APPENDIX B

SAP TABLE 1 – COMPLIANCE GROUNDWATER MONITORING PROGRAM

TABLE I
Compliance Groundwater Monitoring Program
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

	Well	Depth to Groundwater	Total Well Depth	Compliance Monitoring Parameters (Annually)	Compliance Monitoring Parameters (Semi-Annually)	Field Parameters (During Annual Sampling)
On-Site Monitoring Wells	MW-1S[2]	X	X	X	X	X
Shallow	MW-2S	X	X	X		X
	MW-3[1]	X	X	X	X	X
	MW-4S[2]	X	X	X	X	X
	MW-5S[2]	X	X	X	X	X
	MW-6S	X	X	X		X
	MW-7S	X	X	X		X
	MW-8S	X	X	X		X
	MW-9S	X	X	X		X
	MW-10S	X	X	X	X	X
	MW-11S	X	X	X		X
	MW-12S[2]	X	X	X	X	X
	MW-13S[2]	X	X	X	X	X
	MW-24S	X	X	X		X
	MW-103	X	X	X		X
Deep	MW-1D	X	X	X	X	X
	MW-2DR	X	X	X		X
	MW-4D	X	X	X		X
	MW-5D	X	X	X		X
	MW-6D	X	X	X		X
	MW-7D	X	X	X		X
	MW-8DR	X	X	X		X
	MW-9D	X	X	X		X
	MW-10D	X	X	X		X
	MW-11D	X	X	X	X	X
	MW-12D	X	X	X		X
	MW-13D	X	X	X	X	X
	MW-13DD	X	X	X	X	X
	MW-13D3	X	X	X	X	X
	MW-24D	X	X	X		X
Off-Site Monitoring Wells	MW-14S	X	X	X	X	X
Shallow	MW-16	X	X	X		X
	MW-17	X	X	X		X
	MW-18	X	X	X		X
	MW-19R	X	X	X		X
	MW-26	X	X	X		X
	MW-27	X	X	X		X
	MW-28	X	X	X		X
Deep	MW-14D	X	X	X	X	X
	MW-15	X	X	X	X	X
	MW-20	X	X	X	X	X
	MW-21	X	X	X	X	X
	MW-22	X	X	X	X	X
	MW-23	X	X	X		X
	MW-29	X	X	X		X
	TOTAL #	**45**	**45**	**45**	**18**	**45**

[1] - Background Well

[2] - Point of Compliance Wells

Field Parameters include: pH, temperature, turbidity, specific conductance, dissolved oxygen, and oxidation-reduction potential.

APPENDIX C

FIELD DATA SHEETS – 2024 ANNUAL EVENT

Appendix C - Groundwater Monitoring Well Visual Inspection Checklist
Perma-Fix of South Georgia, Inc.

Well ID	Inspection Date	Outer Protective Casing	Outer Protective Casing Cap	Locked	Inner Casing Well Cap	Concrete Seal Present/ Intact	Visual Damage	Casing Material	Casing Diameter	Ponded Water	Clearly Labelled	Measuring Point Marked	Gaskets/ Bolts/ Washers	Comments
MW-1D	1/24/2025	Fair	Fair	Yes	Good	Yes	No	PVC	2-inches	No	No	Yes	N/A	Label plaque/etched label don't match. Lock replaced 1/24/25
MW-1S	12/2/2024	Fair	Fair	Yes	Good	Yes	No	PVC	2-inches	No	No	Yes	N/A	
MW-2DR	12/2/2024	Fair	Fair	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	N/A	Outer casing slightly rusted.
MW-2S	12/2/2024	Fair	Fair	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	N/A	Outer casing slightly rusted.
MW-3	12/2/2024	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	Present	
MW-4D	12/2/2024	Fair	Fair	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	N/A	Outer casing slightly rusted.
MW-4S	12/2/2024	Fair	Fair	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	N/A	Outer casing slightly rusted.
MW-5D	12/2/2024	Fair	Fair	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	N/A	Outer casing slightly rusted.
MW-5S	12/2/2024	Fair	Fair	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	N/A	Outer casing slightly rusted.
MW-6D	12/2/2024	Fair	Fair	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	N/A	Outer casing slightly rusted.
MW-6S	12/2/2024	Fair	Fair	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	N/A	Outer casing slightly rusted.
MW-7D	12/2/2024	Good	Good	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	Present	
MW-7S	1/24/2025	Good	Good	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	Present	Tapped threads; replaced bolts and washers 1/24/25
MW-8DR	12/2/2024	Good	Good	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	N/A	
MW-8S	12/2/2024	Good	Good	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	N/A	
MW-9D	12/2/2024	Good	Good	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	Present	
MW-9S	1/24/2025	Good	Good	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	Present	Tapped threads; replaced bolts and washers 1/24/25
MW-10D	12/2/2024	Good	Good	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	Present	
MW-10S	12/2/2024	Good	Good	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	Present	
,W-11D	12/2/2024	Good	Good	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	Present	
MW-11S	12/2/2024	Good	Good	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	Present	
MW-12D	12/2/2024	Fair	Fair	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	N/A	Outer casing slightly rusted.
MW-12S	12/2/2024	Fair	Fair	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	N/A	Outer casing slightly rusted.
MW-13D	12/2/2024	Good	Good	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	Present	Lock rusted but working
MW-13D3	2/5/2025	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	Present	Lock replaced 1/24/25. O-ring cleaned/washers replaced 2/5/25
MW-13DD	12/2/2024	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	Present	Replaced well cap.
MW-13S	12/2/2024	Good	Good	Yes	Good	Yes	No	SS	2-inches	No	Yes	Yes	Present	
MW-14D	1/24/2025	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	Present	Tapped threads; replaced bolts and washers 1/24/25
MW-14S	1/24/2025	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	Present	Tapped threads; replaced bolts and washers 1/24/25
MW-15	12/2/2024	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	N/A	
MW-16	1/24/2025	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	N/A	Lock replaced 1/24/25

Appendix C - Groundwater Monitoring Well Visual Inspection Checklist
Perma-Fix of South Georgia, Inc.

Well ID	Inspection Date	Outer Protective Casing	Outer Protective Casing Cap	Locked	Inner Casing Well Cap	Concrete Seal Present/ Intact	Visual Damage	Casing Material	Casing Diameter	Ponded Water	Clearly Labelled	Measuring Point Marked	Gaskets/ Bolts/ Washers	Comments
MW-17	12/2/2024	Fair	Fair	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	N/A	Path slightly flooded.
MW-18	12/2/2024	Fair	Fair	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	N/A	Difficult to access.
MW-19R	1/24/2025	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	present	Lock replaced 1/24/25
MW-20	12/2/2024							PVC	2-inches					Inaccessible due to downed trees
MW-21	12/2/2024							PVC	2-inches					Inaccessible due to downed trees
MW-22	12/2/2024							PVC	2-inches					Inaccessible due to downed trees
MW-23	12/2/2024	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	present	
MW-24D	2/5/2025	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	present	Lock replaced. Tapped threads, replaced bolts; O-ring cleaned
MW-24S	2/5/2025	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	present	Lock replaced. Tapped threads, replaced bolts; O-ring cleaned
MW-26	2/5/2025	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	present	Bolt connector stripped. Inacessible on 1/24/25 and 2/5/25
MW-27	2/5/2025	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	present	O-ring cleaned; bolts/washers replaced
MW-28	12/2/2024	Good	Good	Yes	Good	Well pad cracked	No	PVC	2-inches	No	Yes	Yes	present	
MW-29	1/24/2025	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	present	Lock replaced 1/24/25
MW-103	12/2/2024	Good	Good	Yes	Good	Yes	No	PVC	2-inches	No	Yes	Yes	present	
B106R	12/2/2024	Good	Good	Yes	Fair	Yes	No	PVC	2-inches	No	Yes	Yes	present	
B-108R	1/24/2025	Good	Good	Yes	Fair	Yes	No	PVC	2-inches	No	Yes	Yes	present	Tapped threads, replaced bolts 1/24/25
B-113R	1/24/2025	Good	Good	Yes	Fair	Yes	No	PVC	2-inches	No	Yes	Yes	present	Lock replaced. Tapped threads, replaced bolts/washers 1/24/25
B-114R	1/24/2025	Good	Good	Yes	Fair	Yes	No	PVC	2-inches	No	Yes	Yes	present	Tapped threads; replaced bolts/washers 1/24/25
MP-8	12/2/2024	Good	Good	Yes	Fair	Yes	No	PVC	2-inches	No	Yes	Yes	present	
TW-1	12/2/2024							PVC	2-inches					Unable to locate - inaccessible due to downed trees
TW-2	12/2/2024							PVC	2-inches					Inaccessible due to downed trees
TW-3	12/2/2024							PVC	2-inches					Inaccessible due to downed trees

ss = Stainless Steel PVC = Polyvinyl chloride

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/10/2024 Time: 2:10 PM

Field Personnel: D. Jones Finish Date: 12/10/2024 Time: 2:45 PM

WELL INFORMATION

Well ID: MW-1S

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 27.79 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ❑ Submersible Pump ☒ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 22 ft

Stabilized Pumping Rate: 0.2 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	15.11	2:03 PM	15.67	2:45 PM
DNAPL				
Total Well Depth (TD)	27.79		27.79	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 12.68 **feet**

1 Well Volume: 2.03 **Gallons** 3 Well Volume: 6.09 **Gallons**

5 Well Volume: 10.15 **Gallons** **Total Purged:** 7 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE Intake Depth: 22 **FT BTOC**

Well Purged Dry ❑Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	2:10 PM	0	15.11	-	-	-	-	-	-	-	
12/10/2024	2:20 PM	2.0	15.67	0.56	23.5	6.12	159.2	1.09	66.3	88.5	Clear
12/10/2024	2:25 PM	3.0	15.67	0.56	23.4	6.07	157.9	1.92	15.2	86.5	Clear
12/10/2024	2:30 PM	4.0	15.67	0.56	23.4	5.81	127.6	2.33	10.3	91.6	Clear
12/10/2024	2:35 PM	5.0	15.67	0.56	23.4	5.79	124.3	2.41	8.66	96.9	Clear
12/10/2024	2:40 PM	6.0	15.67	0.56	23.4	5.78	121.5	2.49	5.79	99.5	Clear
12/10/2024	2:45 PM	7.0	15.67	0.56	23.4	5.80	119.7	2.50	2.15	95.1	Clear

NOTES

PG. 1 OF 1

Hach 2100P Turbidity SN# 940400005080
Solinst 101 WL SN# 362412
Peristaltic pump used due bend in casing preventing use of submersible pump
APP IX + VOCs & Heptachlor

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/10/2024 | Time: 10:55 AM

Field Personnel: D. Jones | Finish Date: 12/10/2024 | Time: 11:25 AM

WELL INFORMATION

Well ID: MW-1D

Well Casing Diameter: 2 Inches

Screen Interval: 36 - 46 ft

Well Total Depth: 46.42 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 40

Stabilized Pumping Rate: 0.5 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	15.27	10:45 AM	17.60	11:25 AM
DNAPL				
Total Well Depth (TD)	46.42		46.42	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 31.15 **feet**

1 Well Volume: 4.98 **Gallons** | 3 Well Volume: 14.94 **Gallons**

5 Well Volume: 24.90 **Gallons** | **Total Purged:** 15.0 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 40 **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	10:55 AM	0	15.27	-	-	-	-	-	-	-	
12/10/2024	11:05 AM	5.0	16.57	1.30	22.4	5.97	82.2	6.66	1.27	127.3	Clear
12/10/2024	11:10 AM	7.5	17.04	1.77	22.3	6.04	84.1	6.25	0.81	127.8	Clear
12/10/2024	11:15 AM	10.0	17.60	2.33	22.3	6.07	84.8	6.13	0.60	128.0	Clear
12/10/2024	11:20 AM	12.5	17.60	2.33	22.3	6.05	85.9	6.11	0.34	127.4	Clear
12/10/2024	11:25 AM	15.0	17.60	2.33	22.3	6.03	82.8	6.06	0.24	128.0	Clear

NOTES

Hach 2100P Turbidity SN# 940400005080
Solinst 101 WL SN# 362412

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/9/2024 Time: 9:05 AM

Field Personnel: D. Jones Finish Date: 12/9/2024 Time: 9:55 AM

WELL INFORMATION

Well ID: MW-2S

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 20.82 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ❑ Submersible Pump ☒ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 15 ft

Stabilized Pumping Rate: 0.15 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	12.57	9:01 AM	13.03	9:55 AM
DNAPL				
Total Well Depth (TD)	20.82		20.82	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 8.25 **feet**

1 Well Volume: 1.32 **Gallons** 3 Well Volume: 3.96 **Gallons**

5 Well Volume: 6.60 **Gallons** **Total Purged:** 6.75 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE Intake Depth: 15 **FT BTOC**

Well Purged Dry ❑Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	9:10 AM	0	12.57	-	-	-	-	-	-	-	
12/10/2024	9:20 AM	1.5	13.03	0.46	20.6	5.41	58.8	1.37	171	122.8	Slightly cloudy
12/10/2024	9:25 AM	2.25	13.03	0.46	20.6	5.43	58.1	1.40	95.6	121.1	Slightly cloudy
12/10/2024	9:30 AM	3.0	13.03	0.46	20.6	5.44	59.1	1.48	80.4	121.3	Slightly cloudy
12/10/2024	9:35 AM	3.75	13.03	0.46	20.6	5.42	60.2	1.51	67.3	122.4	Slightly cloudy
12/10/2024	9:40 AM	4.50	13.03	0.46	20.6	5.45	61.2	1.60	64.8	120.9	Slightly cloudy
12/10/2024	9:45 AM	5.25	13.03	0.46	20.6	5.45	60.6	1.61	66.1	121.0	Slightly cloudy
12/10/2024	9:50 AM	6.00	13.03	0,46	20.6	5.46	60.7	1.70	64.4	121.8	Slightly cloudy
12/10/2024	9:55 AM	6.75	13.03	0.46	20.6	5.47	60.9	1.71		122.7	Slightly cloudy

NOTES

PG. 1 OF 1

Hach 2100P Turbidity SN# 940400005080
Solinst 101 WL SN# 362412

Submersible pump could not be used due to a bend in the well casing
Sampled at 5 well volumes due to high turbidity

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/6/2024 Time: 3:35 PM

Field Personnel: E. Brunner Finish Date: 12/6/2024 Time: 4:54 PM

WELL INFORMATION

Well ID: MW-2DR

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 44.52 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 36

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	13.86	3:31 PM	14.64	4:35 PM
DNAPL				
Total Well Depth (TD)	44.52			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 30.66 **feet**

1 Well Volume: 4.91 **Gallons** 3 Well Volume: 14.73 **Gallons**

5 Well Volume: 24.55 **Gallons** **Total Purged:** 15 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE Intake Depth: 36 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/6/2024	3:45 PM	0	13.86								
12/6/2024	3:55 PM	3	14.39	0.53	21.9	4.73	49.1	7.76	44.1	448.0	Clear
12/6/2024	4:05 PM	6	14.64	0.78	21.8	4.75	48.9	7.68	28.1	453.2	Clear
12/6/2024	4:15 PM	9	14.64	0.78	21.8	4.75	48.8	7.65	14.5	454.8	Clear
12/6/2024	4:25 PM	12	14.64	0.78	21.9	4.74	48.7	7.75	10.1	459.9	Clear
12/6/2024	4:35 PM	15	14.64	0.78	21.8	4.74	48.7	7.73	8.66	462.5	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN#21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/6/2024 Time: 1:55 PM

Field Personnel: T. Hall Finish Date: 12/6/2024 Time: 2:20 PM

WELL INFORMATION

Well ID: MW-3

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 20.62 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro SN# 74776

Pump Intake Depth: ~16 ft BTOC

Stabilized Pumping Rate: 0.25 gpm

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	14.70	1:55 PM	14.97	2:20 PM
DNAPL				
Total Well Depth (TD)	20.62			

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 5.92 **feet**

1 Well Volume: 0.95 **Gallons** 3 Well Volume: 2.85 **Gallons**

5 Well Volume: 4.75 **Gallons** **Total Purged:** ~12 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE Intake Depth: ~18 ft BTOC **FT BTOC**

Well Purged Dry ❑Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/6/2024	1:55 PM	-	14.70	-	-	-	-	-	-	-	NA
12/6/2024	2:00 PM	2.5	14.95	0.25	21.7	4.58	30.7	7.01	3.57	263.5	Clear
12/6/2024	2:05 PM	5.0	14.95	0.25	21.7	4.58	30.4	6.98	2.92	264.0	Clear
12/6/2024	2:10 PM	7.5	14.95	0.25	21.6	4.57	30.0	6.95	2.42	263.6	Clear
12/6/2024	2:15 PM	10.0	14.97	0.27	21.6	4.55	29.8	6.90	2.50	262.9	Clear
12/6/2024	2:20 PM	12.5	14.97	0.27	21.6	4.54	29.7	6.90	2.31	262.7	Clear

NOTES

PG. 1 OF 1

Hach 2100P Turbidity SN# 940400005080
Solinst 101 WL SN# 362412

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/6/2024 | Time: 2:06 PM

Field Personnel: E. Brunner | Finish Date: 12/6/2024 | Time: 3:21 PM

WELL INFORMATION

Well ID: MW-103

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 22.36 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 18

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	13.43	2:15 PM	13.52	3:00 PM
DNAPL				
Total Well Depth (TD)	22.36			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 8.93 **feet**

1 Well Volume: 1.43 **Gallons** | 3 Well Volume: 4.29 **Gallons**

5 Well Volume: 7.15 **Gallons** | **Total Purged:** 6.75 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 18 **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/6/2024	2:15 PM	0	13.43	0							
12/6/2024	2:25 PM	1.50	13.52	0.09	24.2	4.99	31.1	6.05	1100	389.9	Turbid, brown
12/6/2024	2:30 PM	2.25	13.52	0.09	24.1	4.96	31.1	5.76	354	389.4	Cloudy, yellow
12/6/2024	2:35 PM	3.00	13.52	0.09	24.2	4.96	31.2	5.73	151	390.0	Cloudy
12/6/2024	2:40 PM	3.75	13.52	0.09	24.1	4.93	31.2	5.56	60.8	391.4	Cloudy
12/6/2024	2:45 PM	4.50	13.52	0.09	24.1	4.93	30.8	5.59	38.5	394.9	Cloudy
12/6/2024	2:50 PM	5.25	13.52	0.09	24.2	4.91	31.6	5.25	29.5	396.4	Clear
12/6/2024	2:55 PM	6.00	13.52	0.09	24.1	4.91	31.8	5.43	15.8	394.0	Clear
12/6/2024	3:00 PM	6.75	13.52	0.09	24.3	4.90	31.8	5.23	8.98	392.9	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/9/2024 | Time: 12:57 PM

Field Personnel: E. Brunner | Finish Date: 12/9/2024 | Time: 1:52 PM

WELL INFORMATION

Well ID: MW-4S

Well Casing Diameter: 2 Inches

Screen Interval: 10-25 ft

Well Total Depth: 28.02 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 20

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	13.84	1:05 PM	14.48	1:35 PM
DNAPL				
Total Well Depth (TD)	28.02			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 14.18 **feet**

1 Well Volume: 2.27 **Gallons** | 3 Well Volume: 6.81 **Gallons**

5 Well Volume: 11.35 **Gallons** | **Total Purged:** 7.5 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE | Intake Depth: 20 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/9/2024	1:10 PM	0	13.84								
12/9/2024	1:20 PM	3	13.92	0.08	24.2	5.45	252.8	5.14	3.67	208.0	Clear
12/9/2024	1:25 PM	4.5	14.48	0.64	24.7	6.38	262.3	1.26	0.02	20.1	Clear
12/9/2024	1:30 PM	6	14.48	0.64	24.7	6.47	297.1	0.14	0.02	5.4	Clear
12/9/2024	1:35 PM	7.5	14.48	0.64	24.7	6.47	300.3	0.08	0.02	2.4	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/9/2024 Time: 9:57 AM

Field Personnel: E. Brunner Finish Date: 12/9/2024 Time: 11:13 AM

WELL INFORMATION

Well ID: MW-4D

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 44.58 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 38

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	14.13	9:57 AM	17.78	10:50 AM
DNAPL				
Total Well Depth (TD)	44.58			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 30.45 **feet**

1 Well Volume: 4.87 **Gallons** 3 Well Volume: 14.61 **Gallons**

5 Well Volume: 24.35 **Gallons** **Total Purged:** 16.00 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE Intake Depth: 38 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/9/2024	10:10 AM	0	14.13								Cloudy
12/9/2024	10:20 AM	4	17.62	3.49	23.3	4.71	55.9	5.54	9.60	423.4	Clear
12/9/2024	10:30 AM	8	17.73	3.60	23.3	4.71	55.8	5.60	7.69	425.4	Clear
12/9/2024	10:40 AM	12	17.76	3.63	23.4	4.71	55.8	5.57	0.02	421.5	Clear
12/9/2024	10:50 AM	16	17.78	3.65	23.3	4.72	55.8	5.58	0.02	422.4	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/9/2024 | Time: 12:05 AM

Field Personnel: D. Jones | Finish Date: 12/9/2024 | Time: 12:40 AM

WELL INFORMATION

Well ID: MW-5S

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 28.39 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 23 ft

Stabilized Pumping Rate: 0.2 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	13.86	12:02 PM	14.61	12:40 PM
DNAPL				
Total Well Depth (TD)	28.39		28.39	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 14.53 **feet**

1 Well Volume: 2.32 **Gallons** | 3 Well Volume: 6.96 **Gallons**

5 Well Volume: 11.60 **Gallons** | **Total Purged:** 7 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 23 **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ☒ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/9/2024	12:05 PM	0	13.86	-	-	-	-	-	-	-	
12/9/2024	12:15 PM	2.0	14.55	0.69	21.1	5.85	499	3.13	65.0	37.9	Slightly cloudy
12/9/2024	12:20 PM	3.0	14.61	0.75	21.1	5.82	491	3.07	27.0	40.2	Slightly cloudy
12/9/2024	12:25 PM	4.0	14.61	0.75	21.1	5.79	480	3.25	14.2	42.8	Clear
12/9/2024	12:30 PM	5.0	14.61	0:75	21.1	5.74	475	3.36	10.3	49.6	Clear
12/9/2024	12:35 PM	6.0	14.61	0.75	21.1	5.72	472	3.40	9.01	51.0	Clear
12/9/2024	12:40 PM	7.0	14.61	0.75	21.1	5.71	469	3.43	7.66	55.2	Clear

NOTES

Hanna HI 98703 Turbidity SN# H0032411
Solinst 101 WL SN# 362412

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/9/2024 Time: 8:22 AM

Field Personnel: E. Brunner Finish Date: Time: 9:40 AM

WELL INFORMATION

Well ID: MW-5D

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 43.78 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 37

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	13.61	8:22 AM	15.48	9:20 AM
DNAPL				
Total Well Depth (TD)	43.78			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 30.17 **feet**

1 Well Volume: 4.83 **Gallons** 3 Well Volume: 14.49 **Gallons**

5 Well Volume: 24.15 **Gallons** **Total Purged:** 16.00 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE Intake Depth: 37 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/9/2024	8:40 AM	0	13.61								Clear
12/9/2024	8:50 AM	4	15.48	1.87	22.5	4.84	50.2	6.39	12.6	424.3	Clear
12/9/2024	9:00 AM	8	15.48	1.87	22.5	4.82	50.2	6.43	1.72	426.9	Clear
12/9/2024	9:10 AM	12	15.48	1.87	22.5	4.82	50.1	6.38	1.54	433.3	Clear
12/9/2024	9:20 AM	16	15.48	1.87	22.5	4.82	50.1	6.37	0.35	436.0	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/10/2024 Time: 10:25 AM

Field Personnel: E. Brunner Finish Date: 12/10/2024 Time: 11:22 AM

WELL INFORMATION

Well ID: MW-6S

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 27.99 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 20

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	15.43	10:25 AM	16.49	11:00 AM
DNAPL				
Total Well Depth (TD)	27.99			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 12.56 **feet**

1 Well Volume: 2.01 **Gallons** 3 Well Volume: 6.03 **Gallons**

5 Well Volume: 10.05 **Gallons** **Total Purged:** 7.5 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE Intake Depth: 20 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No QC Samples Collected: ☒ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	10:35 AM	0	15.43	0							
12/10/2024	10:45 AM	3	16.28	0.85	24.6	6.06	2662	0.16	1.15	-17.3	Clear
12/10/2024	10:50 AM	4.5	16.28	0.85	24.6	6.06	2554	0.16	0.02	-20.7	Clear
12/10/2024	10:55 AM	6	16.49	1.06	24.6	6.07	2313	0.12	0.02	2.5	Clear
12/10/2024	11:00 AM	7.5	16.49	1.06	24.6	6.05	2109	0.13	0.02	0.3	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/9/2024 | Time: 10:15 AM

Field Personnel: D. Jones | Finish Date: 12/9/2024 | Time: 10:50 AM

WELL INFORMATION

Well ID: MW-6D

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 43.16 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 39 ft

Stabilized Pumping Rate: 0.4 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	15.51	10:10 AM	17.71	10:50 AM
DNAPL				
Total Well Depth (TD)	43.16		43.16	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 27.65 **feet**

1 Well Volume: 4.42 **Gallons** | 3 Well Volume: 13.26 **Gallons**

5 Well Volume: 22.10 **Gallons** | **Total Purged:** 14.0 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 39 **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/9/2024	10:15 AM	0	15.51	-	-	-	-	-	-	-	
12/9/2024	10:25 AM	4.0	17.15	1.64	20.9	4.86	86.2	4.93	140	191.4	Slightly cloudy
12/9/2024	10:30 AM	6.0	17.33	1.82	20.9	4.90	81.9	4.61	40.1	181.4	Slightly cloudy
12/9/2024	10:35 AM	8.0	17.48	1.97	20.9	4.90	80.2	4.65	10.0	181.6	Clear
12/9/2024	10:40 AM	10.0	17.55	2.04	20.9	4.88	79.2	4.64	6.40	180.1	Clear
12/9/2024	10:45 AM	12.0	17.65	2.14	20.9	4.83	80.6	4.74	5.30	181.7	Clear
12/9/2024	10:50 AM	14.0	17.71	2.20	20.9	4.84	80.9	4.70	5.24	181.3	Clear

NOTES

PG. 1 OF 1

Hanna HI 98703 Turbidity SN# H0032411

Solinst 101 WL SN# 554831

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/10/2024 | Time: 12:25 PM

Field Personnel: D. Jones | Finish Date: 12/10/2024 | Time: 1:00 PM

WELL INFORMATION

Well ID: MW-7S

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 24.87 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 20 ft

Stabilized Pumping Rate: 0.3 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	12.04	12:18 PM	12.31	1:00 PM
DNAPL				
Total Well Depth (TD)	24.87		24.87	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 12.83 **feet**

1 Well Volume: 2.05 **Gallons** | 3 Well Volume: 6.15 **Gallons**

5 Well Volume: 10.25 **Gallons** | **Total Purged:** 10.5 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 20 **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	12:25 PM	0	12.04	-	-	-	-	-	-	-	
12/10/2024	12:35 PM	3.0	12.30	0.26	23.2	6.43	260.8	0.11	155	-59.4	Cloudy
12/10/2024	12:40 PM	4.5	12.30	0.26	23.2	6.42	259.7	0.10	180	-60.9	Cloudy
12/10/2024	12:45 PM	6.0	12.30	0.26	23.1	6.43	262.2	0.09	184	-61.8	Cloudy
12/10/2024	12:50 PM	7.5	12.31	0,27	23.1	6.42	260.4	0.08	188	-62.8	Cloudy
12/10/2024	12:55 PM	9.0	12.31	0.27	23.1	6.42	261.8	0.08	185	-62.3	Cloudy
12/10/2024	1:00 PM	10.5	12.32	0.28	23.0	6.42	259.2	0.07	113	-61.3	Cloudy

NOTES

PG. 1 OF 1

Hach 2100P Turbidity SN# 940400005080
Solinst 101 WL SN# 362412

5 well volumes purged due to high turbidity

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/9/2024 Time: 11:43 PM

Field Personnel: E. Brunner Finish Date: 12/9/2024 Time: 12:49 PM

WELL INFORMATION

Well ID: MW-7D

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 40.98 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 35

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	12.39	11:43 AM	13.28	12:30 PM
DNAPL				
Total Well Depth (TD)	40.98			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 28.59 **feet**

1 Well Volume: 4.57 **Gallons** 3 Well Volume: 13.71 **Gallons**

5 Well Volume: 22.85 **Gallons** **Total Purged:** 14.00 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE Intake Depth: 35 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/9/2024	11:50 AM	0	12.39								Clear
12/9/2024	12:00 PM	3.5	13.28	0.89	23.9	4.82	47.4	6.41	3.54	356.2	Clear
12/9/2024	12:10 PM	7.0	13.28	0.89	24.0	4.78	49.0	6.27	0.02	321.9	Clear
12/9/2024	12:20 PM	10.5	13.28	0.89	24.0	4.81	49.3	6.27	0.02	315.4	Clear
12/9/2024	12:30 PM	14.0	13.28	0.89	24.0	4.77	49.4	6.25	0.02	334.6	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/10/2024 | Time: 4:40 PM

Field Personnel: D. Jones | Finish Date: 12/10/2024 | Time: 5:10 PM

WELL INFORMATION

Well ID: MW-8S

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 27.96 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 23 ft

Stabilized Pumping Rate: 0.2 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	18.66	4:36 PM	19.21	5:10 PM
DNAPL				
Total Well Depth (TD)	27.96		27.96	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 9.30 **feet**

1 Well Volume: 1.49 **Gallons** | 3 Well Volume: 4.47 **Gallons**

5 Well Volume: 7.45 **Gallons** | **Total Purged:** 6 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 23 **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	4:40 PM	0	18.66	-	-	-	-	-	-	-	-
12/10/2024	4:50 PM	2.0	19.19	0.53	21.8	4.59	2065	0.26	9.73	123.6	Slightly cloudy
12/10/2024	4:55 PM	3.0	19.21	0.55	21.8	4.69	1462	0.23	4.44	109.8	Clear
12/10/2024	5:00 PM	4.0	19.21	0.55	21.7	4.72	1012	0.25	2.60	101.1	Clear
12/10/2024	5:05 PM	5.0	19.21	0.55	21.7	4.76	993	0.26	2.00	97.1	Clear
12/10/2024	5:10 PM	6.0	19.21	0.55	21.7	4,78	972	0.26	1.64	94.5	Clear

NOTES

PG. 1 OF 1

Hach 2100P Turbidity SN# 940400005080

Solinst 101 WL SN# 362412

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/9/2024 Time: 2:24 PM

Field Personnel: E. Brunner Finish Date: 12/9/2024 Time: 3:42 PM

WELL INFORMATION

Well ID: MW-8DR

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 44.22 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 38

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	19.18	2:23 PM	19.60	3:15 PM
DNAPL				
Total Well Depth (TD)	44.22			

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 25.04 **feet**

1 Well Volume: 4.01 **Gallons** 3 Well Volume: 12.03 **Gallons**

5 Well Volume: 20.05 **Gallons** **Total Purged:** 12.00 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE Intake Depth: 38 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/9/2024	2:35 PM	0	19.18								
12/9/2024	2:45 PM	3	19.60	0.42	23.0	4.57	59.6	5.83	22.9	279.1	Clear
12/9/2024	2:55 PM	6	19.60	0.42	22.9	4.57	59.4	5.93	2.99	358.1	Clear
12/9/2024	3:05 PM	9	19.60	0.42	22.9	4.57	59.4	5.81	1.13	380.2	Clear
12/9/2024	3:15 PM	12	19.60	0.42	23.0	4.57	59.3	5.79	1.08	385.9	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/10/2024 Time: 3:45 PM

Field Personnel: D. Jones Finish Date: 12/10/2024 Time: 4:10 PM

WELL INFORMATION

Well ID: MW-9S

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 24.68 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 20 ft

Stabilized Pumping Rate: 0.2 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	13.76	3:36 PM	14.43	4:10 PM
DNAPL				
Total Well Depth (TD)	24.68		24.68	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 10.92 **feet**

1 Well Volume: 1.75 **Gallons** 3 Well Volume: 5.25 **Gallons**

5 Well Volume: 8.75 **Gallons** **Total Purged:** 6 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE Intake Depth: 20 **FT BTOC**

Well Purged Dry ❑Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	3:40 PM	0	13.76	-	-	-	-	-	-	-	
12/10/2024	3:50 PM	2.0	14.43	0.67	22.5	4.46	100.6	2.86	33.8	187.0	Slightly cloudy
12/10/2024	3:55 PM	3.0	14.43	0.67	22.5	4.45	97.1	3.00	13.6	185.3	Clear
12/10/2024	4:00 PM	4.0	14.43	0.67	22.5	4.44	95.5	3.10	7.51	183.4	Clear
12/10/2024	4:05 PM	5.0	14.43	0.67	22.5	4.46	90.1	3.23	3.06	180.2	Clear
12/10/2024	4:10 PM	6.0	14.43	0.67	22.5	4.45	89.7	3.29	2.02	178.7	Clear

NOTES

Hach 2100P Turbidity SN# 940400005080
Solinst 101 WL SN# 362412

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/9/2024 | Time: 3:20 PM

Field Personnel: D. Jones | Finish Date: 12/9/2024 | Time: 3:55 PM

WELL INFORMATION

Well ID: MW-9D

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 40.86 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 35 ft

Stabilized Pumping Rate: 0.4 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	13.91	3:15 PM	14.72	3:55 PM
DNAPL				
Total Well Depth (TD)	40.86		40.86	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 26.95 **feet**

1 Well Volume: 4.31 **Gallons** | 3 Well Volume: 12.93 **Gallons**

5 Well Volume: 21.55 **Gallons** | **Total Purged:** 14 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 35 **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/9/2024	3:20 PM	0	13.91	-	-	-	-	-	-	-	
12/9/2024	3:30 PM	4.0	14.66	0.75	20.9	4.45	60.6	5.16	1.70	218.9	Clear
12/9/2024	3:35 PM	6.0	14.68	0.77	20.8	4.44	60.6	5.15	1.22	210.3	Clear
12/9/2024	3:40 PM	8.0	14.69	0.78	20.8	4.43	60.7	5.13	0.90	208.6	Clear
12/9/2024	3:45 PM	10.0	14.70	0.79	20.8	4.42	60.7	5.20	0.85	205.7	Clear
12/9/2024	3:50 PM	12.0	14.71	0.80	20.8	4.42	60.6	5.28	0.50	203.7	Clear
12/9/2024	3:55 PM	14.0	14.72	0.81	20.8	4.41	60.5	5.27	0.20	200.8	Clear

NOTES

Hanna HI 98703 Turbidity SN# H0032411
Solinst 101 WL SN# 362412

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/10/2024 Time: 5:45 PM

Field Personnel: D. Jones Finish Date: 12/10/2024 Time: 6:15 PM

WELL INFORMATION

Well ID: MW-10S

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 24.96 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 20 ft

Stabilized Pumping Rate: 0.2 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	14.36	5:37 PM	14.37	6:15 PM
DNAPL				
Total Well Depth (TD)	24.96		24.96	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 10.60 **feet**

1 Well Volume: 1.70 **Gallons** 3 Well Volume: 5.10 **Gallons**

5 Well Volume: 8.50 **Gallons** **Total Purged:** 6.0 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE Intake Depth: 20 **FT BTOC**

Well Purged Dry ❑Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	5:45 PM	0	14.36	-	-	-	-	-	-	-	-
12/10/2024	5:55 PM	2.0	14.37	0.01	22.2	6.01	305.7	0.90	25.3	2.6	Slightly cloudy
12/10/2024	6:00 PM	3.0	14.37	0.01	22.2	5.98	293.1	1.01	18.4	5.4	Clear
12/10/2024	6:05 PM	4.0	14.37	0.01	22.2	5.90	285.2	1.07	8.58	11.4	Clear
12/10/2024	6:10 PM	5.0	14.37	0.01	22.2	5.89	283.1	1.18	6.80	18.7	Clear
12/10/2024	6:15 PM	6.0	14.37	0.01	22.2	5.87	281.0	1.21	3.24	20.5	Clear

NOTES

Hach 2100P Turbidity SN# 940400005080
Solinst 101 WL SN# 362412

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/9/2024 | Time: 4:30 PM

Field Personnel: D. Jones | Finish Date: 12/9/2024 | Time: 5:05 PM

WELL INFORMATION

Well ID: MW-10D

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 40.85 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 35 ft

Stabilized Pumping Rate: 0.4 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	14.36	4:25 PM	14.69	5:05 PM
DNAPL				
Total Well Depth (TD)	40.85		40.85	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 26.49 **feet**

1 Well Volume: 4.24 **Gallons** | 3 Well Volume: 12.72 **Gallons**

5 Well Volume: 21.20 **Gallons** | **Total Purged:** 14.0 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 35 **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/9/2024	4:30 PM	0	14.36	-	-	-	-	-	-	-	
12/9/2024	4:40 PM	4.0	14.69	0.33	21.1	4.51	47.5	5.86	4.30	200.2	Clear
12/9/2024	4:45 PM	6.0	14.69	0.33	21.0	4.44	47.7	5.91	1.60	201.6	Clear
12/9/2024	4:50 PM	8.0	14.69	0.33	21.0	4.44	48.0	5.96	0.55	202.1	Clear
12/9/2024	4:55 PM	10.0	14.69	0.33	21.0	4.43	48.0	5.95	0.43	203.2	Clear
12/9/2024	5:00 PM	12.0	14.69	0.33	21.0	4.42	48.1	5.93	0.25	203.5	Clear
12/9/2024	5:05 PM	14.0	14.69	0.33	21.0	4.43	48.3	5.90	0.20	203.4	Clear

NOTES

PG. 1 OF 1

Hanna HI 98703 Turbidity SN# H0032411
Solinst 101 WL SN# 362412

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/10/2024 Time: 12:00 PM

Field Personnel: E. Brunner Finish Date: 12/10/2024 Time: 12:59 PM

WELL INFORMATION

Well ID: MW-11S

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 25.01 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 20

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	18.48	11:46 AM	18.60	12:40 PM
DNAPL				
Total Well Depth (TD)	25.01			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 6.53 **feet**

1 Well Volume: 1.04 **Gallons** 3 Well Volume: 3.12 **Gallons**

5 Well Volume: 5.20 **Gallons** **Total Purged:** 5 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE Intake Depth: 20 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	12:15 PM	0	18.48								
	12:25 PM	2	18.60	0.12	25.8	4.72	37.0	3.53	3.99	62.2	Clear
	12:30 PM	3	18.60	0.12	25.9	4.76	37.6	3.42	3.91	62.3	Clear
	12:35 PM	4	18.60	0.12	25.5	4.72	39.8	3.57	1.26	63.2	Clear
	12:40 PM	5	18.60	0.12	25.6	4.68	43.1	3.42	0.19	62.6	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/10/2024 Time: 1:00 PM

Field Personnel: E. Brunner Finish Date: 12/10/2024 Time: 2:14 PM

WELL INFORMATION

Well ID: MW-11D

Well Casing Diameter: 2 Inches

Screen Interval: 31-41 ft

Well Total Depth: 43.59 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 33

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	18.45	1:00 PM	19.18	2:00 PM
DNAPL				
Total Well Depth (TD)	43.59			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 25.14 **feet**

1 Well Volume: 4.02 **Gallons** 3 Well Volume: 12.06 **Gallons**

5 Well Volume: 20.10 **Gallons** **Total Purged:** 15 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE Intake Depth: 33 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	1:10 PM	0	18.45								
12/10/2024	1:20 PM	3	19.18	0.73	23.6	5.32	62.9	6.96	0.02	372.5	Clear
12/10/2024	1:30 PM	6	19.18	0.73	23.5	5.31	62.4	5.79	0.02	373.5	Clear
12/10/2024	1:40 PM	9	19.18	0.73	23.6	5.32	61.1	5.77	0.02	367.5	Clear
12/10/2024	1:50 PM	12	19.18	0.73	23.5	5.32	60.2	5.81	0.02	365.1	Clear
12/10/2024	2:00 PM	15	19.18	0.73	23.5	5.31	60.0	5.66	0.02	368.2	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/10/2024 | Time: 8:58 AM

Field Personnel: E. Brunner | Finish Date: 12/10/2024 | Time: 9:59 AM

WELL INFORMATION

Well ID: MW-12S

Well Casing Diameter: 2 Inches

Screen Interval: 10-25 ft

Well Total Depth: 27.75 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 20

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	13.52	8:58 AM		
DNAPL				
Total Well Depth (TD)	27.75			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 14.23 **feet**

1 Well Volume: 2.28 **Gallons** | 3 Well Volume: 6.84 **Gallons**

5 Well Volume: 11.40 **Gallons** | **Total Purged:** 7.5 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE | Intake Depth: 20 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	9:15 AM	0	13.52								
12/10/2024	9:25 AM	2.5	14.05	0.53	24.2	6.68	358.9	0.11	45.1	-58.7	Clear
12/10/2024	9:30 AM	3.75	14.05	0.53	24.2	6.68	357.0	0.10	24.5	-56.9	Clear
12/10/2024	9:35 AM	5.0	14.05	0.53	24.2	6.65	357.6	0.09	14.6	-56.2	Clear
12/10/2024	9:40 AM	6.25	14.05	0.53	24.1	6.63	357.6	0.11	9.92	-53.9	Clear
12/10/2024	9:45 AM	7.5	14.05	0.53	24.1	6.63	357.6	0.09	6.62	-53.2	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/9/2024 | Time: 9:10 AM

Field Personnel: D. Jones | Finish Date: 12/9/2024 | Time: 9:45 AM

WELL INFORMATION

Well ID: MW-12D

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 42.68 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 38 ft

Stabilized Pumping Rate: 0.4 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	13.70	8:57 AM	14.57	9:45 AM
DNAPL				
Total Well Depth (TD)	42.68		42.6	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 28.98 **feet**

1 Well Volume: 4.64 **Gallons** | 3 Well Volume: 13.92 **Gallons**

5 Well Volume: 23.20 **Gallons** | **Total Purged:** 14.0 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 38 **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/9/2024	9:10 AM	0	13.70	-	-	-	-	-	-	-	
12/9/2024	9:20 AM	4.0	14.50	0.80	20.9	4.49	65.1	4.93	5.24	196.7	Clear
12/9/2024	9:25 AM	6.0	14.52	0.82	20.8	4.45	64.7	5.06	4.90	193.7	Clear
12/9/2024	9:30 AM	8.0	14.57	0.87	20.8	4.45	62.4	5.08	3.44	193.3	Clear
12/9/2024	9:35 AM	10.0	14.57	0.87	20.8	4.45	60.1	5.11	2.70	192.9	Clear
12/9/2024	9:40 AM	12.0	14.57	0.87	20.9	4.45	60.1	5.10	2.30	193.3	Clear
12/9/2024	9:45 AM	14.0	14.57	0.87	20.9	4.44	60.0	5.11	2.06	193.9	Clear

NOTES

PG. 1 OF 1

Hanna HI 98703 Turbidity SN# H0032411
Solinst 101 WL SN# 362412

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/10/2024 Time:

Field Personnel: E. Brunner Finish Date: Time:

WELL INFORMATION

Well ID: MW-13S

Well Casing Diameter: 2 Inches

Screen Interval: 9-24 ft

Well Total Depth: 24.51 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 15

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	11.89	4:00 PM	12.32	4:35 PM
DNAPL				
Total Well Depth (TD)	24.51			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 12.62 **feet**

1 Well Volume: 2.02 **Gallons** 3 Well Volume: 6.06 **Gallons**

5 Well Volume: 10.10 **Gallons** **Total Purged:** 7.5 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE Intake Depth: 15 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	4:10 PM	0	11.89	0							
12/10/2024	4:20 PM	3	12.32	0.43	26.3	4.86	80.1	2.04	14.1	58.4	Clear
12/10/2024	4:25 PM	4.5	12.32	0.43	26.1	4.89	80.4	1.66	11.6	58.1	Clear
12/10/2024	4:30 PM	6	12.32	0.43	26.2	4.89	82.2	1.77	7.91	59.2	Clear
12/10/2024	4:35 PM	7.5	12.32	0.43	26.2	4.88	82.2	1.62	9.34	59.2	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/10/2024 Time: 2:39 PM

Field Personnel: E. Brunner Finish Date: 12/10/2024 Time: 3:57 PM

WELL INFORMATION

Well ID: MW-13D

Well Casing Diameter: 2 Inches

Screen Interval: 31-41 ft

Well Total Depth: 41.66 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 33

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	11.95	2:39 PM	21.54	3:30 PM
DNAPL				
Total Well Depth (TD)	41.66			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 29.71 **feet**

1 Well Volume: 4.75 **Gallons** 3 Well Volume: 14.25 **Gallons**

5 Well Volume: 23.75 **Gallons** **Total Purged:** 16 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE Intake Depth: 33 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No QC Samples Collected: ☒ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	2:50 PM	0	11.95								
	3:00 PM	4	20.98	9.03	24.8	5.95	76.4	3.78	0.02	35.9	Clear
	3:10 PM	8	21.54	9.59	24.8	5.41	66.7	4.36	0.02	37.1	Clear
	3:20 PM	12	21.54	9.59	24.7	5.38	63.5	4.43	0.02	36.3	Clear
	3:30 PM	16	21.54	9.59	24.7	5.38	63.0	4.45	0.02	35.8	Clear

NOTES

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/10/2024 | Time: 4:51 PM

Field Personnel: E. Brunner | Finish Date: 12/10/2024 | Time:

WELL INFORMATION

Well ID: MW-13DD

Well Casing Diameter: 2 Inches

Screen Interval: 60-65 ft

Well Total Depth: 67.60 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 60

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	18.66	4:53 PM	31.06	6:00 PM
DNAPL				
Total Well Depth (TD)	67.60			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 48.94 **feet**

1 Well Volume: 7.83 **Gallons** | 3 Well Volume: 23.49 **Gallons**

5 Well Volume: 39.15 **Gallons** | **Total Purged:** 24 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE | Intake Depth: 60 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/10/2024	5:00 PM	0	18.66	0							
12/10/2024	5:10 PM	4	26.61	4.45	23.9	9.23	206.1	2.90	6.98	62.3	Clear
12/10/2024	5:20 PM	8	31.06	12.40	23.9	9.05	175.9	3.51	0.02	76.5	Clear
12/10/2024	5:30 PM	12	31.06	12.40	23.9	8.12	173.2	4.01	0.02	97.9	Clear
12/10/2024	5:40 PM	16	31.06	12.40	23.8	7.51	206.7	4.18	0.02	120.5	Clear
12/10/2024	5:50 PM	20	31.06	12.40	23.8	7.31	203.1	4.30	0.02	125.4	Clear
12/10/2024	6:00 PM	24	31.06	12.40	23.8	7.28	207.3	4.40	0.02	133.8	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/9/2024 | Time: 1:40 PM

Field Personnel: D. Jones | Finish Date: 12/9/2024 | Time: 2:30 PM

WELL INFORMATION

Well ID: MW-13D3

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 135.55 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 130 ft

Stabilized Pumping Rate: 0.5 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	84.13		105.52	2:30 PM
DNAPL				
Total Well Depth (TD)	135.55		135.55	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 51.42 feet

1 Well Volume: 8.23 Gallons | 3 Well Volume: 24.69 Gallons

5 Well Volume: 41.15 Gallons | Total Purged: 25 Gallons

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 130 FT BTOC

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/9/2024	1:40 PM	0	84.13	-	-	-	-	-	-	-	
12/9/2024	1:50 PM	5.0	94.14	10.99	21.2	8.52	238.5	5.65	39.0	78.7	Slightly cloudy
12/9/2024	1:55 PM	7.5	96.70	12.57	21.2	8.50	239.4	5.68	22.2	78.5	Slightly cloudy
12/9/2024	2:00 PM	10.0	97.49	13.36	21.2	8.49	238.7	5.89	10.0	78.7	Clear
12/9/2024	2:05 PM	12.4	98.30	14.17	21.2	8.47	239.0	5.97	9.65	79.2	Clear
12/9/2024	2:10 PM	15.0	100.17	16.04	21.2	8.46	239.2	6.38	4.02	77.8	Clear
12/9/2024	2:15 PM	17.5	102.95	18.82	21.2	8.43	239.7	6.10	3.88	78.0	Clear
12/9/2024	2:20 PM	20.0	104.65	20.52	21.1	8.39	239.6	6.19	3.78	78.1	Clear
12/9/2024	2:25 PM	22.5	105.45	21.32	21.1	8.36	239.4	6.28	3.61	79.1	Clear
12/9/2024	2:30 PM	25.0	105.52	21.39	21.1	8.34	239.0	6.34	3.20	79.3	Clear

NOTES

Hanna HI 98703 Turbidity SN# H0032411
Solinst 101 WL SN# 362412

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/6/2024 | Time:

Field Personnel: T. Halll | Finish Date: 12/6/2024 | Time:

WELL INFORMATION

Well ID: MW-14S

Well Casing Diameter: 2 Inches

Screen Interval: 14-24 ft

Well Total Depth: 24.45 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24776

Pump Intake Depth: ~18 ft BTOC

Stabilized Pumping Rate: 0.2 gpm

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	5.04	11:25 AM	7.31	12:05 PM
DNAPL				
Total Well Depth (TD)	24.45			

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 19.41 **feet**

1 Well Volume: 3.11 **Gallons** | 3 Well Volume: 9.33 **Gallons**

5 Well Volume: 15.55 **Gallons** | **Total Purged:** ~12 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: ~18 ft BTOC **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/6/2024	11:40 AM	-	5.04	-	-	-	-	-	-	-	NA
12/6/2024	11:45 AM	2.5	7.05	2.01	21.1	6.45	707	0.15	25.8	-48.9	Clear
12/6/2024	11:50 AM	5.0	7.10	2.06	21.4	6.44	690	0.11	5.31	-56.2	Clear
12/6/2024	11:55 AM	7.5	7.21	2.17	21.5	6.43	666	0.11	2.82	-56.4	Clear
12/6/2024	12:00 AM	10.0	7.30	2.26	21.6	6.42	661	0.10	2.02	-56.4	Clear
12/6/2024	12:05 AM	12.5	7.30		21.6	6.40	665	0.10	2.24	-56.2	Clear

NOTES

Hach 2100P Turbidity SN# 940400005080
Solinst 101 WL SN# 362412

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/6/2024 | Time: 9:50 AM

Field Personnel: T. Hall | Finish Date: 12/6/2024 | Time: 10:30 AM

WELL INFORMATION

Well ID: MW-14D

Well Casing Diameter: 2 Inches

Screen Interval: 28-38 ft

Well Total Depth: 38.80 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24776

Pump Intake Depth: ~30 ft BTOC

Stabilized Pumping Rate: 0.2 gpm

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	6.99	9:30 AM	9.75	10:30 AM
DNAPL				
Total Well Depth (TD)	38.80			

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 31.81 feet

1 Well Volume: 5.09 Gallons | 3 Well Volume: 15.27 Gallons

5 Well Volume: 25.45 Gallons | Total Purged: ~16 Gallons

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: ~30.0 FT BTOC

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/6/2024	9:50 AM	-	6.99	-	-	-	-	-	-	-	NA
12/6/2024	9:55 AM	2.0	9.75	2.76	21.0	4.37	57.1	6.95	3.77	273.6	Clear
12/6/2024	10:00 AM	4.0	9.75	2.76	21.0	4.40	56.5	6.56	3.00	271.5	Clear
12/6/2024	10:05 AM	6.0	9.75	2.76	21.0	4.39	56.4	6.51	2.77	269.8	Clear
12/6/2024	10:10 AM	8.0	9.75	2.76	20.9	4.39	56.1	6.51	2.81	269.9	Clear
12/6/2024	10:15 AM	10.0	9.75	2.76	20.9	4.39	56.0	6.49	3.01	270.1	Clear
12/6/2024	10:20 AM	12.0	9.75	2.76	20.9	4.40	56.0	6.47	2.31	270.5	Clear
12/6/2024	10:25 AM	14.0	9.75	2.76	20.9	4.42	56.0	6.50	1.72	270.2	Clear
12/6/2024	10:30 AM	16.0	9.75	2.76	20.9	4.43	56.0	6.51	1.54	270.2	Clear

NOTES

Hach 2100P Turbidity SN# 940400005080
Solinst 101 WL SN# 362412

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/5/2024 | Time: 3:10 PM

Field Personnel: D. Jones | Finish Date: 12/5/2024 | Time: 3:45 PM

WELL INFORMATION

Well ID: MW-15

Well Casing Diameter: 2 Inches

Screen Interval: 33 - 43 ft

Well Total Depth: 43.40 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 37 ft

Stabilized Pumping Rate: 0.5 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	11.93	3:05 PM	13.47	3:45 PM
DNAPL				
Total Well Depth (TD)	43.40		43.40	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 31.47 **feet**

1 Well Volume: 5.04 **Gallons** | 3 Well Volume: 15.12 **Gallons**

5 Well Volume: 25.20 **Gallons** | **Total Purged:** 17.5 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 37 **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/5/2024	3:10 PM	0	11.93	-	-	-	-	-	-	-	
12/5/2024	3:20 PM	5.0	13.30	1.37	23.5	4.32	53.5	6.70	86.4	279.0	Cloudy
12/5/2024	3:25 PM	7.5	13.45	1.52	23.5	4.32	53.2	6.62	62.5	279.9	Slightly cloudy
12/5/2024	3:30 PM	10.0	13.47	1.54	23.5	4.32	52.8	6.51	17.2	280.4	Slightly cloudy
12/5/2024	3:35 PM	12.5	13.47	1.54	23.5	4.32	52.4	6.53	7.78	280.9	Clear
12/5/2024	3:40 PM	15.0	13.47	1.54	23.5	4.31	52.4	6.58	5.80	281.7	Clear
12/5/2024	3:45 PM	17.5	13.47	1.54	23.5	4.31	52.6	6.52	3.12	282.1	Clear

NOTES

Turbidity- Hach 2100P SN# 940800005917
Water Level - Solinst 101 SN# 554831

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/5/2024 Time: 1:40 PM

Field Personnel: D. Jones Finish Date: 12/5/2024 Time: 2:25 PM

WELL INFORMATION

Well ID: MW-16

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 35.56 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 30 ft

Stabilized Pumping Rate: 0.3 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	8.81	1:35 PM	10.10	2:25 PM
DNAPL				
Total Well Depth (TD)	35.56			

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 26.75 **feet**

1 Well Volume: 4.28 **Gallons** 3 Well Volume: 12.84 **Gallons**

5 Well Volume: 21.40 **Gallons** **Total Purged:** 13.5 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE Intake Depth: 30 **FT BTOC**

Well Purged Dry ❑Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/5/2024	1:40 PM	0	8.81	-	-	-	-	-	-	-	
12/5/2024	1:50 PM	3.0	9.80	0.99	21.8	4.56	59.0	1.70	155	136.0	Slightly cloudy
12/5/2024	2:00 PM	6.0	10.10	1.29	21.9	4.49	57.4	1.61	75.9	235.9	Slightly cloudy
12/5/2024	2:05 PM	7.5	10.10	1.29	21.8	4.54	57.1	1.55	49.3	231.8	Slightly cloudy
12/5/2024	2:10 PM	9.0	10.10	1.29	21.8	4.54	56.2	1.83	13.9	227.1	Clear
12/5/2024	2:15 PM	10.5	10.10	1.29	21.8	4.53	55.8	1.97	10.3	224.2	Clear
12/5/2024	2:20 PM	12.0	10.10	1.29	21.8	4.51	55.3	1.49	8.26	225.1	Clear
12/5/2024	2:25 PM	13.5	10.10	1.29	21.9	4.49	55.2	1.44	4.91	225.3	Clear

NOTES

Turbidity- Hach 2100P SN# 940800005917

Water Level - Solinst 101 SN# 554831

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/6/2024 Time: 8:55 AM

Field Personnel: D. Jones/ E. Brunner Finish Date: 12/6/2024 Time:

WELL INFORMATION

Well ID: MW-17

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 43.32 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 35

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	3.39	8:42 AM	5.99	9:55 AM
DNAPL				
Total Well Depth (TD)	43.32	8:42 AM		

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 39.93 feet

1 Well Volume: 6.39 Gallons 3 Well Volume: 19.17 Gallons

5 Well Volume: 31.95 Gallons **Total Purged:** 20 Gallons

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE Intake Depth: 35 FT BTOC

Well Purged Dry ❑Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/6/2024	9:05 AM	0	3.39								
12/6/2024	9:15 AM	4	5.54	2.15	21.6	4.91	43.9	7.73	82.4	398.0	Cloudy
12/6/2024	9:25 AM	8	5.90	2.51	21.6	4.86	43.6	7.43	35.2	425.8	Cloudy
12/6/2024	9:35 AM	12	5.99	2.60	21.6	4.85	43.3	7.30	11.7	433.2	Clear
12/6/2024	9:45 AM	16	5.99	2.60	21.7	4.86	43.1	7.31	8.42	436.5	Clear
12/6/2024	9:55 AM	20	5.99	2.60	21.7	4.85	42.8	7.31	6.63	439.6	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/4/2024 Time: 11:20 AM

Field Personnel: D. Jones Finish Date: 12/4/2024 Time: 11:55 AM

WELL INFORMATION

Well ID: MW-18

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 39.37 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 34 ft

Stabilized Pumping Rate: 0.4 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	11.62	11:00 AM	25.92	11:55 AM
DNAPL				
Total Well Depth (TD)	39.38		39.38	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 27.76 **feet**

1 Well Volume: 4.44 **Gallons** 3 Well Volume: 13.32 **Gallons**

5 Well Volume: 22.20 **Gallons** **Total Purged:** 14.0 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE Intake Depth: 34 **FT BTOC**

Well Purged Dry ❑Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/4/2024	11:20 AM	0	11.62	-	-	-	-	-	-	-	
12/4/2024	11:30 AM	4.0	16.60	4.90	21.2	4.48	65.1	4.70	4.25	205.9	Clear
12/4/2024	11:35 AM	6.0	19.41	7.79	21.5	4.47	64.7	4.57	4.92	212.1	Clear
12/4/2024	11:40 AM	8.0	21.50	9.88	21.5	4.46	64.8	4.60	4.70	209.6	Clear
12/4/2024	11:45 AM	10.0	22.96	11.34	21.6	4.48	64.9	4.61	4.66	207.4	Clear
12/4/2024	11:50 AM	12.0	24.10	12.48	21.6	4.49	65.3	4.62	4.49	206.9	Clear
12/4/2024	11:55 AM	14.0	25.92	14.30	21.6	4.48	66.4	4.51	4.32	208.9	Clear

NOTES

PG. 1 OF 1

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/4/2024 Time: 12:35 PM

Field Personnel: E. Brunner Finish Date: 12/4/2024 Time: 1:30 PM

WELL INFORMATION

Well ID: MW-19R

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 40.10 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 35

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	13.14	12:30 PM	14.10	1:15 PM
DNAPL				
Total Well Depth (TD)	40.10			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 26.96 **feet**

1 Well Volume: 4.31 **Gallons** 3 Well Volume: 12.93 **Gallons**

5 Well Volume: 21.55 **Gallons** **Total Purged:** 14.00 **Gallons**

Tubing type: ❑ Teflon ❑ TLPE ❑ HDPE Intake Depth: 35 **FT BTOC**

Well Purged Dry ❑Yes ❑ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/4/2024	12:35 PM	0	13.14								Cloudy
12/4/2024	12:45 PM	3.5	13.72	0.58	24.9	4.58	58.3	6.44	15.3	402.1	Cloudy
12/4/2024	12:55 PM	7	14.10	0.96	25.0	4.56	58.3	6.29	13.2	462.0	Clear
12/4/2024	1:05 PM	10.5	14.10	0.96	25.2	4.55	58.8	6.28	9.33	454.8	Clear
12/4/2024	1:15 PM	14	14.10	0.96	25.1	4.56	58.2	6.17	4.71	457.6	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/5/2024 | Time: 12:10 PM

Field Personnel: D. Jones | Finish Date: 12/5/2024 | Time: 12:30 PM

WELL INFORMATION

Well ID: MW-23

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 78.77 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 35 ft - Pump hindered by an obstruction in the well

Stabilized Pumping Rate: 0.3 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	24.80	11:33 AM	35.60	12:30 PM
DNAPL				
Total Well Depth (TD)	78.77		78.77	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 53.97 **feet**

1 Well Volume: 8.64 **Gallons** | 3 Well Volume: 25.92 **Gallons**

5 Well Volume: 43.20 **Gallons** | **Total Purged:** **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 35 **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/5/2024	12:10 PM	0	24.80	-	-	-	-	-	-	-	
12/5/2024	12:20 PM	3.0	32.80		20.9	8.92	236.9	4.94	3.68	136.0	Clear
12/5/2024	12:30 PM	6.0	35.60		20.9	8.91	239.2	4.98	4.10	123.5	Clear
12/5/2024	12:33 PM										Stopped pump - insufficient recharge to
											maintain water column in pump
											Purge volume at intake depth insufficient
											to consider sample an adequate
											representation of well

NOTES

PG. 1 OF 1

Turbidity- Hach 2100P SN# 940800005917
Water Level - Solinst 101 SN# 554831

Submersible pump can be used due to defect in the well at 35 ft that obstructs pump

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility**
Client: **Perma-Fix of South Georgia, Inc.**
Project Number: **PERMA-024-0001**
Task# **0001**
Start Date: 12/9/2024 Time: 3:45 PM
Field Personnel: E. Brunner
Finish Date: 12/9/2024 Time: 4:38 PM

WELL INFORMATION

Well ID: MW-24S
Well Casing Diameter: 2 Inches
Screen Interval: ft
Well Total Depth: 21.67 ft
☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump
Bailer Type:
Pump Type and Serial#: Hurricane Pro 24774
Pump Intake Depth: 15
Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	12.98	3:45 PM	13.25	4:20 PM
DNAPL				
Total Well Depth (TD)	21.67			

Water Level Type / Serial #: Heron Instruments SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge
Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**
Water Column (TD-DTW): 8.69 **feet**
1 Well Volume: 1.39 **Gallons** 3 Well Volume: 4.17 **Gallons**
5 Well Volume: 6.95 **Gallons** **Total Purged:** 5.00 **Gallons**
Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE Intake Depth: 15 **FT BTOC**
Well Purged Dry ❑ Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/9/2024	4:00 PM	0	12.98	0							
12/9/2024	4:10 PM	2.50	13.04	0.06	24.4	5.20	132.7	3.05	24.2	359.8	Clear
12/9/2024	4:15 PM	3.75	13.25	0.27	24.0	5.19	126.8	2.31	11.3	355.0	Clear
12/9/2024	4:20 PM	5.00	13.25	0.27	24.2	5.25	123.8	2.32	1.08	347.9	Clear

NOTES

PG. 1 OF 1
YSI ProQuatro SN#23G107100
Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/6/2024 Time: 1:55 PM

Field Personnel: T. Hall Finish Date: 12/6/2024 Time: 2:20 PM

WELL INFORMATION

Well ID: MW-24D

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 39.51 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Monsoon 17020

Pump Intake Depth: ~16 ft BTOC

Stabilized Pumping Rate: 0.25 gpm

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	12.90	3:25 PM		
DNAPL				
Total Well Depth (TD)	39.51			

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 26.61 **feet**

1 Well Volume: 4.26 **Gallons** 3 Well Volume: 12.78 **Gallons**

5 Well Volume: 21.30 **Gallons** **Total Purged:** ~15 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE Intake Depth: ~18 ft BTOC **FT BTOC**

Well Purged Dry ❑Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/6/2024	3:25 PM	-	12.90	-	-	-	-	-	-	-	NA
12/6/2024	3:30 PM	2.5	13.35	0.45	19.9	4.23	14.4	7.06	1.85	253.1	Clear
12/6/2024	3:35 PM	5.0	13.50	0.60	19.8	4.23	14.9	6.85	1.10	253.9	Clear
12/6/2024	3:40 PM	7.5	13.50	0.60	19.8	4.24	15.5	6.79	0.69	253.4	Clear
12/6/2024	3:45 PM	10.0	13.50	0.60	19.1	4.21	15.2	6.81	0.61	254.0	Clear
12/6/2024	3:50 PM	12.5	13.50	0.60	19.0	4.20	14.9	6.82	0.66	253.7	Clear
12/6/2024	3:55 PM	15.0	13.50	0.60	18.8	4.20	14.6	6.80	0.57	254.4	Clear
12/6/2024	4:40 PM										Equipment Blank Pump 1 Sample

NOTES

PG. 1 OF 1

Hach 2100P Turbidity SN# 940400005080
Solinst 101 WL SN# 362412

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/4/2024 | Time: 1:10 PM

Field Personnel: D. Jones | Finish Date: 12/4/2024 | Time: 2:10 PM

WELL INFORMATION

Well ID: MW-26

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 22.69 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development

❑ Low-Flow / Low-Stress Sampling

☒ Well Sampling

❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 18 ft

Stabilized Pumping Rate: 0.1 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	15.50	12:58 PM	17.81	2:10 PM
DNAPL				
Total Well Depth (TD)	22.69		22.69	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 7.19 **feet**

1 Well Volume: 1.15 **Gallons** | 3 Well Volume: 3.45 **Gallons**

5 Well Volume: 5.75 **Gallons** | **Total Purged:** 6.0 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 18 **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/4/2024	1:10 PM	0	15.50	-	-	-	-	-	-	-	
12/4/2024	1:20 PM	1.0	16.80	1.30	22.4	5.81	155.0	4.14	547	161.3	Cloudy
12/4/2024	1:25 PM	1.5	17.12	1.62	22.5	5.77	134.3	4.07	253	160.7	Cloudy
12/4/2024	1:30 PM	2.0	17.71	2.21	22.5	5.81	129.6	4.03	223	159.9	Cloudy
12/4/2024	1:35 PM	2.5	17.80	2.30	22.5	5.80	126.2	3.84	204	157.0	Cloudy
12/4/2024	1:40 PM	3.0	17.80	2.30	22.4	5.82	124.5	3.73	100	155.1	Cloudy
12/4/2024	1:45 PM	3.5	17.81	2.31	22.4	5.81	123.7	3.55	96.0	151.3	Cloudy
12/4/2024	1:50 PM	4.0	17.81	2.31	22.3	5.80	123.1	3.47	94.1	148.4	Cloudy
12/4/2024	1:55 PM	4.5	17.81	2.31	22.3	5.81	123.2	3.31	32.7	148.3	Slightly cloudy
12/4/2024	2:00 PM	5.0	17.81	2.31	22.4	5.81	123.4	3.27	13.6	147.5	Close to clear
12/4/2024	2:05 PM	5.5	17.81	2.31	22.4	5.81	123.0	3.27	11.1	145.7	Clear
12/4/2024	2:10 PM	6.0	17.81	2.31	22.3	5.81	122.9	3.22	9.50	146.1	Clear

NOTES

Turbidity- Hach 2100P SN# 940400005080

Water Level - Solinst 101 SN# 554831

ABBREVIATIONS

SpCond. - Specific Conductance

ORP - Oxidation-Reduction Potential

FT BTOC - Feel Below Top of Casing

µS/cm - microSiemens per centimeter

SU - Standard Units

NM - Not Measured

Temp - Temperature

°C - Degrees Celsius

mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/4/2024 | Time: 2:40 PM

Field Personnel: D. Jones | Finish Date: 12/4/2024 | Time: 3:20 PM

WELL INFORMATION

Well ID: MW-27

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 22.49 ft

❑ Flush Mount ☒ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro Impeller SN# 24776

Pump Intake Depth: 18 ft

Stabilized Pumping Rate: 0.1 gal/min

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	15.04	2:34 PM	15.13	3:20 PM
DNAPL				
Total Well Depth (TD)	22.49		22.49	

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 7.45 **feet**

1 Well Volume: 1.19 **Gallons** | 3 Well Volume: 3.57 **Gallons**

5 Well Volume: 5.95 **Gallons** | **Total Purged:** 4.0 **Gallons**

Tubing type: ❑ Teflon ☒ TLPE ❑ HDPE | Intake Depth: 18 **FT BTOC**

Well Purged Dry ❑Yes ☒ No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial # YSI ProQuatro SN# 21F103780

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/4/2024	2:40 PM	0	15.04	-	-	-	-	-	-	-	
12/4/2024	2:50 PM	1.0	15.13	0.09	23.3	4.58	37.2	4.45	7.00	206.7	Clear
12/4/2024	2:55 PM	1.5	15.13	0.09	23.4	4.48	37.0	4.27	6.32	209.5	Clear
12/4/2024	3:00 PM	2.0	15.13	0.09	23.5	4.42	37.6	4.02	3.66	212.8	Clear
12/4/2024	3:05 PM	2.5	15.13	0.09	23.5	4.39	37.9	3.95	2.74	215.9	Clear
12/4/2024	3:10 PM	3.0	15.13	0.09	23.4	4.37	38.1	3.78	1.76	217.9	Clear
12/4/2024	3:15 PM	3.5	15.13	0.09	23.5	4.34	38.2	3.82	1.34	219.0	Clear
12/4/2024	3:20 PM	4.0	15.13	0.09	23.6	4.34	38.1	3.90	1.10	219.2	Clear

NOTES

Turbidity- Hach 2100P SN# 940400005080
Water Level - Solinst 101 SN# 554831

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

TTL

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** Task# **0001** Start Date: 12/4/2024 Time: 2:15 PM

Field Personnel: E. Brunner Finish Date: 12/4/2024 Time:

WELL INFORMATION

Well ID: MW-28

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 24.14 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 20

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	16.85	2:15 PM	19.75	2:35 PM
DNAPL				
Total Well Depth (TD)	24.14			

Water Level Type / Serial #: Heron Instrumentes SN# 0657-W2

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 7.29 **feet**

1 Well Volume: 1.17 **Gallons** 3 Well Volume: 3.51 **Gallons**

5 Well Volume: 5.85 **Gallons** **Total Purged:** 4 **Gallons**

Tubing type: ☒ Teflon ❑ TLPE ❑ HDPE Intake Depth: 20 **FT BTOC**

Well Purged Dry ❑ Yes ☒ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/4/2024	2:15 PM	0	16.85								
12/4/2024	2:25 PM	2	18.94	2.09	23.5	5.02	49.8	0.72	29.0	339.4	Cloudy
12/4/2024	2:30 PM	3	19.05	2.20	24.1	5.01	49.7	0.65	16.7	320.4	Clear
12/4/2024	2:35 PM	4	19.75	2.90	23.7	5.01	49.4	0.63	7.21	322.5	Clear

NOTES

PG. 1 OF 1

YSI Pro Quatro SN# 23G107100
Geotech Trubidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: **Valdosta, GA facility** | Client: **Perma-Fix of South Georgia, Inc.**

Project Number: **PERMA-024-0001** | Task# **0001** | Start Date: 12/4/2024 | Time: 10:30 AM

Field Personnel: E. Brunner | Finish Date: 12/4/2024 | Time: 11:20 AM

WELL INFORMATION

Well ID: MW-29

Well Casing Diameter: 2 Inches

Screen Interval: ft

Well Total Depth: 40.27 ft

☒ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
☒ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Submersible Pump ❑ Peristaltic Pump

Bailer Type:

Pump Type and Serial#: Hurricane Pro 24774

Pump Intake Depth: 35

Stabilized Pumping Rate:

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)	5.43	10:06 AM	8.70	11:20 AM
DNAPL				
Total Well Depth (TD)	40.27			

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: X Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): 34.84 **feet**

1 Well Volume: 5.57 **Gallons** | 3 Well Volume: 16.71 **Gallons**

5 Well Volume: 27.85 **Gallons** | **Total Purged:** 17.50 **Gallons**

Tubing type: ❑ Teflon ❑ TLPE ❑ HDPE | Intake Depth: 35 **FT BTOC**

Well Purged Dry ❑Yes ☒No | QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
12/4/2024	10:30 AM	0	5.43								
12/4/2024	10:40 AM	3.5	8.34	2.91	23.0	4.79	46.1	1.76	3.33	367.2	Clear
12/4/2024	10:50 AM	7	8.69	0.35	23.0	4.77	46.0	1.69	3.80	377.9	Clear
12/4/2024	11:00 AM	10.5	8.70	0.01	23.1	4.76	46.0	1.70	2.79	383.4	Clear
12/4/2024	11:10 AM	14	8.70	0.00	23.3	4.78	46.0	1.70	2.98	370.8	Clear
12/4/2024	11:20 AM	17.5	8.70	0.00	23.3	4.78	46.0	1.70	1.82	370.3	Clear

NOTES

PG. 1 OF 1

YSI ProQuatro SN#23G107100

Geotech Turbidimeter SN# 21033204

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

FIELD DATA SHEET

SITE NAME: PermaFix South Georgia (PFSG) **PERMIT NO:**

PROJECT NO: 24-07-00832.00 **EVENT NO: N =** December 2024 **EVENT DATE:** 12/6/2024 to 12/10/2024

EQUIPMENT:

Sample Location ID	Sample Type	Sample Date	Sample Time	Temp. (°C or °F) (°)	Ph (SU)	Sp. Cond. (µSm/cm^{C})	D.O. (mg/L)	Turbidity (NTUs)	Comments / Additional Data
Equipment Blank	Sample Pump Rinsate	12/6/2024	4:40 PM						Hurricane Pro SN# 24774
Equipment Blank	Sample Pump Rinsate	12/9/2024	5:30 PM						Hurricane Pro SN# 24776
Equipment Blank	Water Level Meter Rins	12/10/2024	6:30 PM						Heron Instruments SN# 0657-W2
Equipment Blank	Sample Pump Rinsate	12/10/2024	6:40 PM						Hurricane Pro SN# 24776

SAMPLED BY: David Jones, Elizabeth Brunner, Trent Hall

NOTES:

Water level meter equipment blank was completed after the most contaminated well on last day of sampling

TTL
geotechnical · analytical · materials · environmental

Field Instrument Calibration Log

Meter: [X] YSI ProQuatro [ ] YSI Pro-Series [ ] Other S.N. #: 23G107100

TTL Project No. / Name: 24-07-00832.00 / Permafix

Parameter	Criteria	Manufacturer/Lot #	Exp. Date	Acceptance Criteria
DO	See Chart	See Temperature / Saturation Chart	N/A	± 0.3 mg/L
pH	7.00	EON / 4GD1667	Apr-26	± 0.2 SU
pH	4.00	EON / 4GG1238	Jul-26	± 0.2 SU
pH	10.00			± 0.2 SU
Conductivity	See Chart	EON / 4GH0240 1.413 mS/cm @ 25°C	Aug-25	± 10% mS/cm
ORP	See Chart	EON / 4GD1357 200 mV @ 25°C	Jan-25	± 10 mV

Date	Parameter	Criteria	CCV	Time	Pass / Fail	CAL	Time	Pass / Fail	ICV	Time	Pass / Fail	Initials	End-of-Day Check	Initials
12-2-24	DO	9.31 4/18.8°C	8.34	0825	Fail	9.32	0825	Pass	9.35	0826	Pass	DAS		
	pH	7.0	7.02	0829	Pass	—	—	—	—	—	—	DAS		
	pH	4.0	4.07	0830	Pass	—	—	—	—	—	—	DAS		
	Cond	1.260/19°C	1.278	0835	Pass	1.260	0835	Pass	1.260	0836	Pass	DAS		
↓	ORP	207.8/19°C	207.0	0840	Pass	—	—	—	—	—	—	DAS		

CCV = Continuous Calibration Verification (Calibration Check - Pass = No calibration required / Fail = Calibrate)

CAL = Calibration

ICV = Initial Calibration Verification (After Calibration)

Adapted From Florida Dept. of Environmental Protection SOPs

Field Instrument Calibration Log

Meter: [X] YSI ProQuatro [ ] YSI Pro-Series [ ] Other S.N. #: 23G107100

TTL Project No. / Name: 24-07-00832.00 / Permafix

Parameter	Criteria	Manufacturer/Lot #	Exp. Date	Acceptance Criteria
DO	See Chart	See Temperature / Saturation Chart	N/A	± 0.3 mg/L
pH	7.00	EON / 4GD1667	Apr-26	± 0.2 SU
pH	4.00	EON / 4GG1238	Jul-26	± 0.2 SU
pH	10.00			± 0.2 SU
Conductivity	See Chart	EON / 4GH0240 1.413 mS/cm @ 25°C	Aug-25	± 10% mS/cm
ORP	See Chart	EON / 4GD1357 200 mV @ 25°C	Jan-25	± 10 mV

Date	Parameter	Criteria	CCV	Time	Pass / Fail	CAL	Time	Pass / Fail	ICV	Time	Pass / Fail	Initials	End-of-Day Check	Initials
12/4/24	D.O.	17.7 / 9.52	9.49	07:51	Pass	–	–	–	–	–	–	EB		
	pH	7.0	7.03	07:53	Pass	–	–	–	–	–	–	EB		
	pH	4.0	4.02	07:56	Pass	–	–	–	–	–	–	EB		
	cond.	19 / 1268	1268	07:58	Pass	–	–	–	–	–	–	E.B.		
	ORP	17 / 210.4	210.3	08:02	Pass	–	–	–	–	–	–	E.B		
12-6-24	DO	9.056/20.2°C	8.15	0709	Fail	9.18	0709	Pass	9.06	0710	Pass	DAS		
	pH	7.0	7.00	0713	Pass	–	–	–	–	–	–	DAS		
	pH	4.0	4.02	0715	Pass	–	–	–	–	–	–	DAS		
	Cond	1.309/21°C	1.302	0718	Pass	–	–	–	–	–	–	DAS		
	ORP	205.2/21°C	206.3	0721	Pass	–	–	–	–	–	–	DAS		
12-9-24	DO	8.968/20.7°C	7.95	0710	Fail	8.98	0710	Pass	8.98	0711	Pass	DAS		
	pH	7.0	7.08	0712	Pass	–	–	–	–	–	–	DAS		
	pH	4.0	4.07	0714	Pass	–	–	–	–	–	–	DAS		
	Cond	1.309/21°C	1.314	0718	Pass	–	–	–	–	–	–	DAS		
	ORP	205.2/21°C	207.3	0723	Pass	–	–	–	–	–	–	DAS		
12-10-24	DO	8.968/20.7°C	8.81	0724	Pass	–	–	–	–	–	–	DAS		
	pH	7.0	7.09	0726	Pass	–	–	–	–	–	–	DAS		
	pH	4.0	4.09	0729	Pass	–	–	–	–	–	–	DAS		
	Cond	1.309/21°C	1.315	0732	Pass	–	–	–	–	–	–	DAS		
	ORP	205.2/21°C	206.7	0735	Pass	–	–	–	–	–	–	DAS		

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CAL = Calibration

ICV = Initial Calibration Verification (After Calibration)

Adapted From Florida Dept. of Environmental Protection SOPs

Field Instrument Calibration Log

Meter: [X] YSI ProQuatro [ ] YSI Pro-Series [ ] Other S.N. #: 21F103786

TTL Project No. / Name: 24-07-00882.00 / Perma Fix

Parameter	Criteria	Manufacturer/Lot #	Exp. Date	Acceptance Criteria
DO	See Chart	See Temperature / Saturation Chart	N/A	± 0.3 mg/L
pH	7.00	EON / 4GD1667	Apr-26	± 0.2 SU
pH	4.00	EON / 4GG1238	Jul-26	± 0.2 SU
pH	10.00			± 0.2 SU
Conductivity	See Chart	EON / 4GH0240 1.413 mS/cm @ 25°C	Aug-25	± 10% mS/cm
ORP	See Chart	EON / 4GD1357 200 mV @ 25°C	Jan-25	± 10 mV

Date	Parameter	Criteria	CCV	Time	Pass / Fail	CAL	Time	Pass / Fail	ICV	Time	Pass / Fail	Initials	End-of-Day Check	Initials
12-2-24	DO	9.767/16.5°C	10.04	0826	Pass	8.89	0826	Pass	8.87	0827	Pass	DAS		
	pH	7.0	7.00	0829	Pass	—	—	—	—	—	—	DAS		
	pH	4.0	3.99	0830	Pass	—	—	—	—	—	—	DAS		
	Cond	1.213/17°C	1.246	0835	Fail	1.213	0835	Pass	1.213	0838	Pass	DAS		
	ORP	210.4/17°C	211.1	0840	Pass	—	—	—	—	—	—	DAS		

CCV = Continuous Calibration Verification (Calibration Check - Pass = No calibration required / Fail = Calibrate)
CAL = Calibration
ICV = Initial Calibration Verification (After Calibration)
Adapted From Florida Dept. of Environmental Protection SOPs

Field Instrument Calibration Log

Meter: ☒ YSI ProQuatro ☐ YSI Pro-Series ☐ Other S.N. #: 21F103780

TTL Project No. / Name: 24-07-00 832.00 / Berma Fix

Parameter	Criteria	Manufacturer/Lot #	Exp. Date	Acceptance Criteria
DO	See Chart	See Temperature / Saturation Chart	N/A	± 0.3 mg/L
pH	7.00	EON / 4GD1667	Apr-26	± 0.2 SU
pH	4.00	EON / 4GG1238	Jul-26	± 0.2 SU
pH	10.00			± 0.2 SU
Conductivity	See Chart	EON / 4GH0240 1.413 mS/cm @ 25°C	Aug-25	± 10% mS/cm
ORP	See Chart	EON / 4GD1357 200 mV @ 25°C	Jan-25	± 10 mV

Date	Parameter	Criteria	CCV	Time	Pass / Fail	CAL	Time	Pass / Fail	ICV	Time	Pass / Fail	Initials	End-of-Day Check	Initials
12-4-24	D.O.	15.3 / 10.09	9.99	07:44	Pass	—	—	—	—	—	—	E.B.		
	pH	7.0	7.02	07:46	Pass	—	—	—	—	—	—	EB		
	pH	4.0	4.02	07:51	Pass	—	—	—	—	—	—	EB		
	Cond.	17 / 1213	1214	07:55	Pass	—	—	—	—	—	—	EB		
	~~ORP~~ EB	~~15 / 213.0~~												
	ORP	15 / 213.0	216.8	0801	Pass	—	—	—	—	—	—	EB		
12-5-24	DO	9.849 / 16.1°C	9.60	0954	Pass	9.86	0954	Pass	9.65	0955	Pass	DLS		
	pH	7.0	7.00	0956	Pass	—	—	—	—	—	—	DLS		
	pH	4.0	4.06	0956	Pass	—	—	—	—	—	—	DLS		
	Cond	1.213 / 17°C	1.219	0959	Pass	—	—	—	—	—	—	DLS		
	ORP	210.4 / 19°C	214.1	1003	Pass	—	—	—	—	—	—	DLS		
12-6-24	DO	9.448 / 18.1°C	9.21	0710	Pass	9.50	0710	Pass	9.50	0711	Pass	DLS		
	pH	7.0	6.98	0713	Pass	—	—	—	—	—	—	DLS		
	pH	4.0	4.03	0715	Pass	—	—	—	—	—	—	DLS		
	Cond	1.260 / 19°C	1.256	0718	Pass	—	—	—	—	—	—	DLS		
	ORP	207.8 / 19°C	209.1	0722	Pass	—	—	—	—	—	—	DLS		
12-9-24	DO	9.352 / 18.6°C	9.39	0706	Pass	—	—	—	—	—	—	DLS		
	pH	7.0	6.96	0712	Pass	—	—	—	—	—	—	DLS		
	pH	4.0	4.07	0714	Pass	—	—	—	—	—	—	DLS		
	Cond	1.260 / 19°C	1.270	0718	Pass	—	—	—	—	—	—	DLS		
	ORP	207.8 / 19°C	209.9	0723	Pass	—	—	—	—	—	—	DLS		

CCV = Continuous Calibration Verification (Calibration Check - Pass = No calibration required / Fail = Calibrate)

CAL = Calibration

ICV = Initial Calibration Verification (After Calibration)

Adapted From Florida Dept. of Environmental Protection SOPs

Field Instrument Calibration Log

Meter: [X] YSI ProQuatro [ ] YSI Pro-Series [ ] Other S.N. #: 21F103780

TTL Project No. / Name: 24-07-00832.00 / Perma Fix

Parameter	Criteria	Manufacturer/Lot #	Exp. Date	Acceptance Criteria
DO	See Chart	See Temperature / Saturation Chart	N/A	± 0.3 mg/L
pH	7.00	EON / 4GD1667	Apr-26	± 0.2 SU
pH	4.00	EON / 4GG1238	Jul-26	± 0.2 SU
pH	10.00			± 0.2 SU
Conductivity	See Chart	EON / 4GH0240 1.413 mS/cm @ 25°C	Aug-25	± 10% mS/cm
ORP	See Chart	EON / 4GD1357 200 mV @ 25°C	Jan-25	± 10 mV

Date	Parameter	Criteria	CCV	Time	Pass / Fail	CAL	Time	Pass / Fail	ICV	Time	Pass / Fail	Initials	End-of-Day Check	Initials
12-10-24	DO	9.371/18.5	9.21	0724	Pass	—	—	—	—	—	—	DAS		
↓	pH	7.0	7.04	0726	Pass	—	—	—	—	—	—	DAS		
	pH	4.0	4.08	0729	Pass	—	—	—	—	—	—	DAS		
	Cond	1.260/19°C	1.270	0732	Pass	—	—	—	—	—	—	DAS		
	ORP	207.8/19°C	209.4	0735	Pass	—	—	—	—	—	—	DAS		

CCV = Continuous Calibration Verification (Calibration Check - Pass = No calibration required / Fail = Calibrate)

CAL = Calibration

ICV = Initial Calibration Verification (After Calibration)

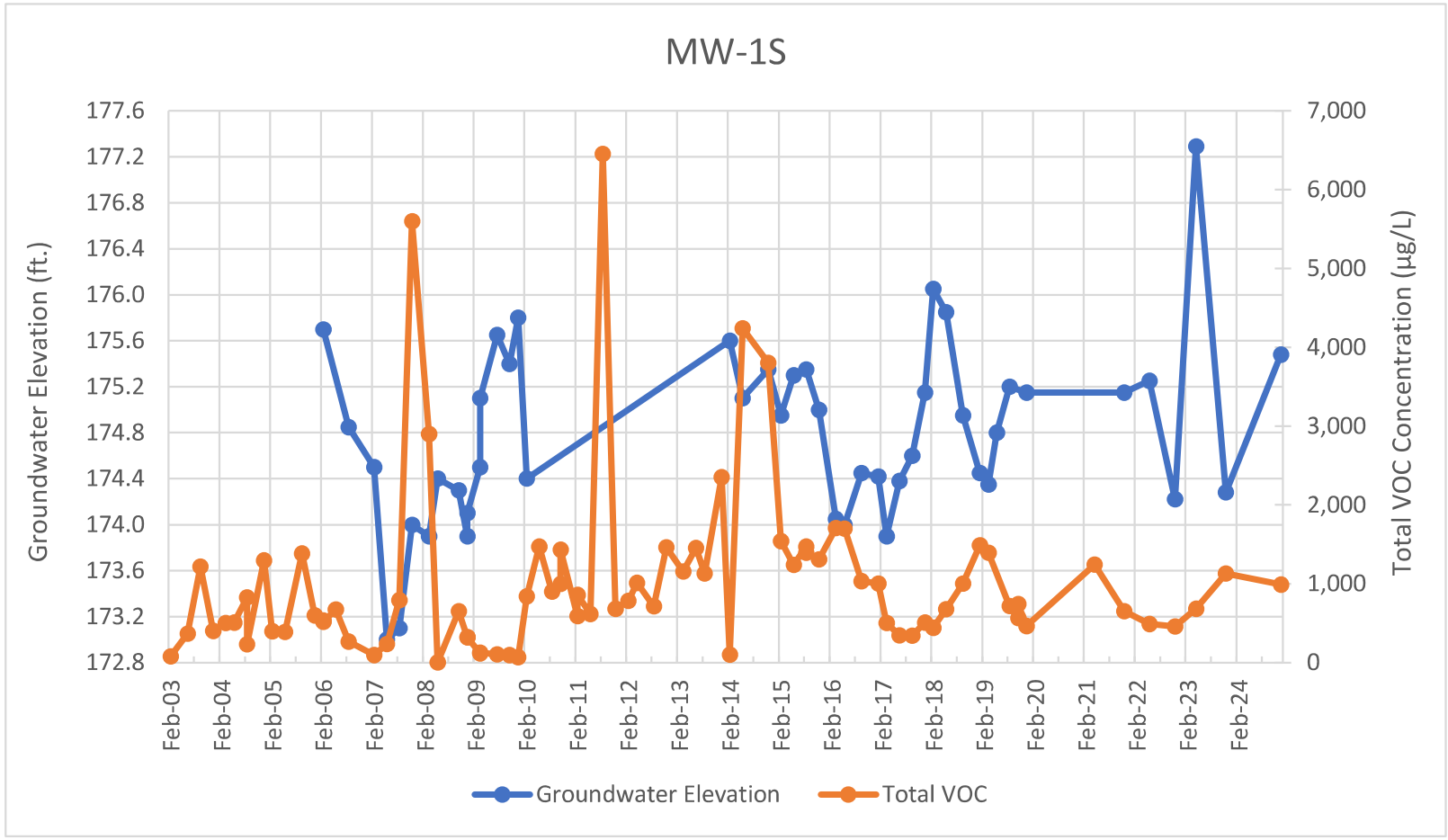
Adapted From Florida Dept. of Environmental Protection SOPs

APPENDIX D

GROUNDWATER ELEVATIONS AND TOTAL VOCS VS. TIME PLOTS

GROUNDWATER ELEVATIONS AND VOC CONCENTRATIONS VS. TIME

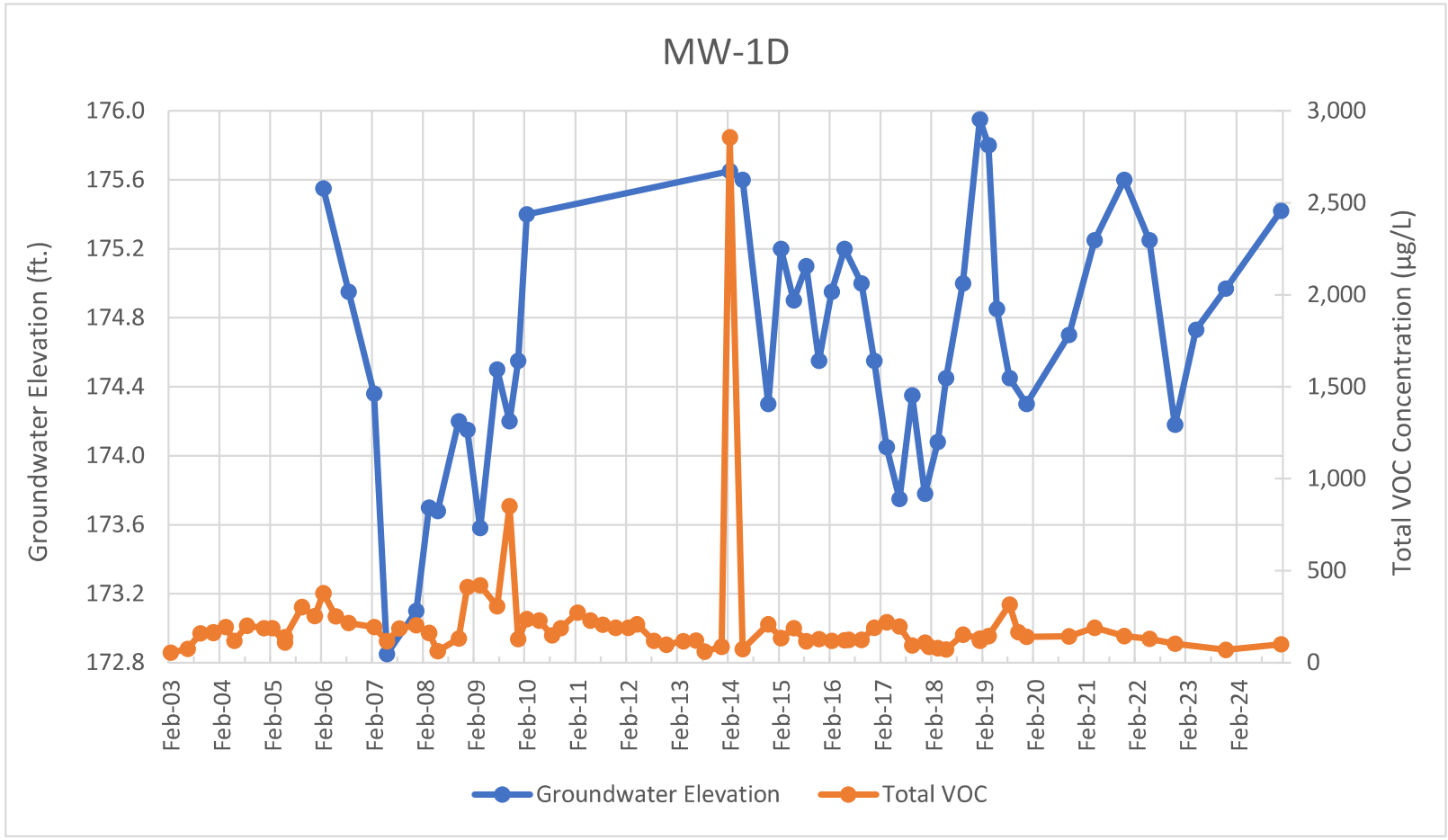
PERMA-FIX OF SOUTH GEORGIA
VALDOSTA, GA



GeoSouth
Environmental Solutions

GROUNDWATER ELEVATIONS AND VOC CONCENTRATIONS VS. TIME

PERMA-FIX OF SOUTH GEORGIA
VALDOSTA, GA



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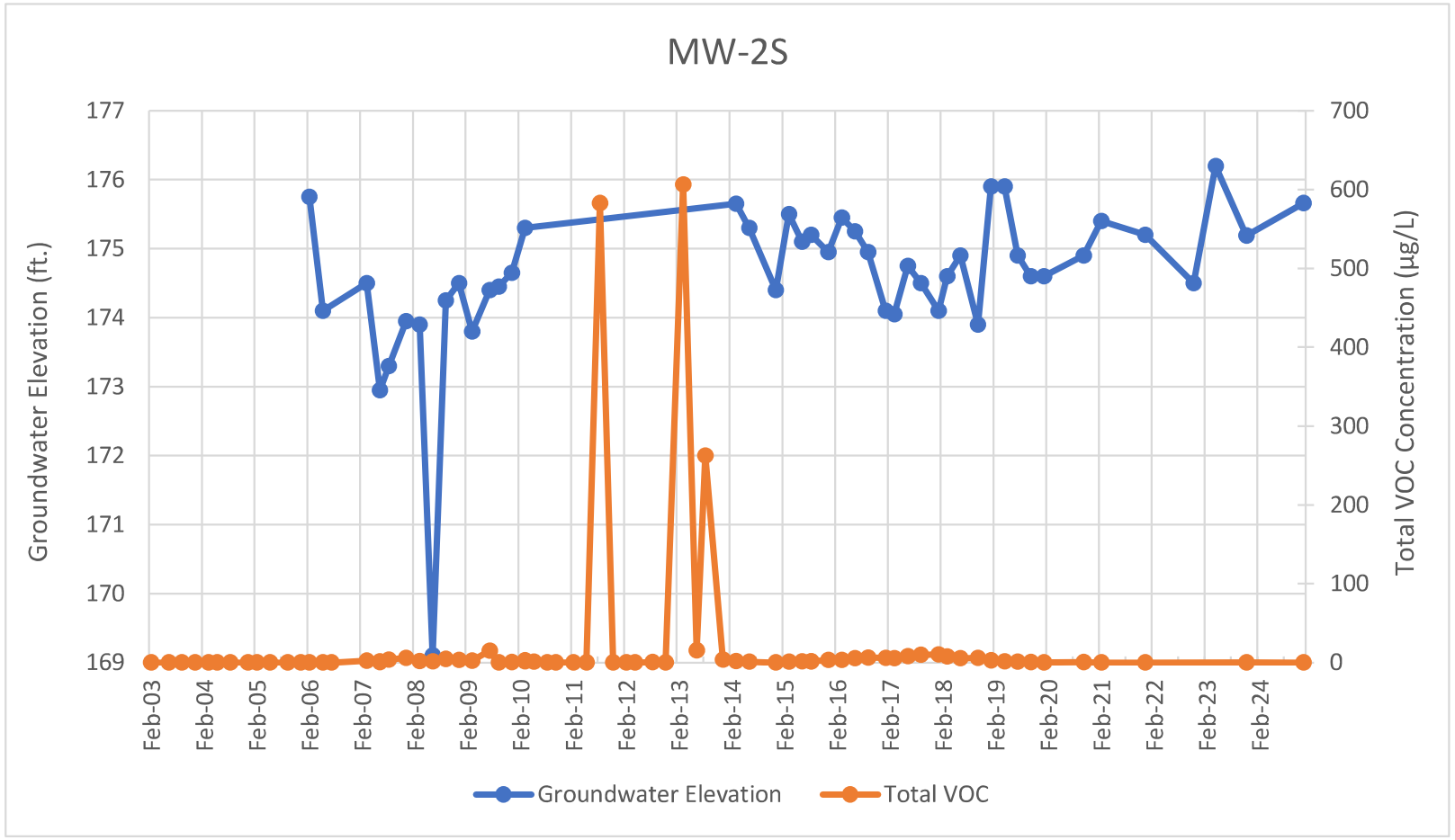
GROUNDWATER ELEVATIONS AND VOC CONCENTRATIONS VS. TIME

PERMA-FIX OF SOUTH GEORGIA
VALDOSTA, GA



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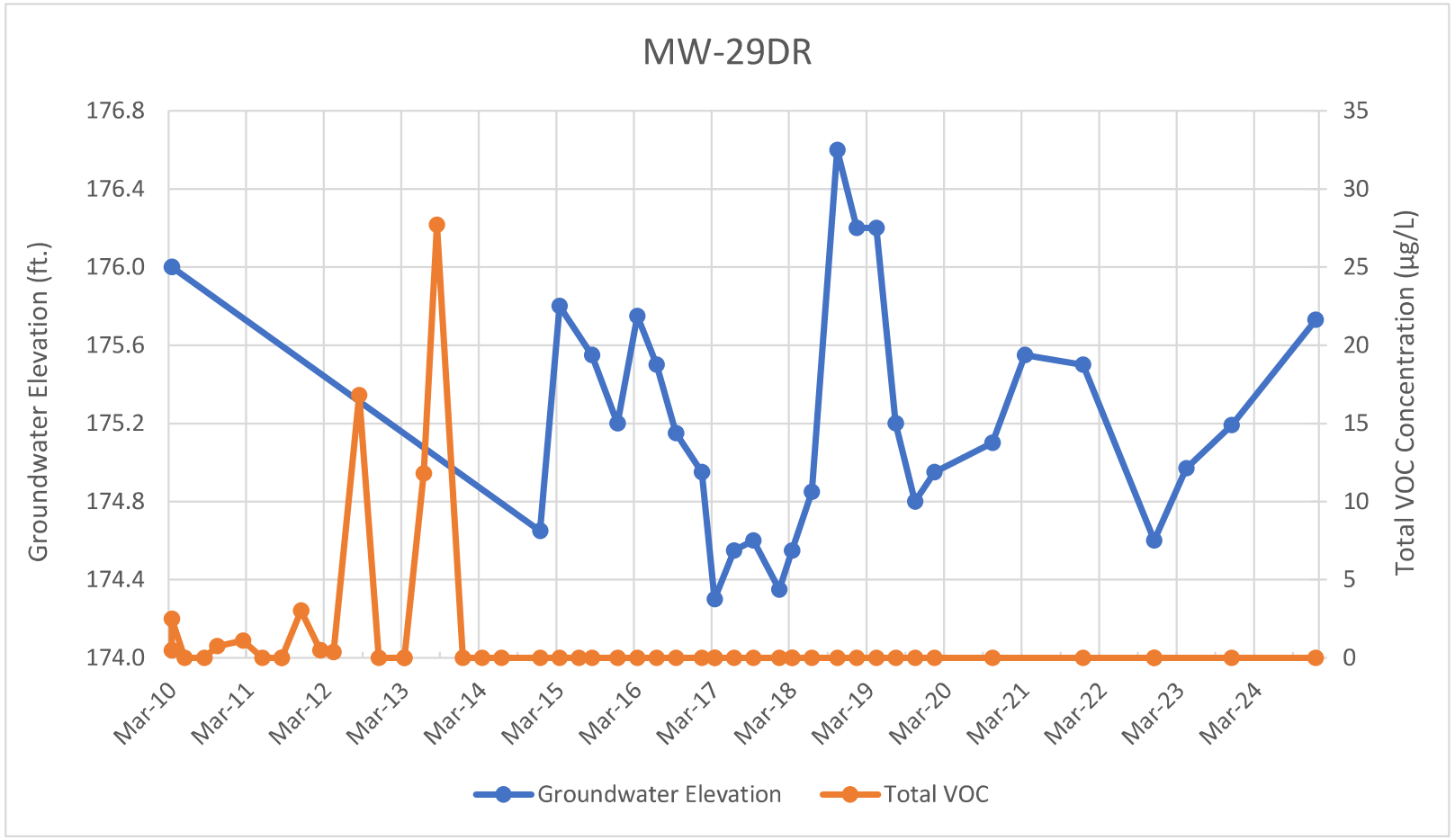
GROUNDWATER ELEVATIONS AND VOC CONCENTRATIONS VS. TIME

PERMA-FIX OF SOUTH GEORGIA
VALDOSTA, GA



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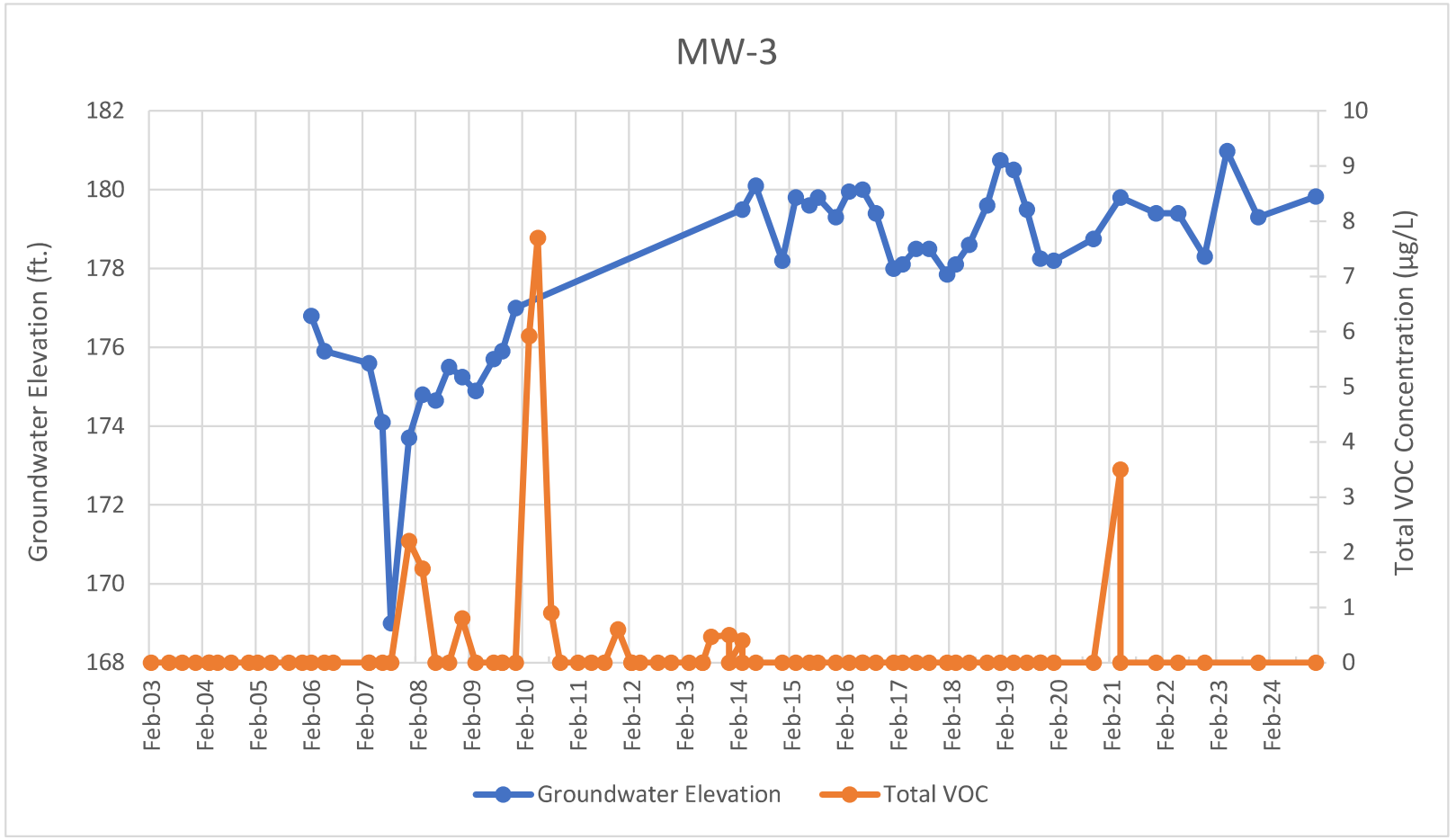
Environmental Solutions

GROUNDWATER ELEVATIONS AND VOC CONCENTRATIONS VS. TIME

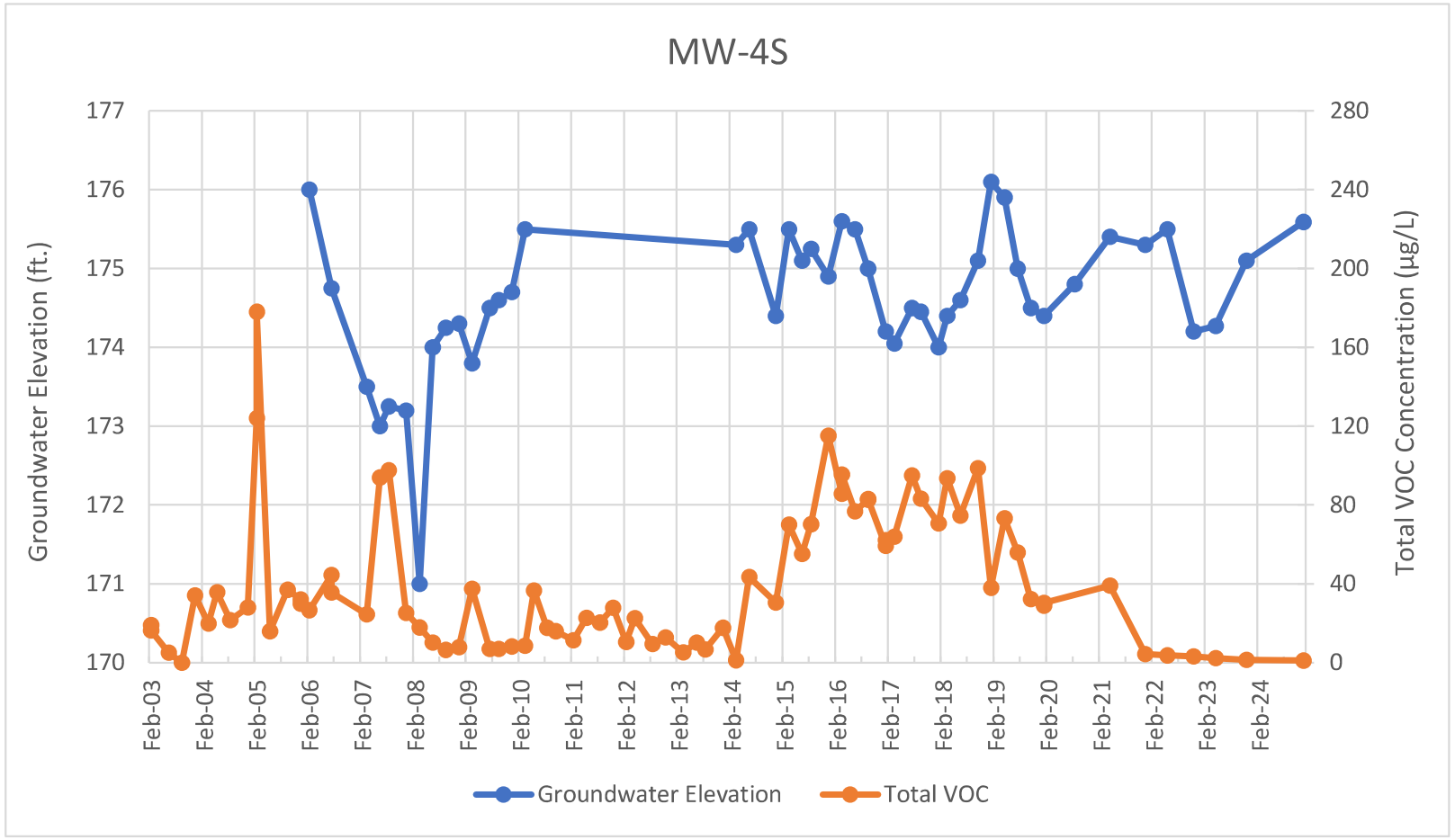
PERMA-FIX OF SOUTH GEORGIA
VALDOSTA, GA



GeoSouth
Environmental Solutions

GROUNDWATER ELEVATIONS AND VOC CONCENTRATIONS VS. TIME

PERMA-FIX OF SOUTH GEORGIA
VALDOSTA, GA



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GROUNDWATER ELEVATIONS AND VOC CONCENTRATIONS VS. TIME

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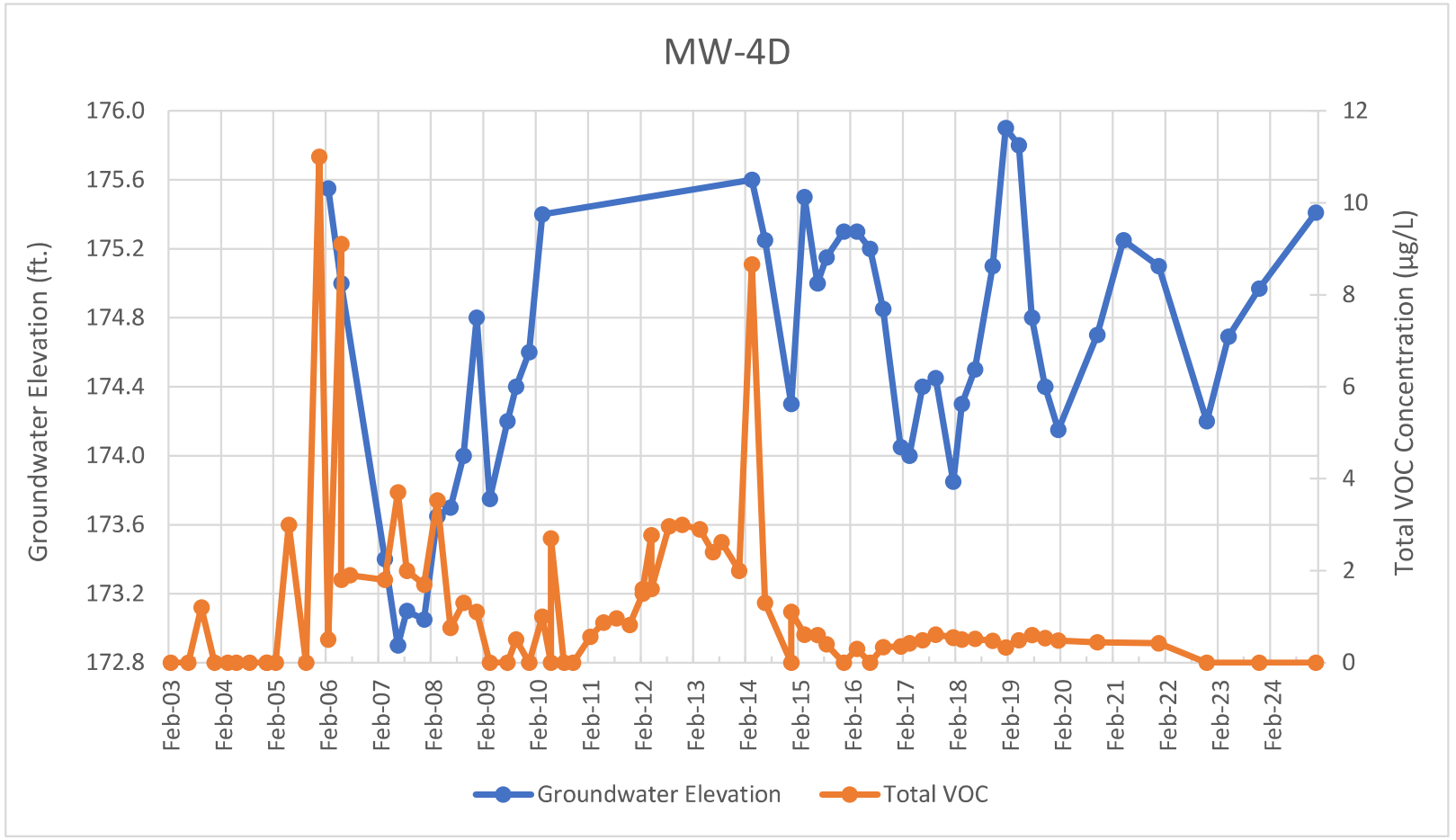
VALDOSTA, GA



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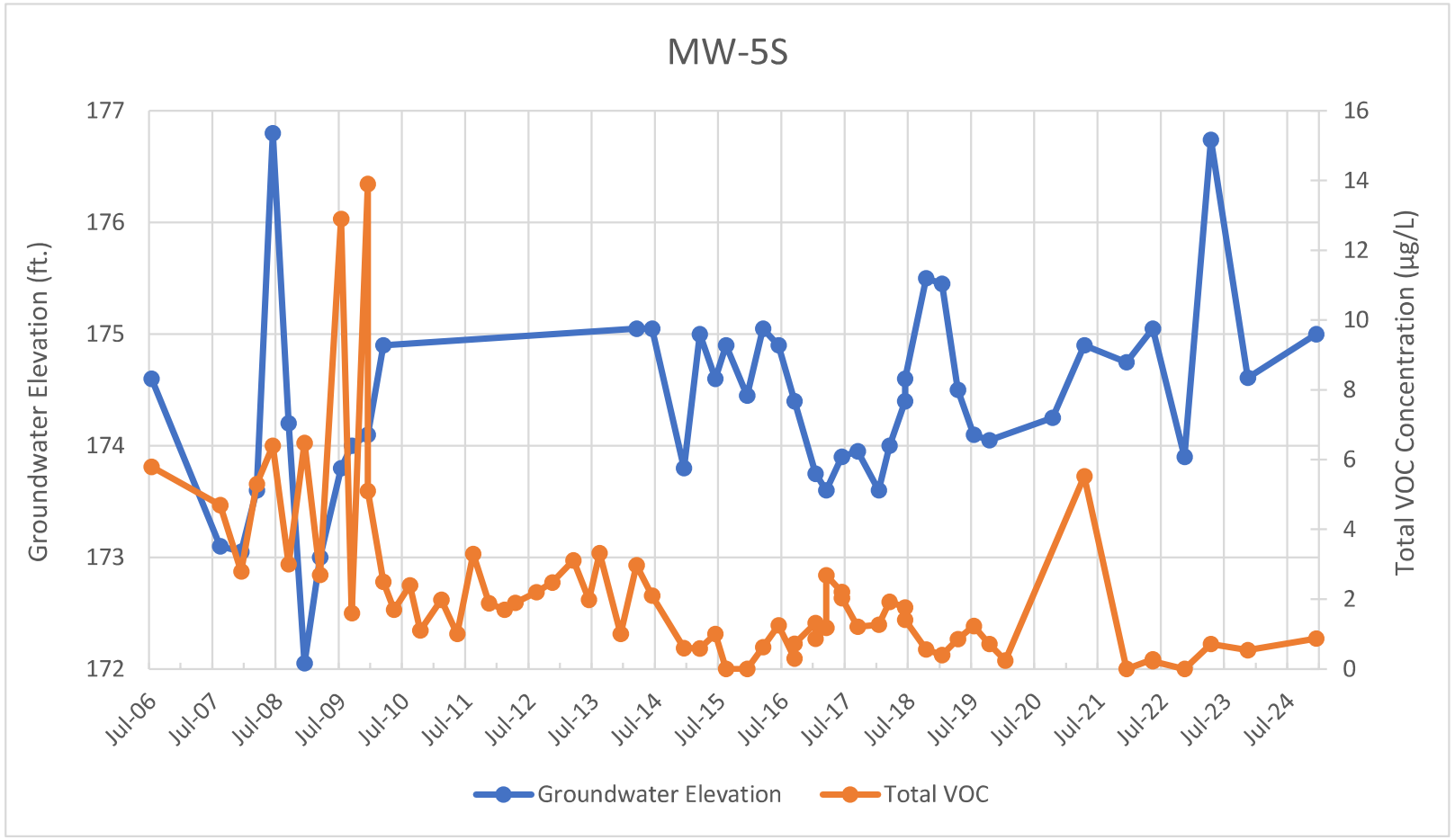

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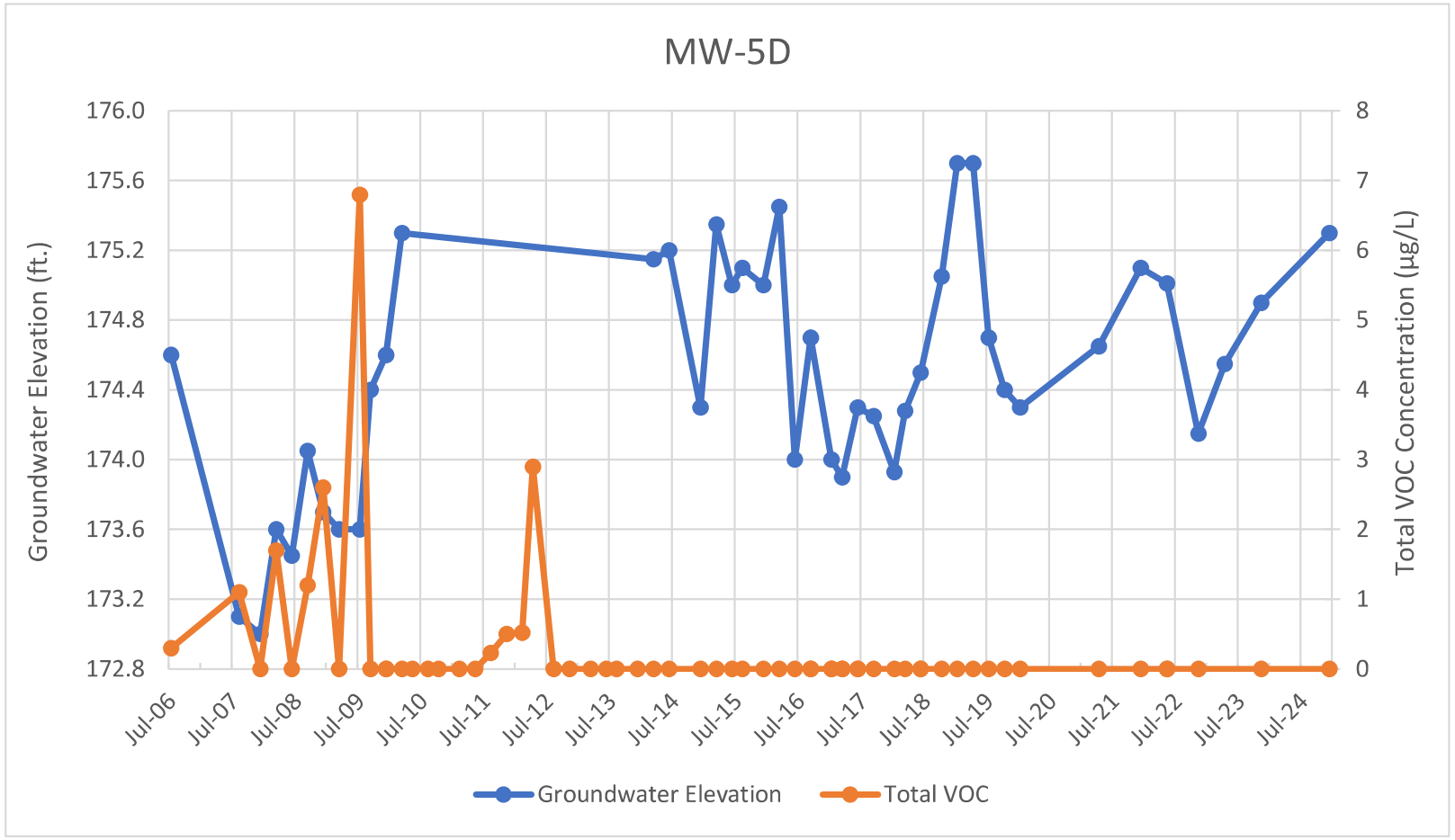

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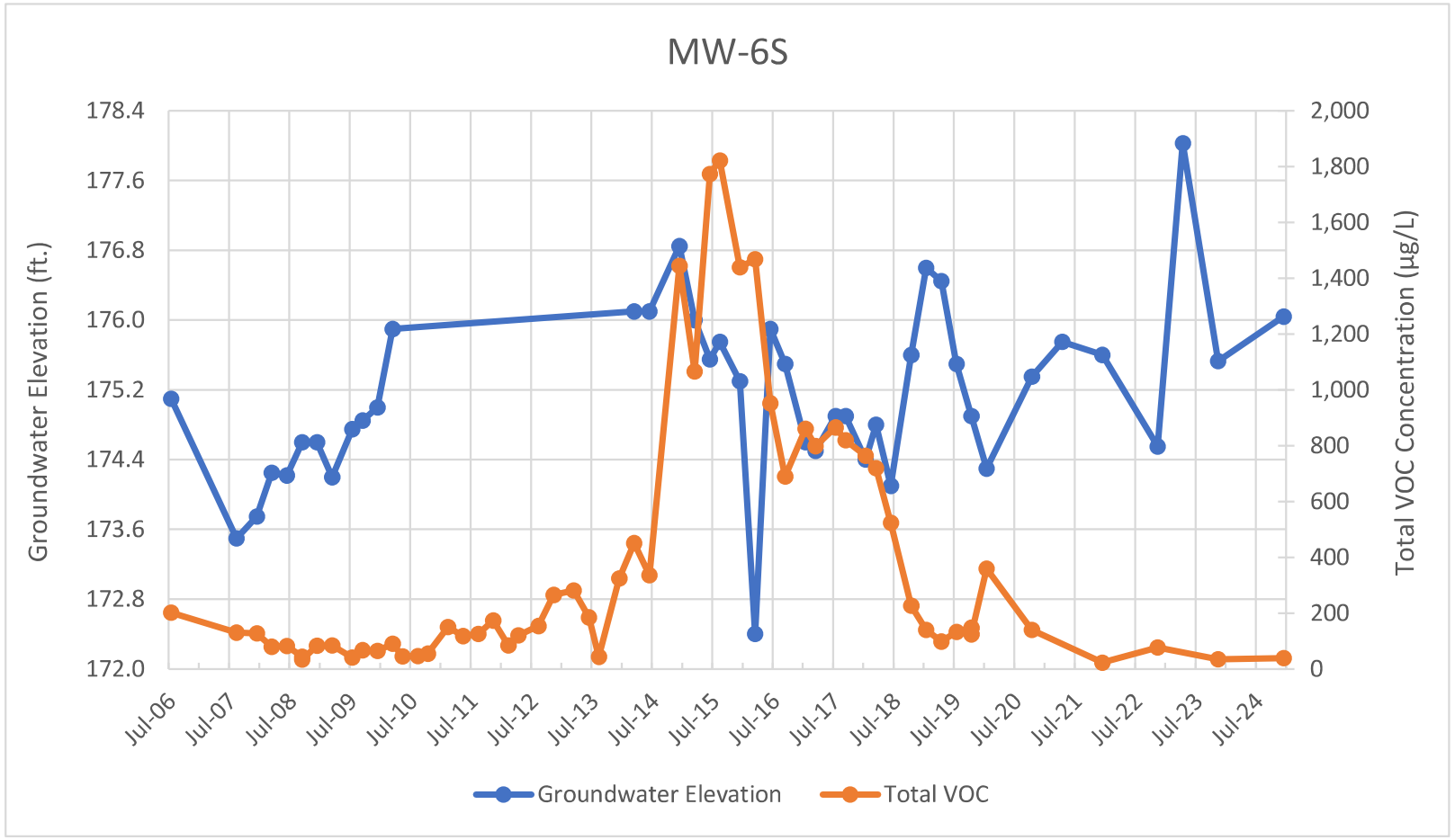

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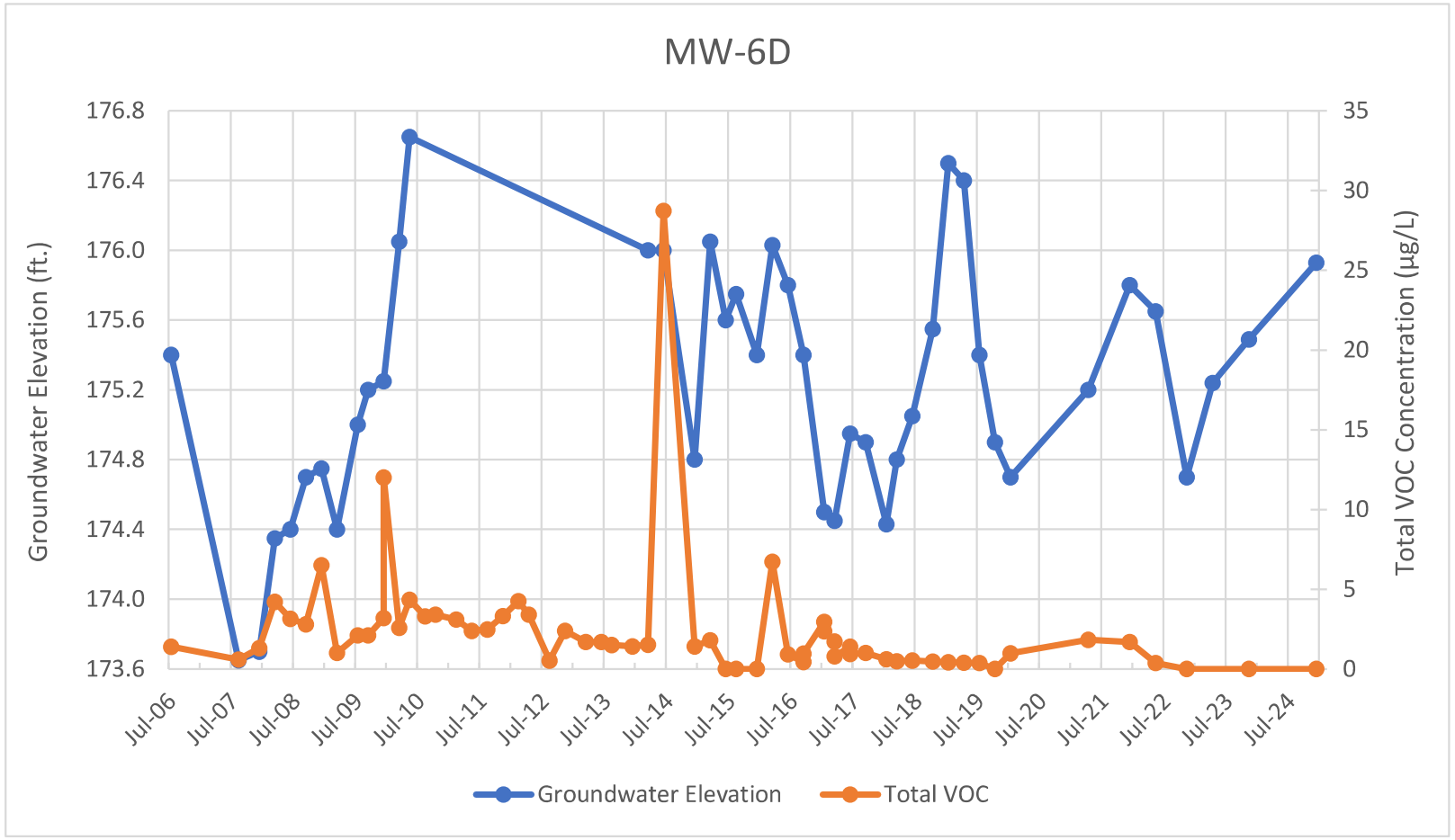

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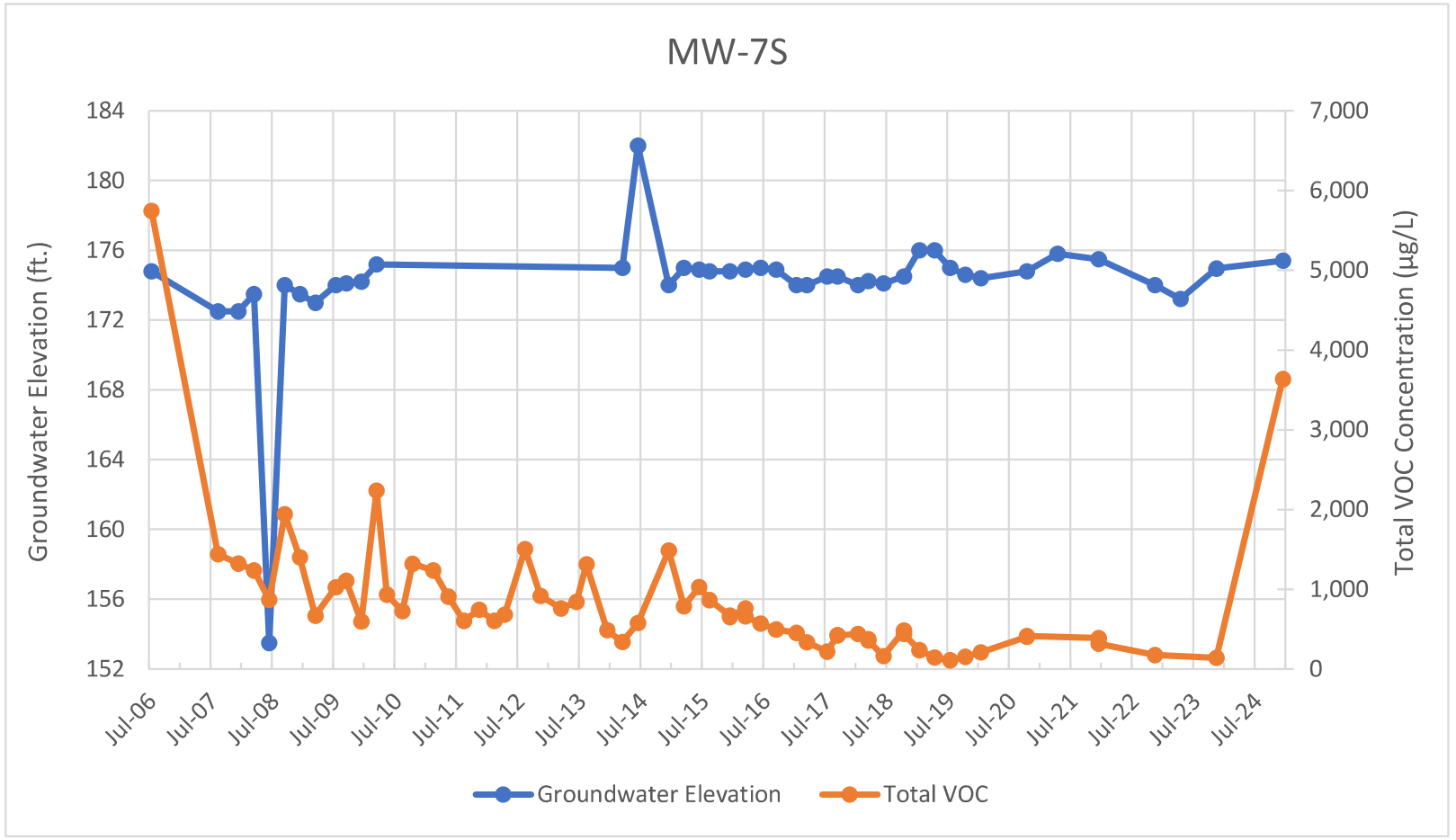

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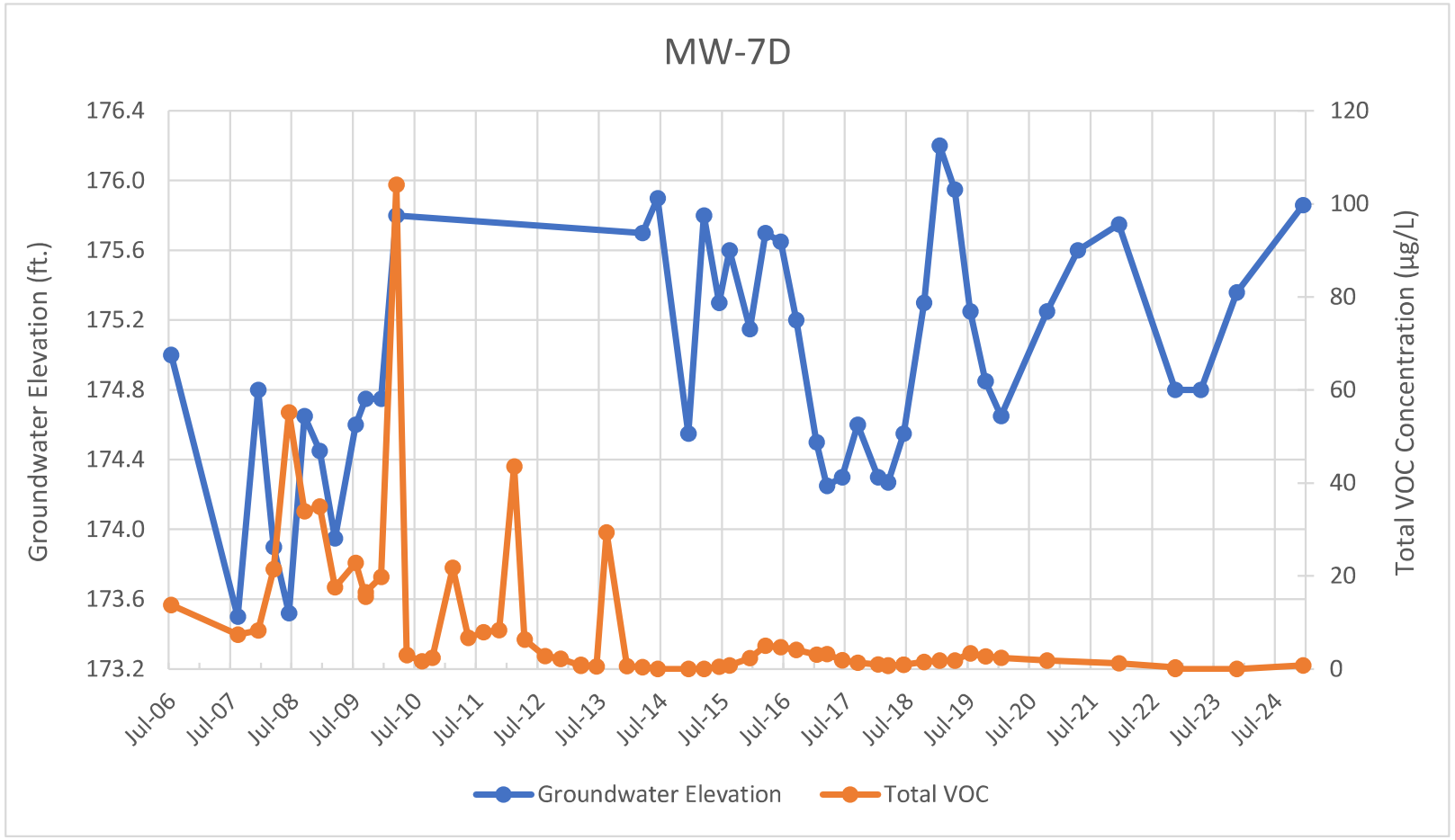

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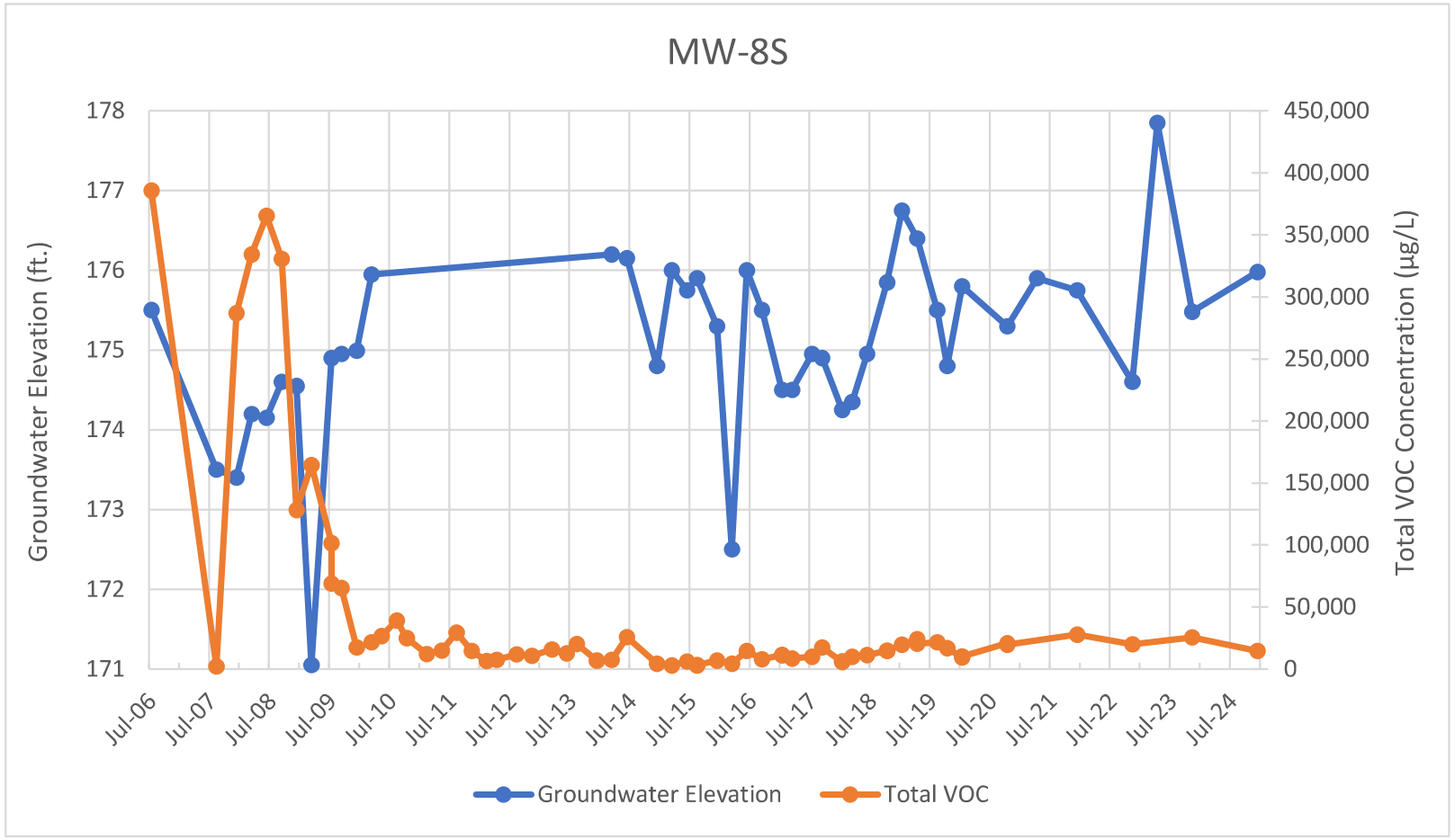

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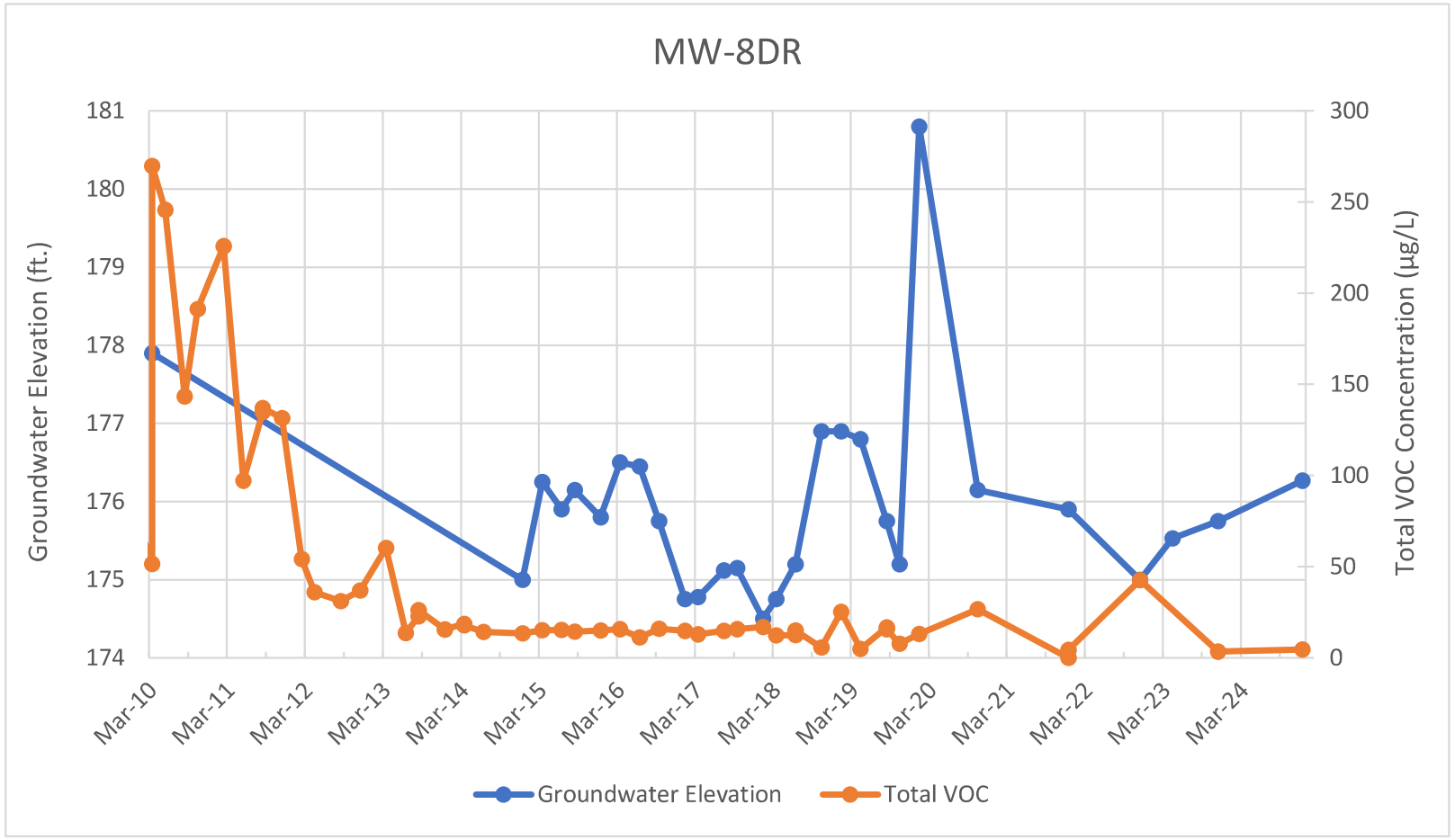

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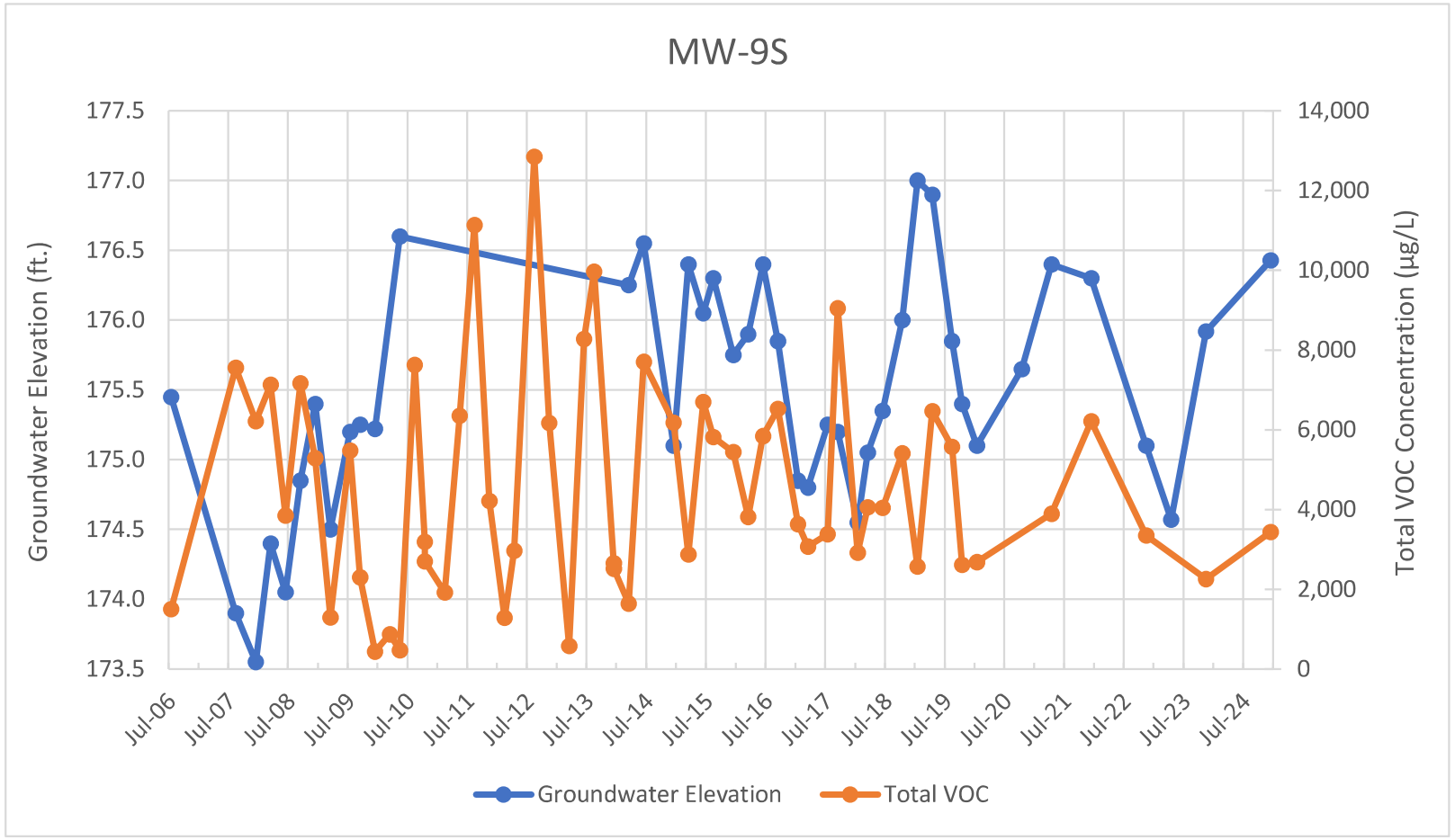

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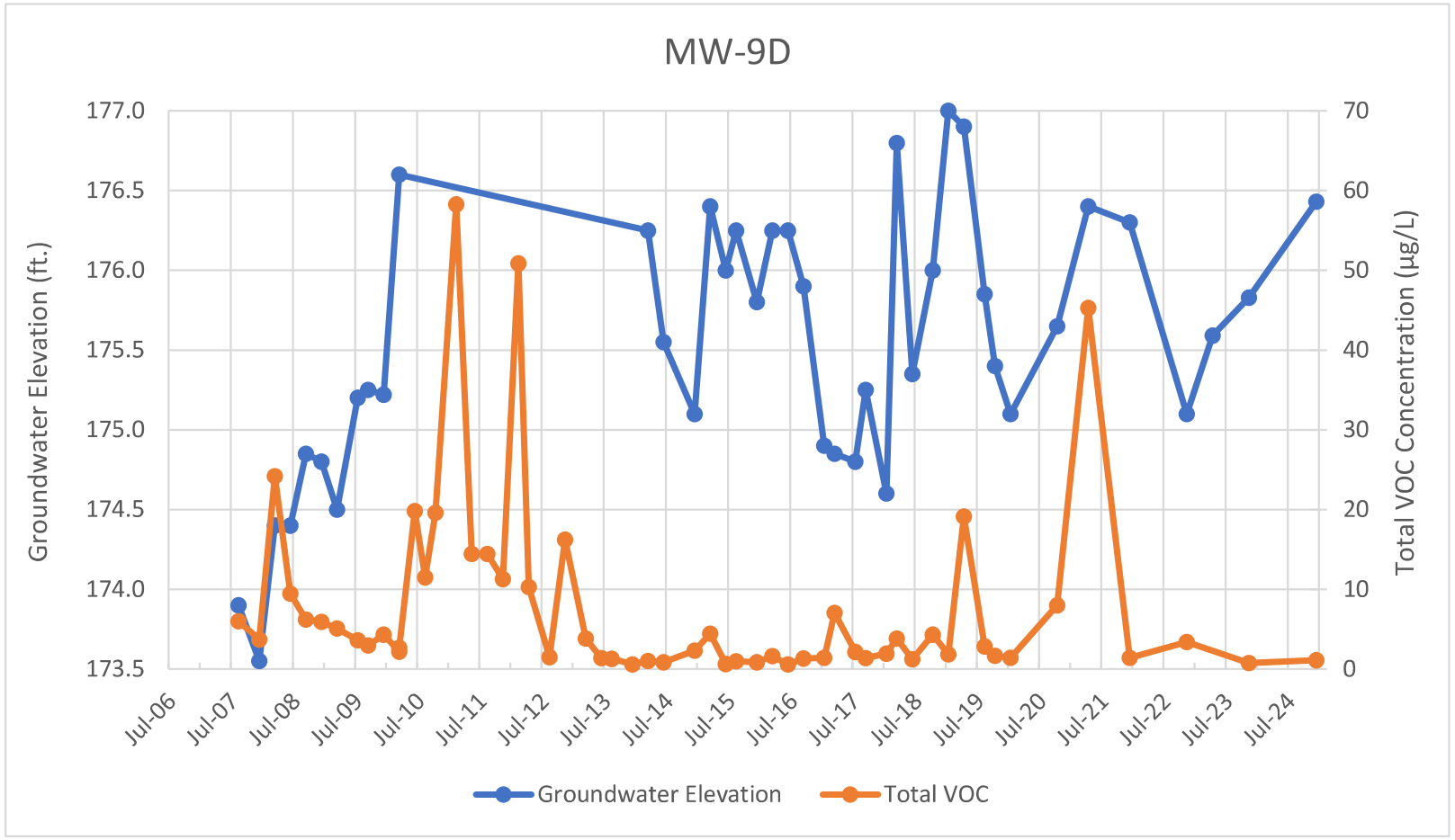

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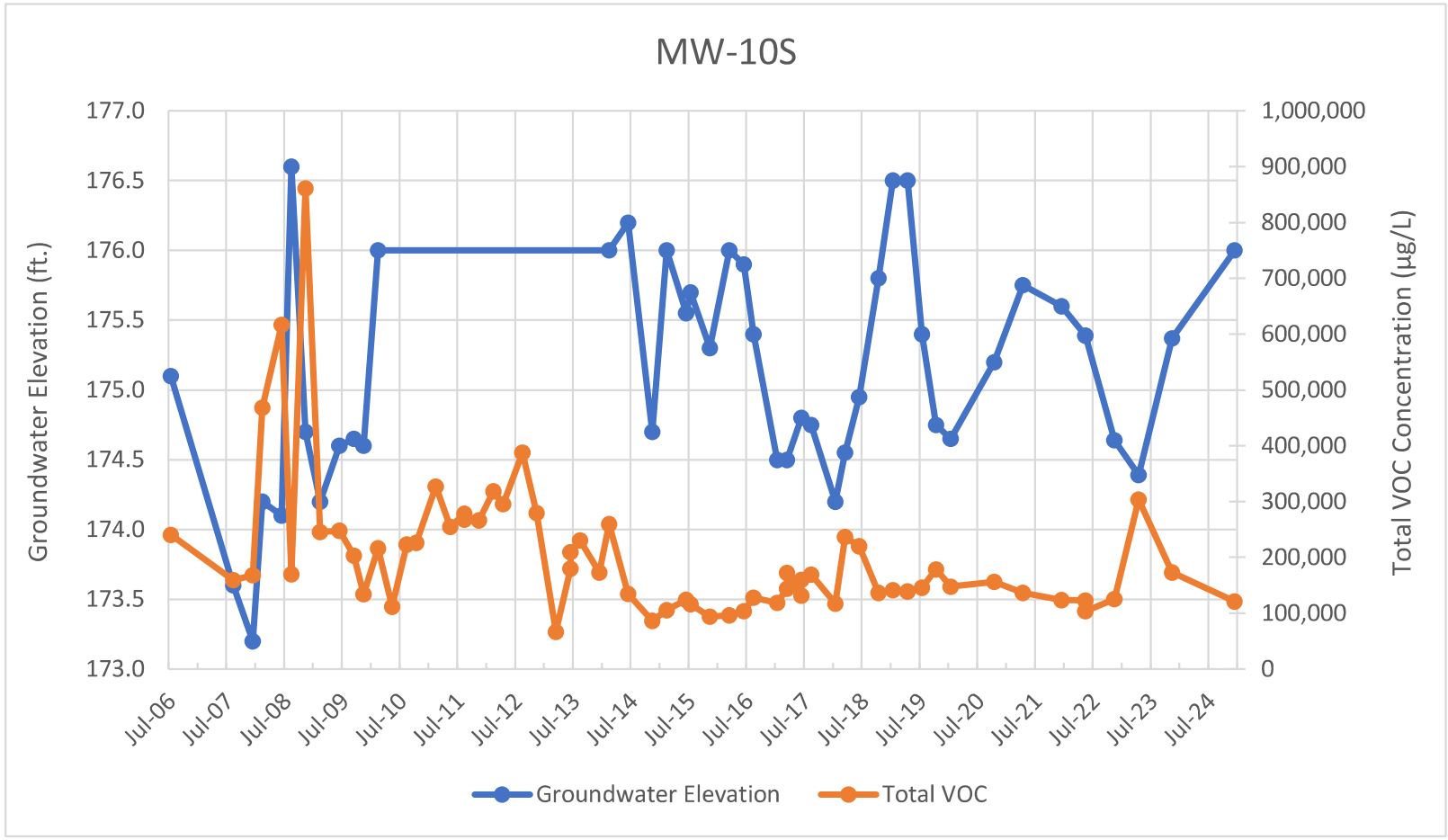

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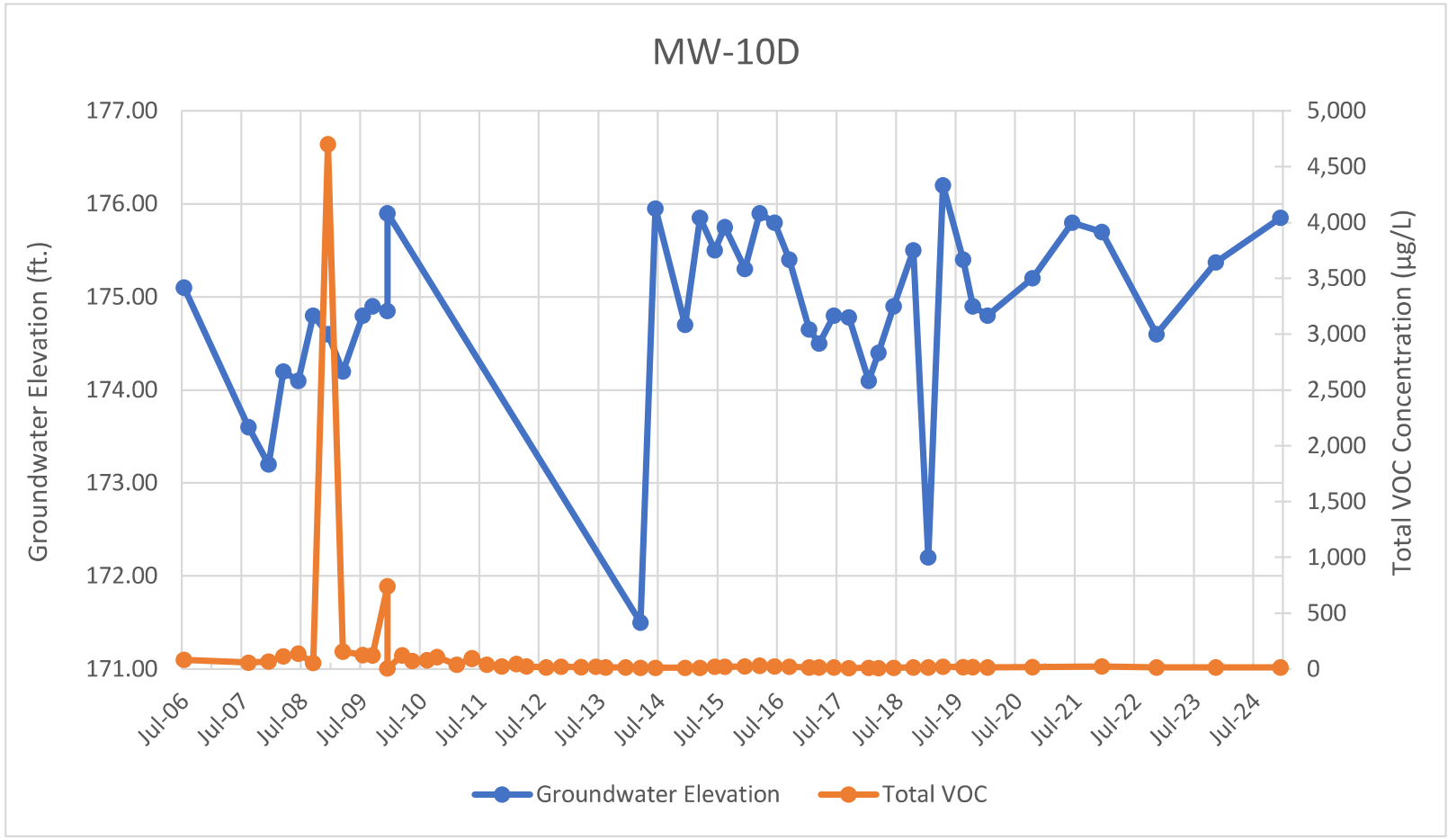

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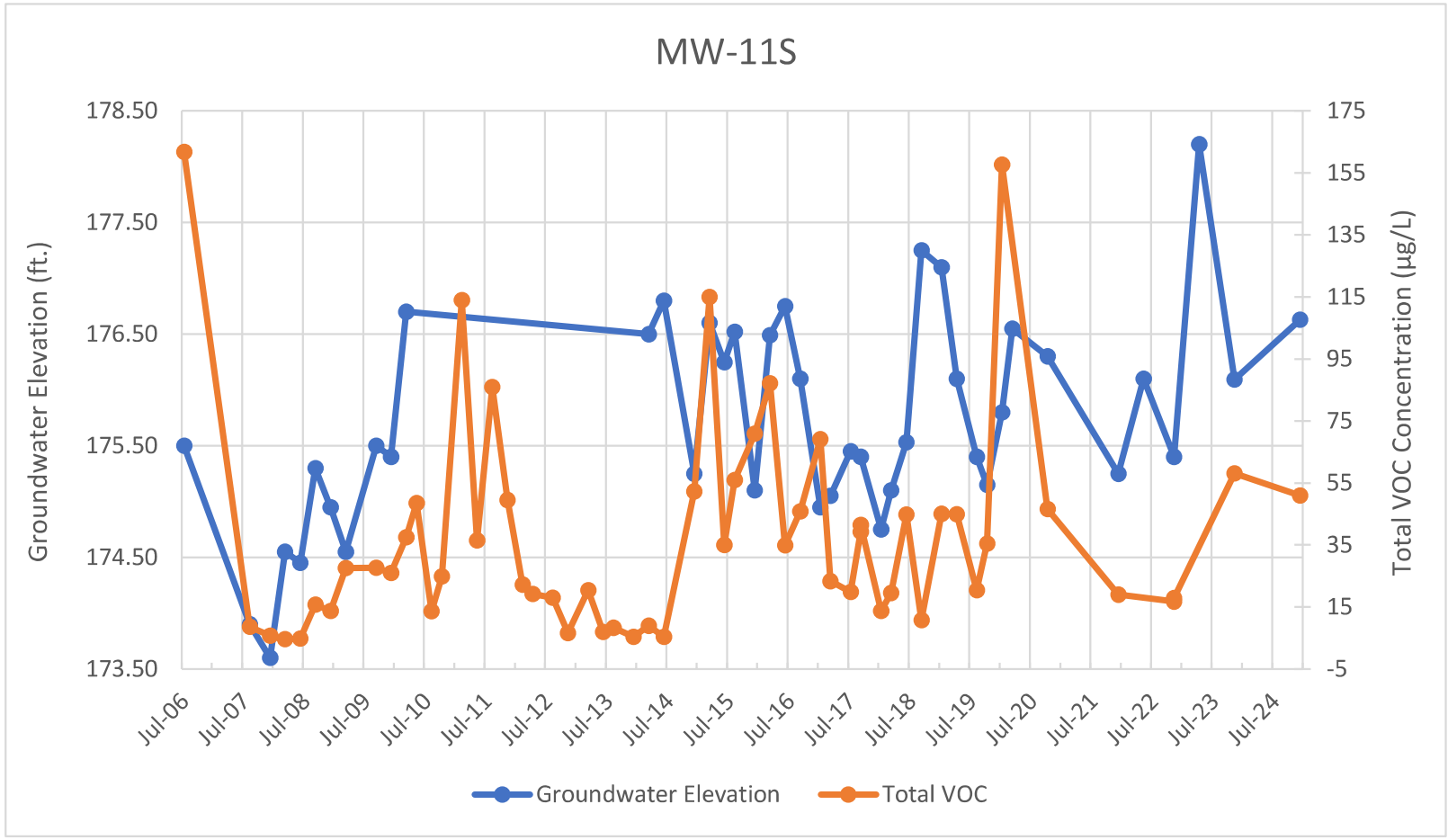

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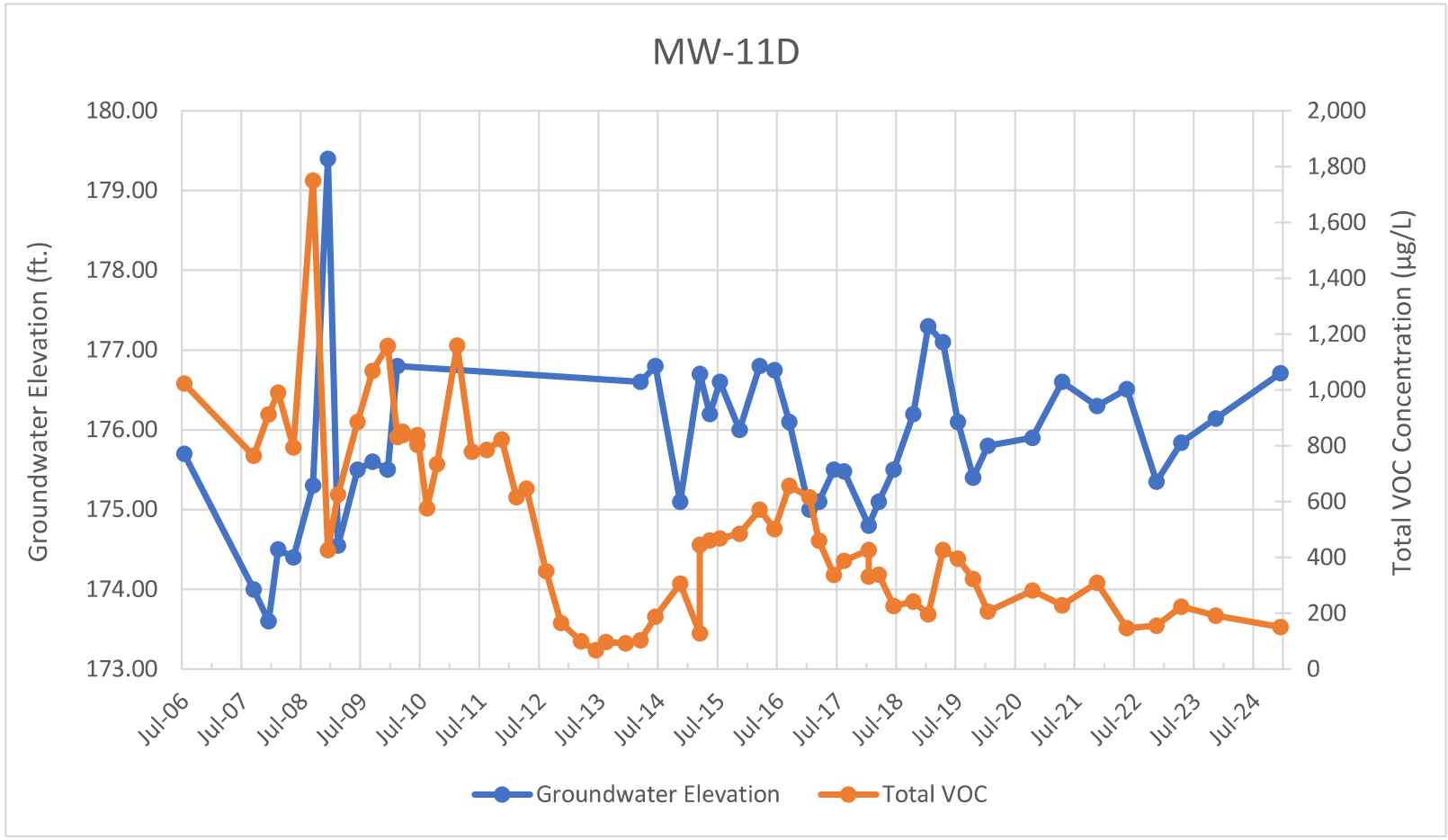

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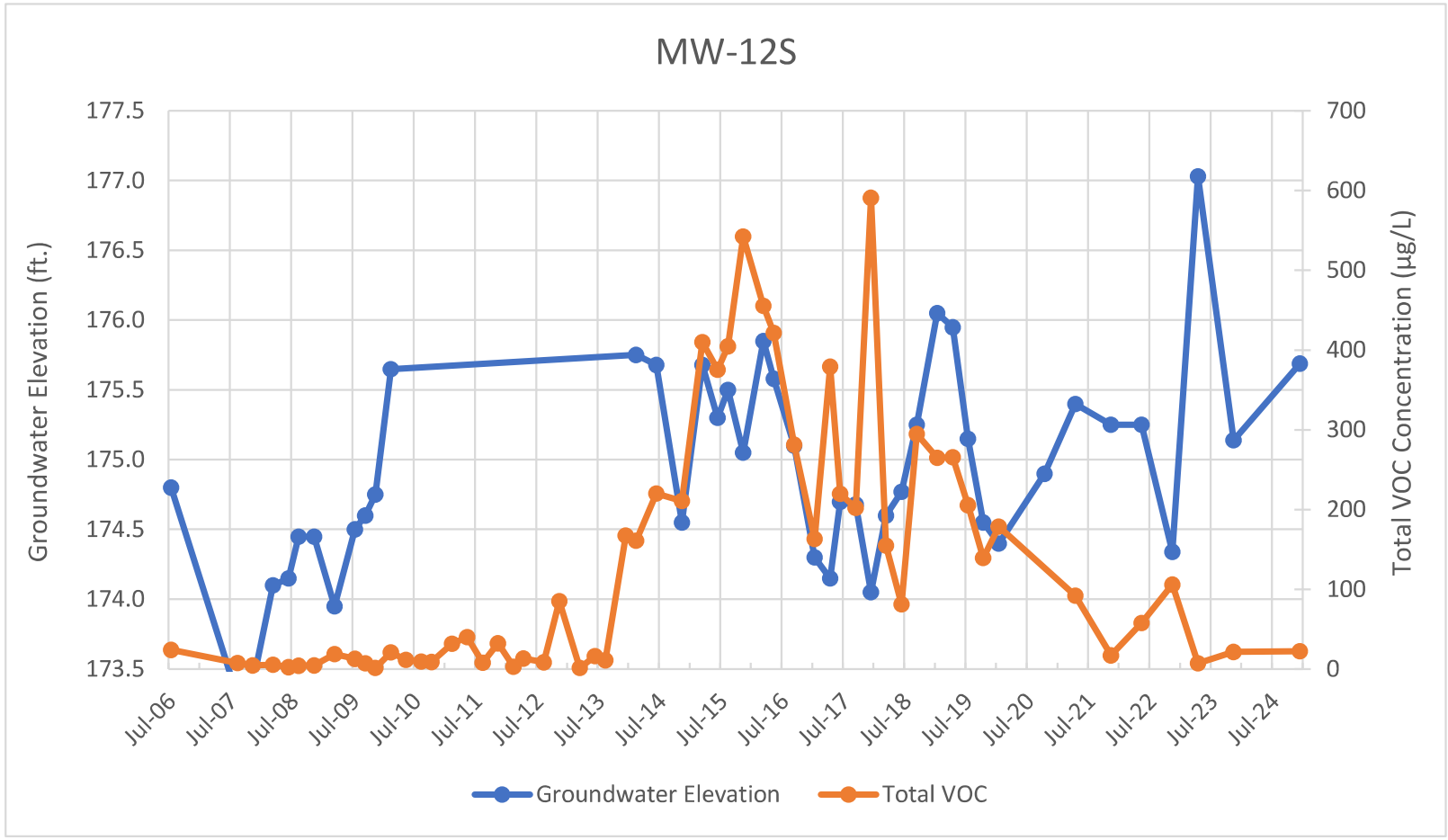

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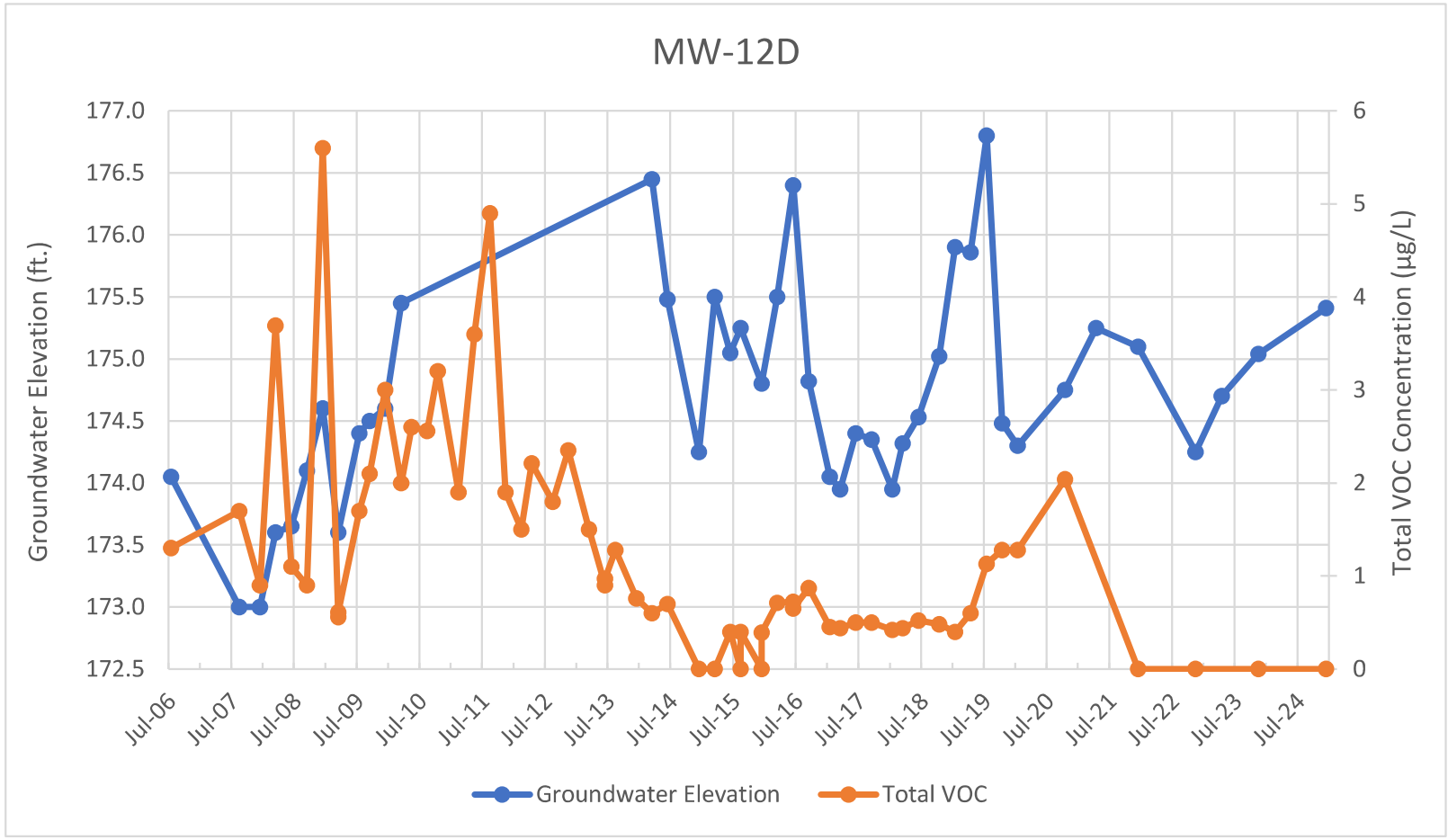

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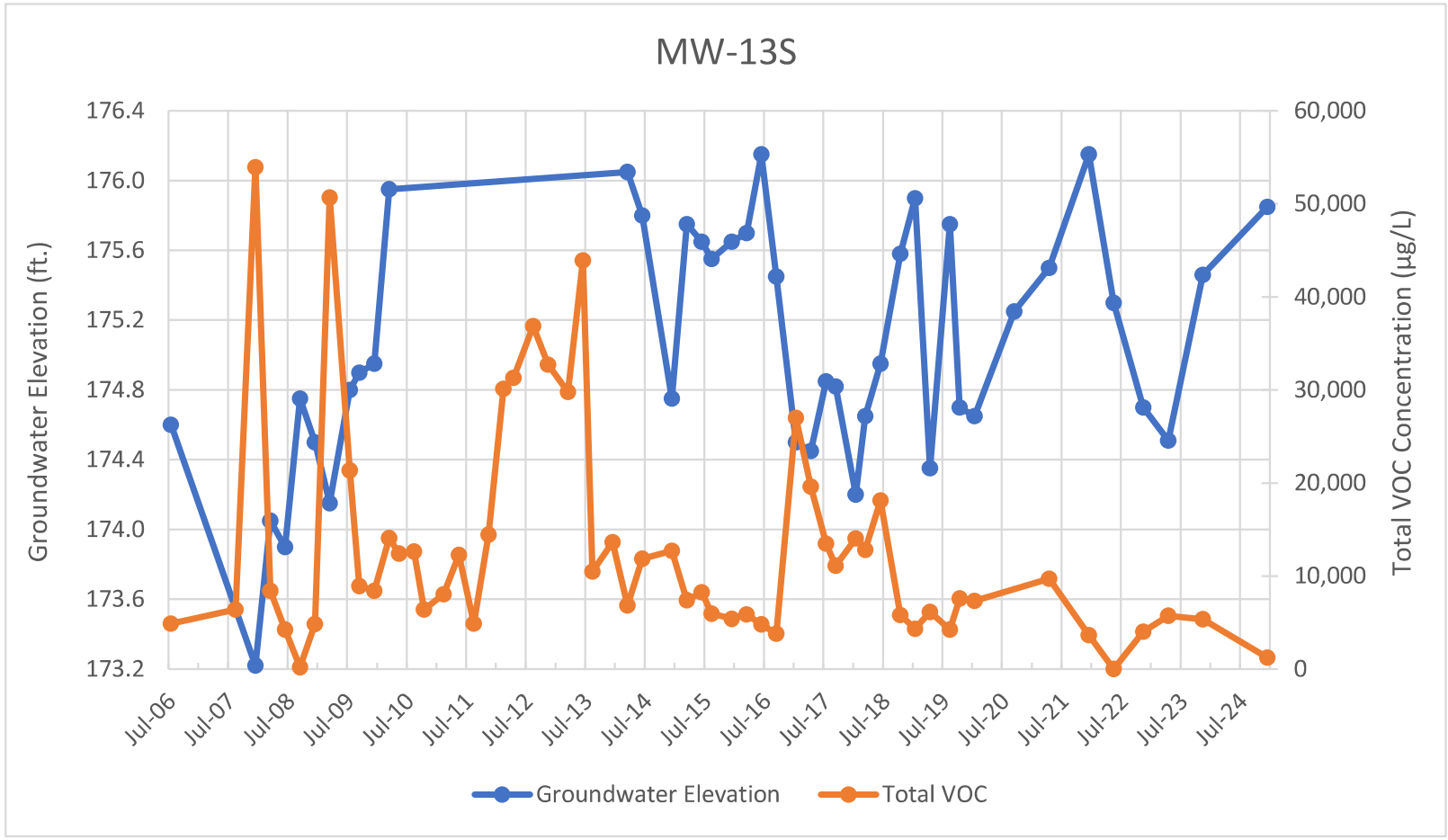

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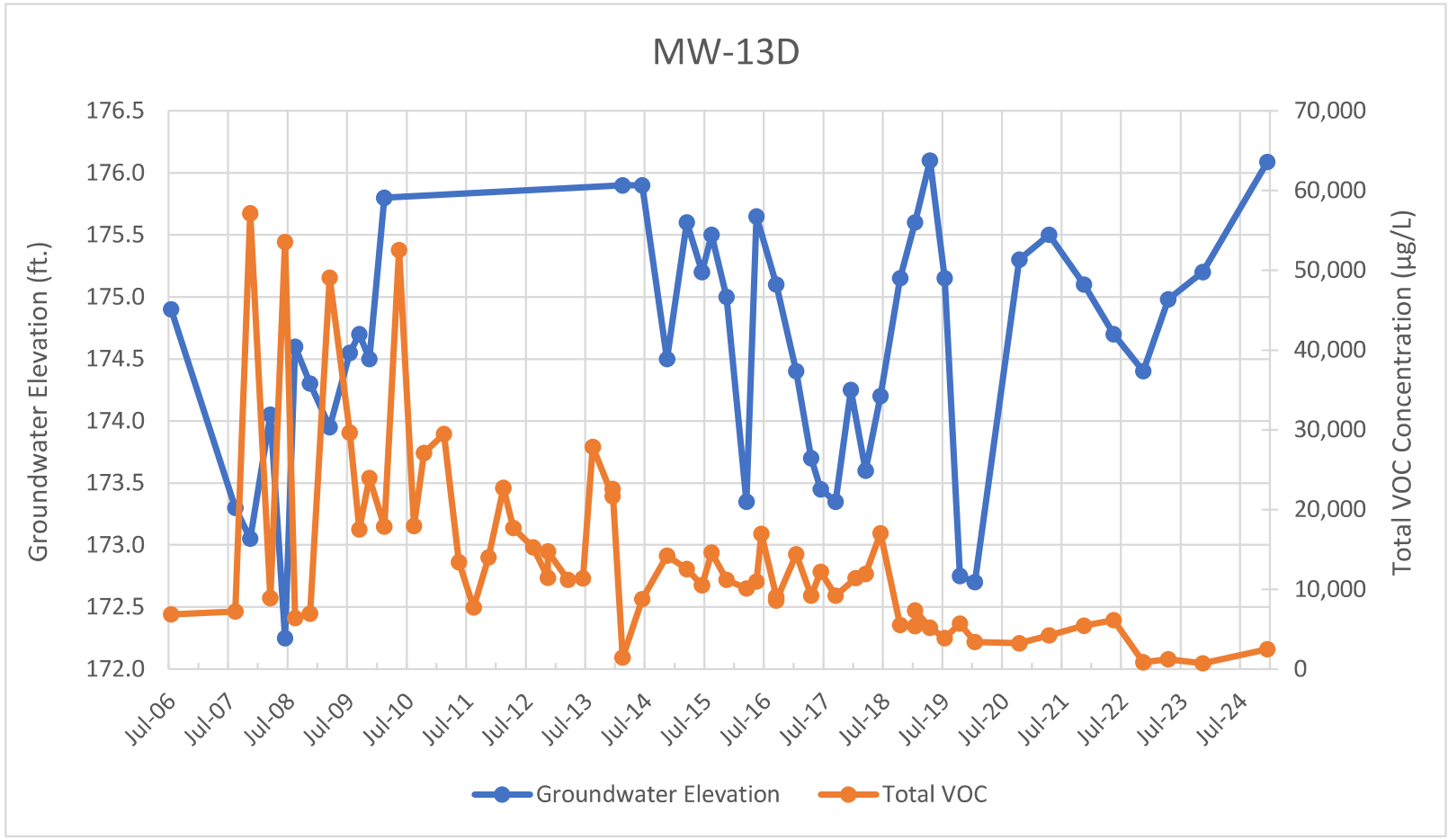

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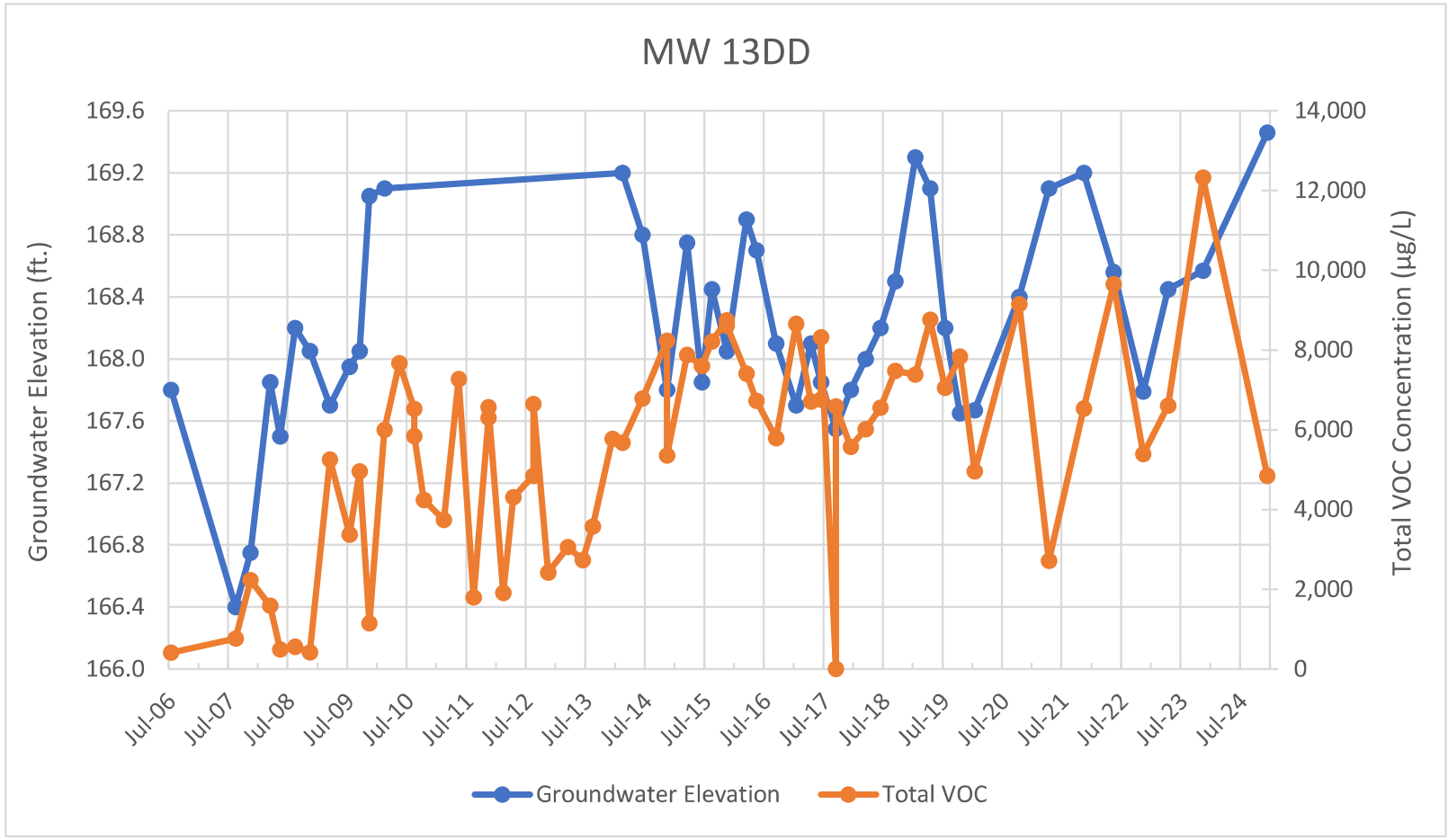

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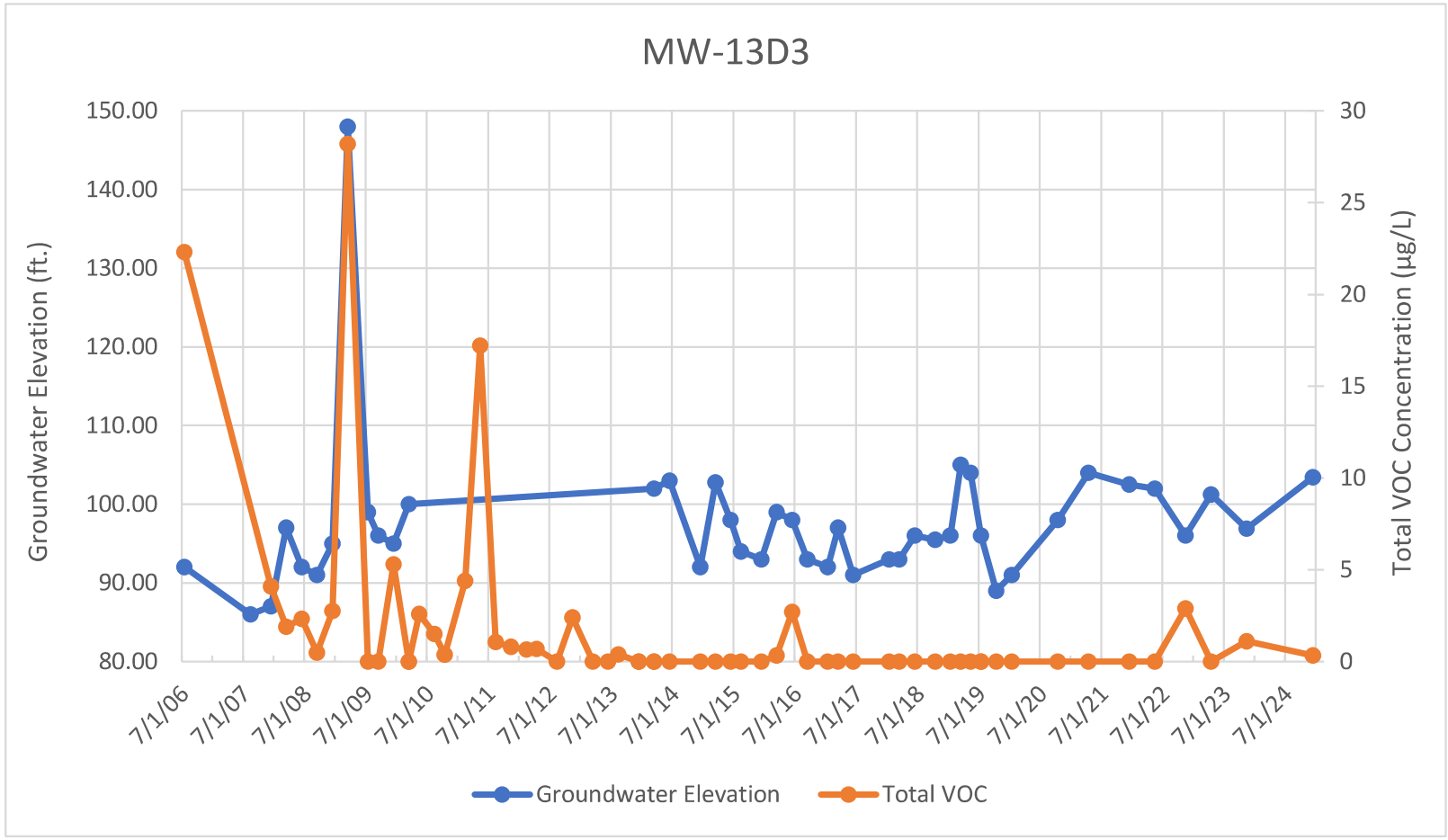

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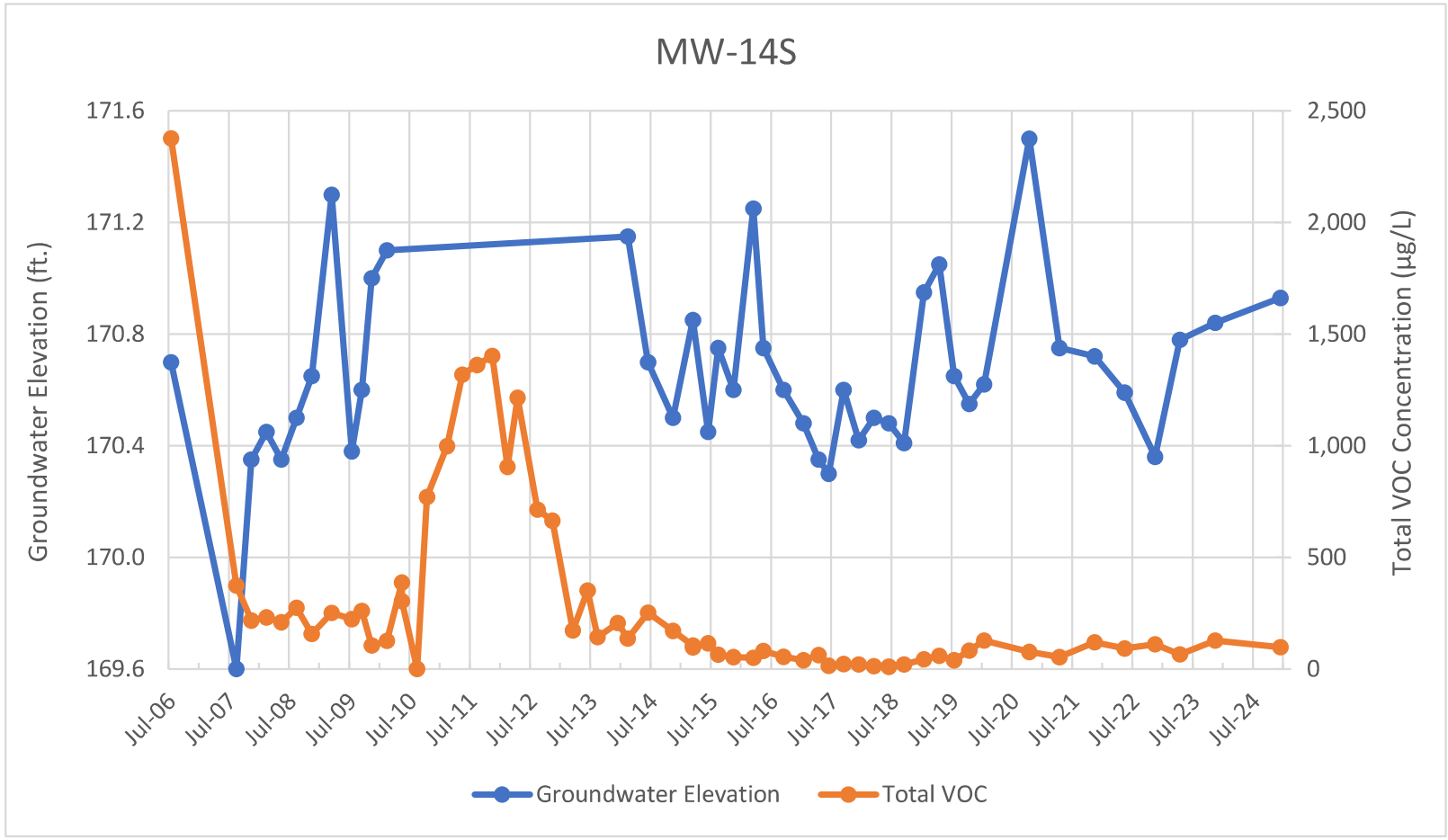

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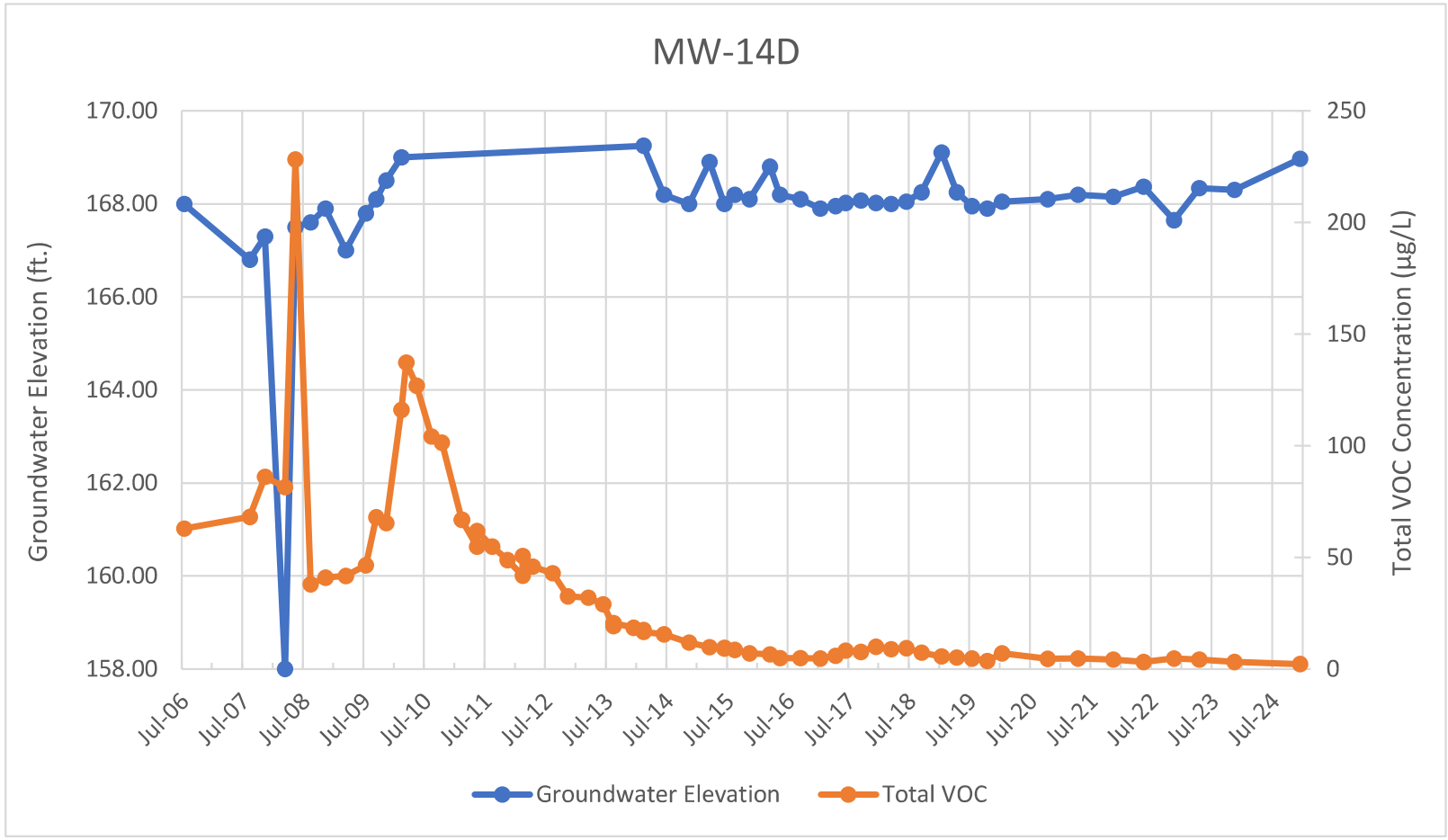

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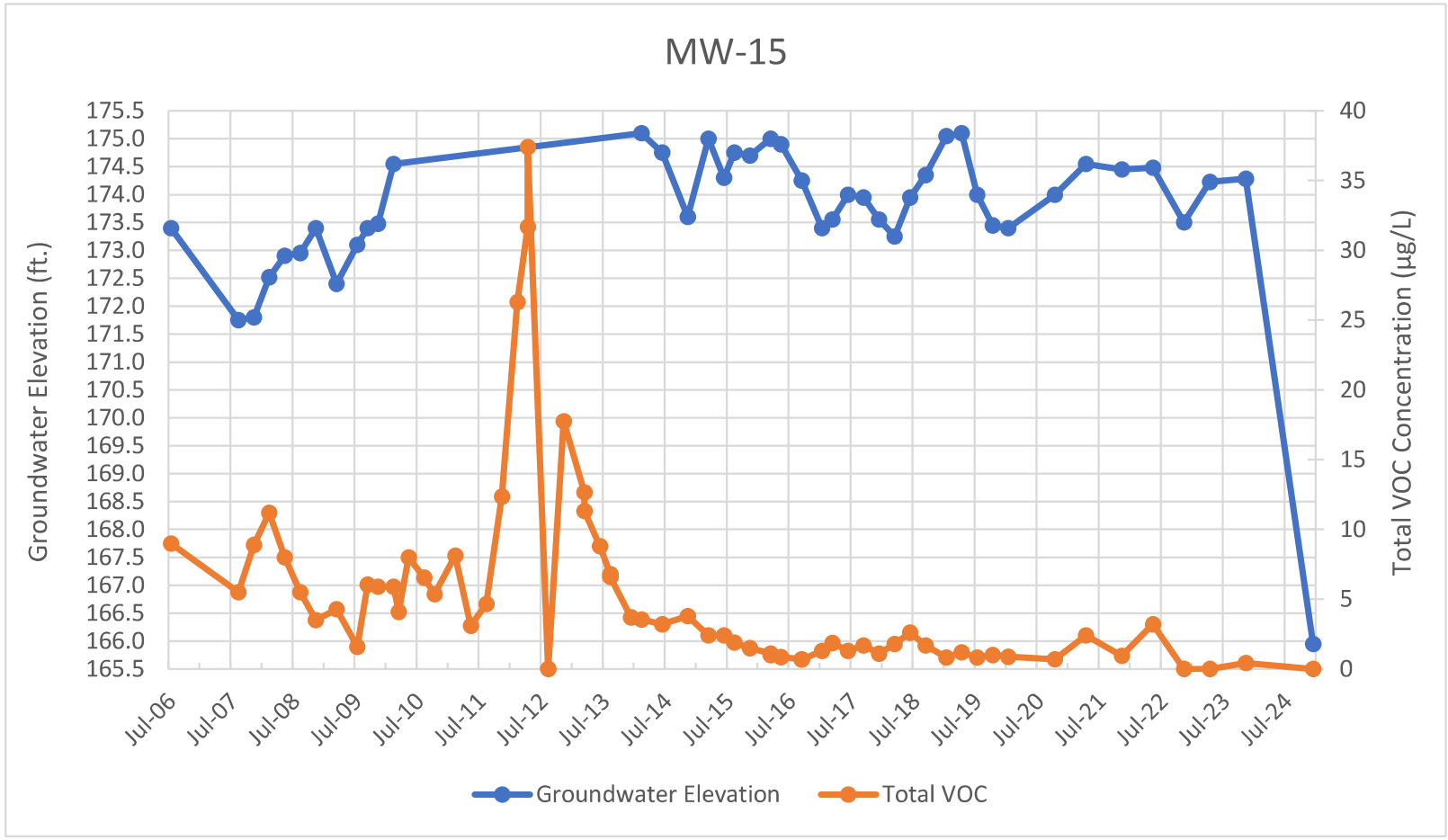

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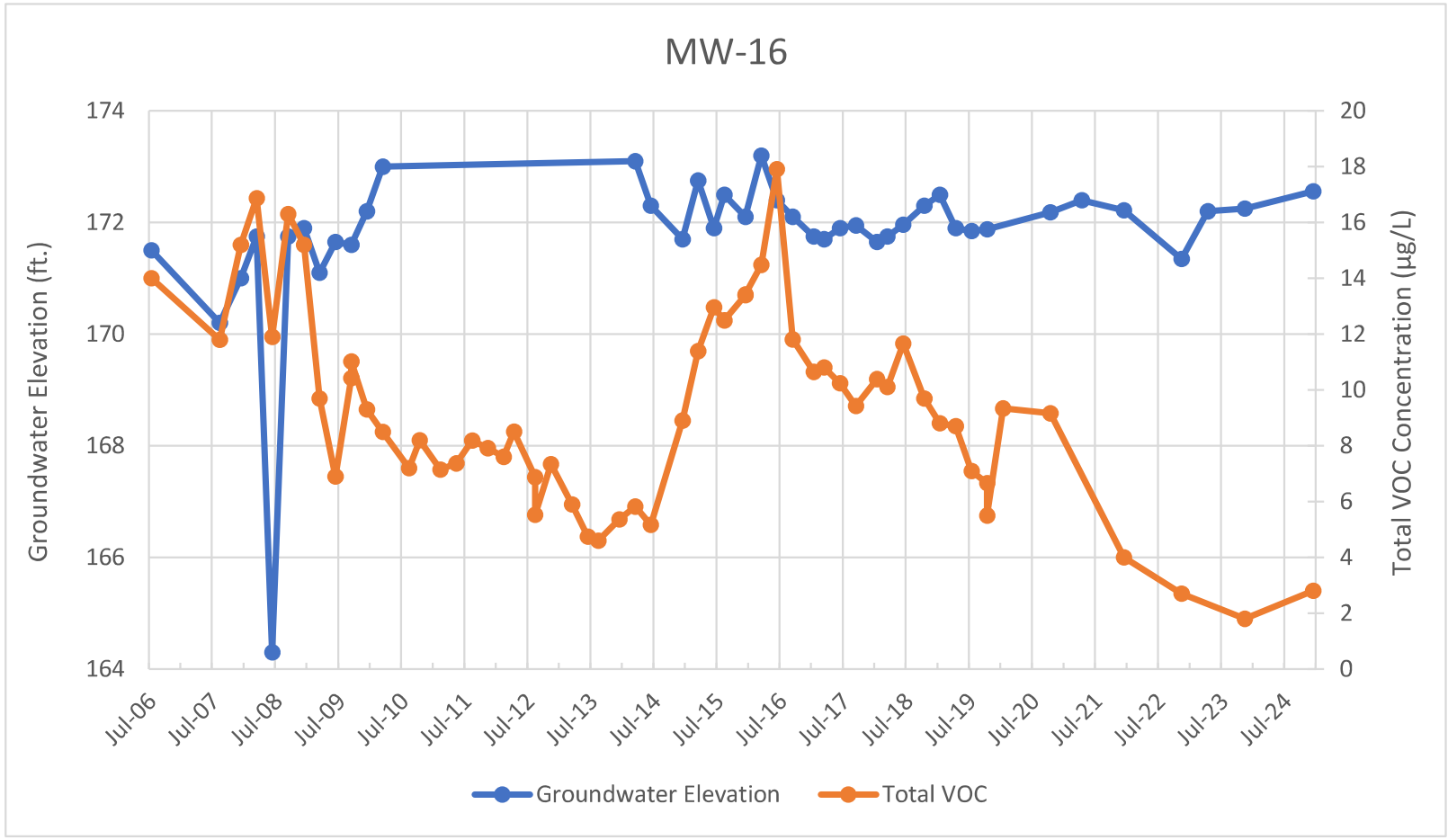

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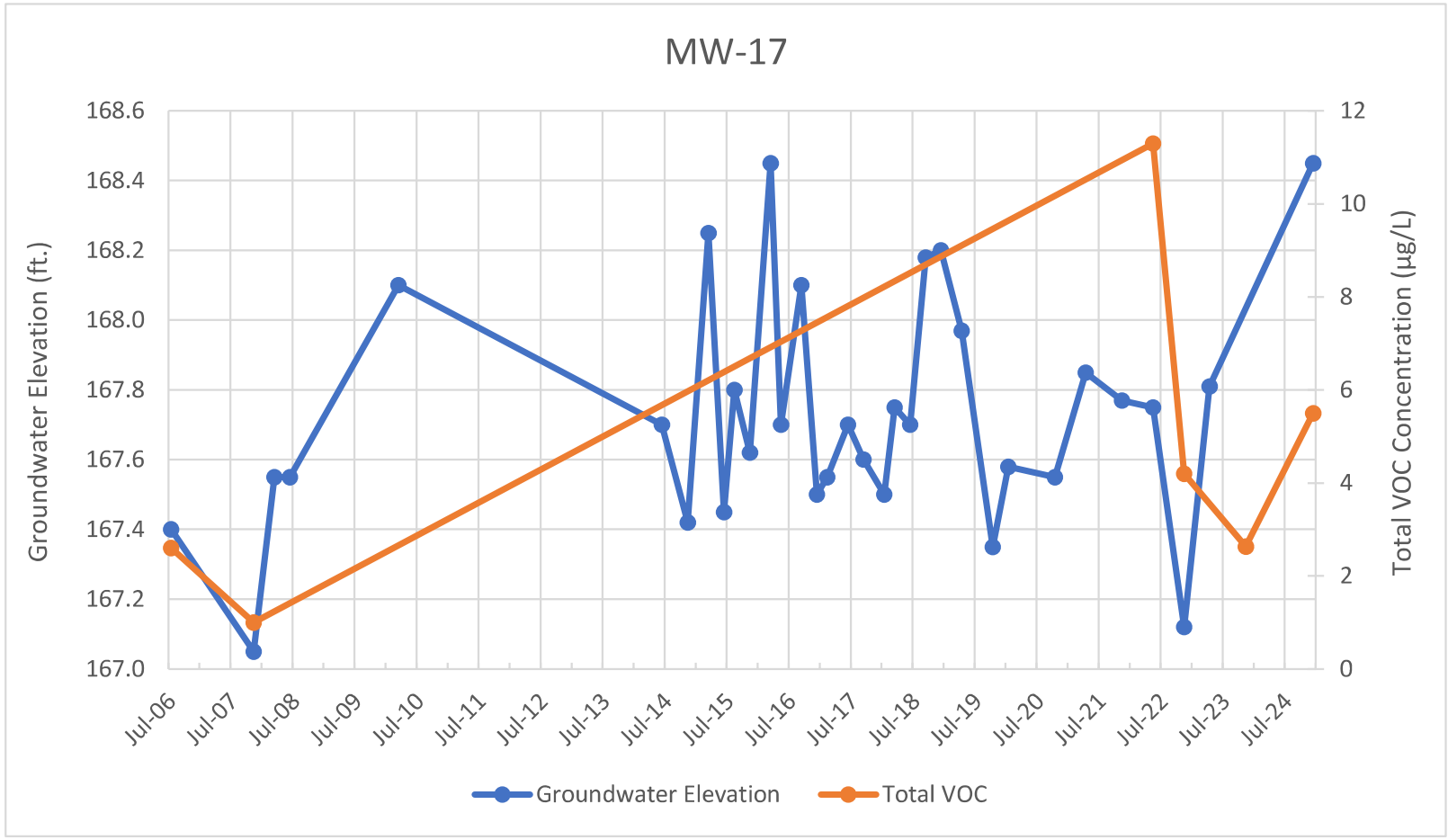

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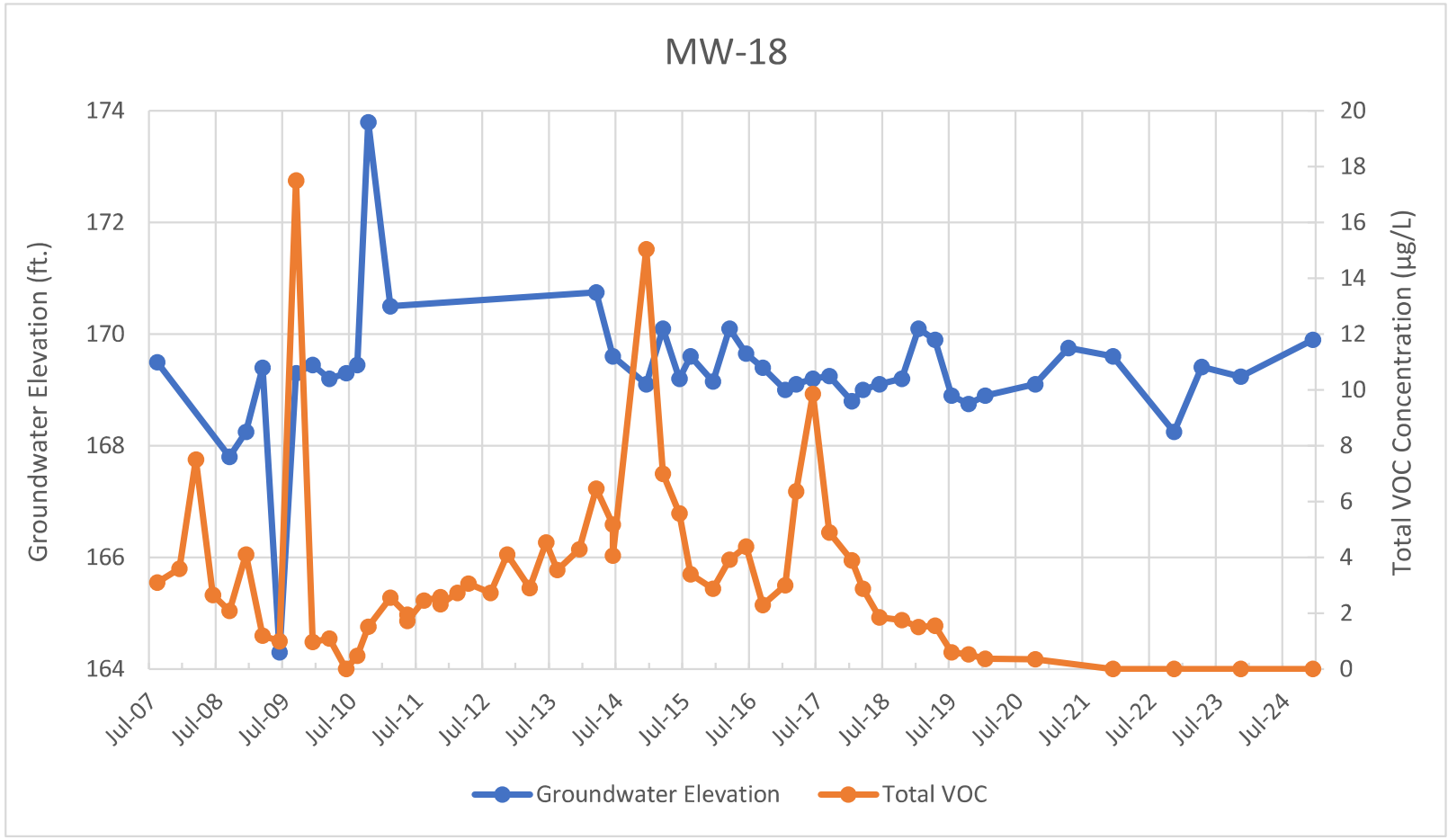

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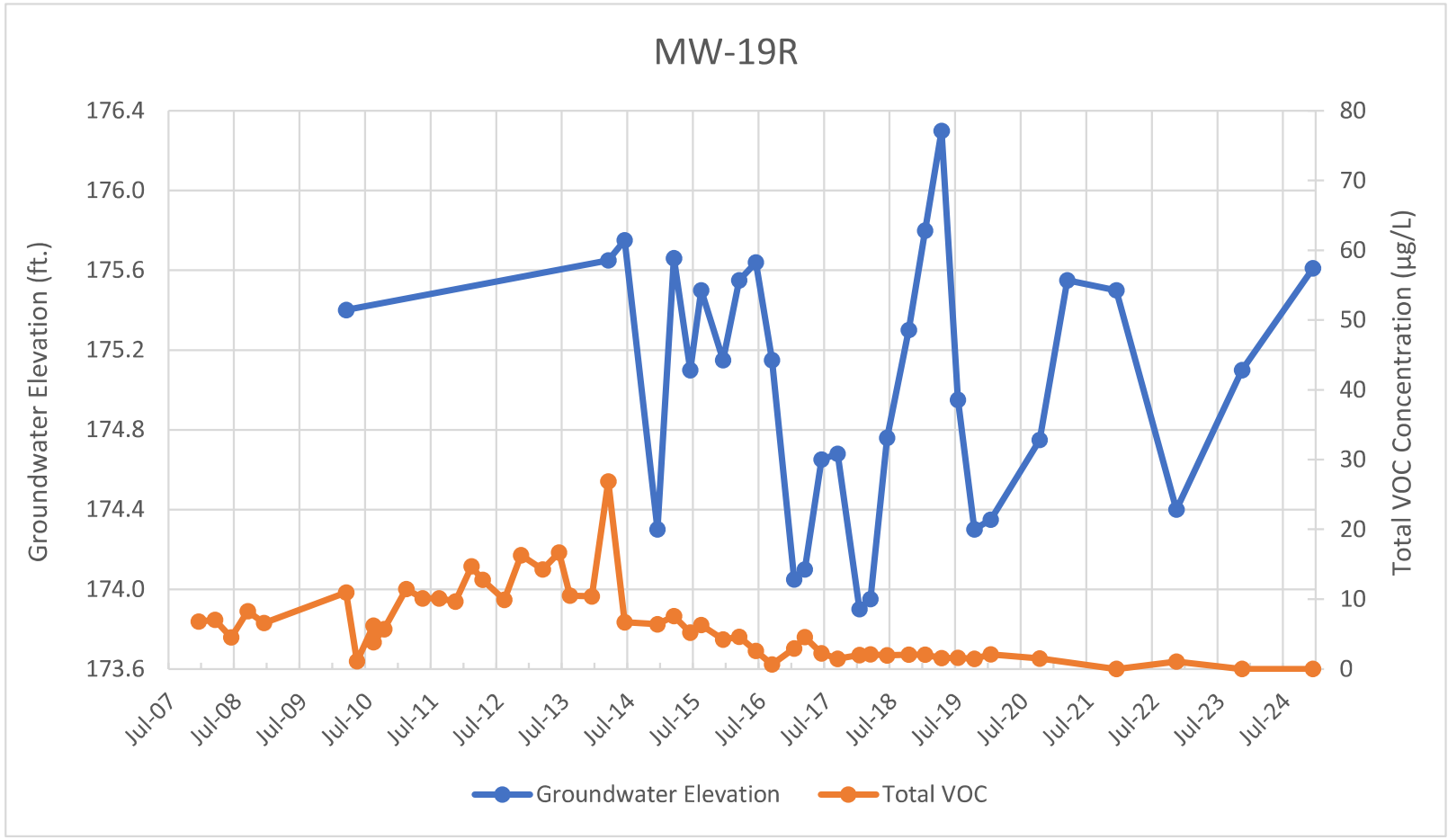

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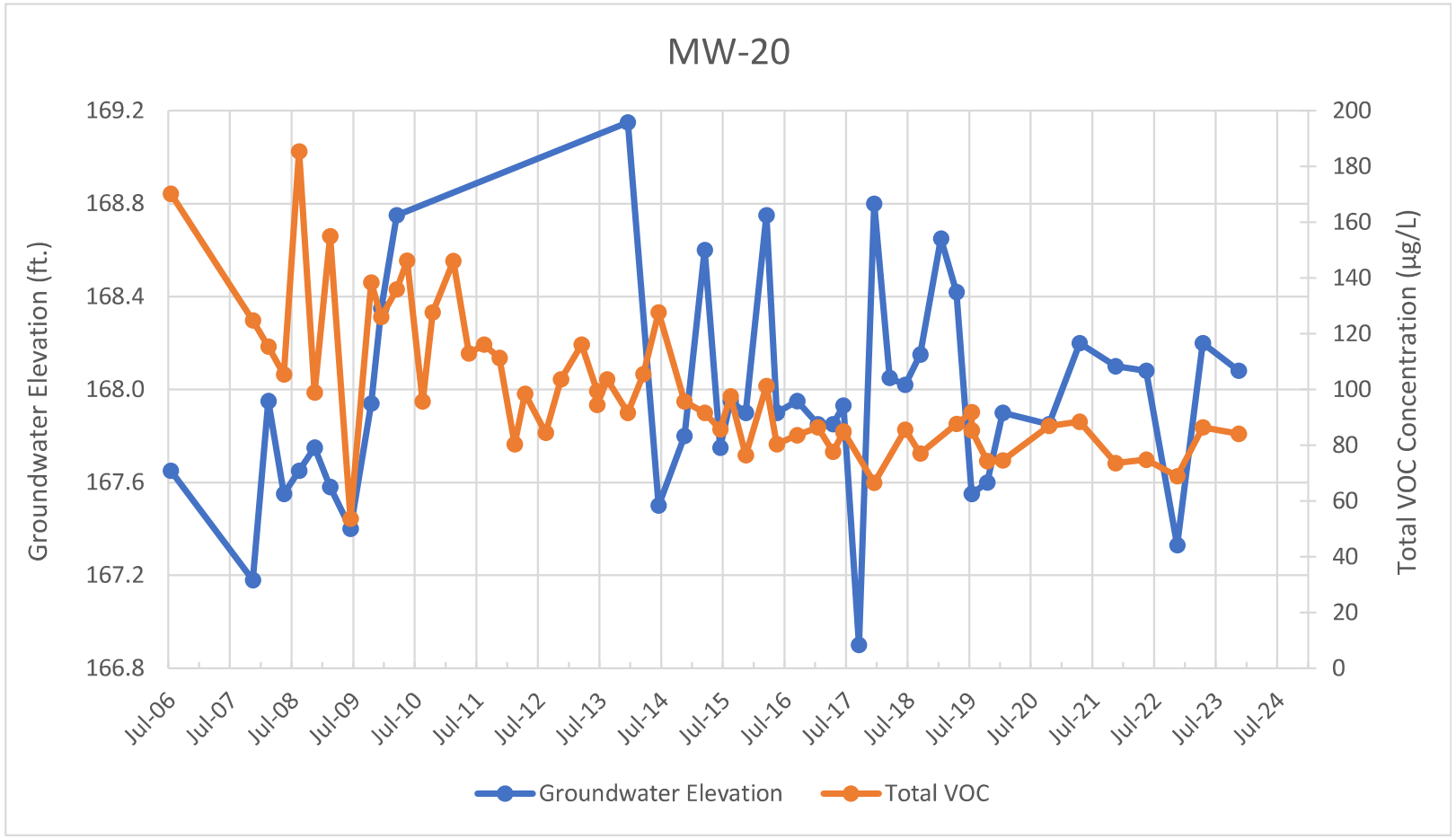

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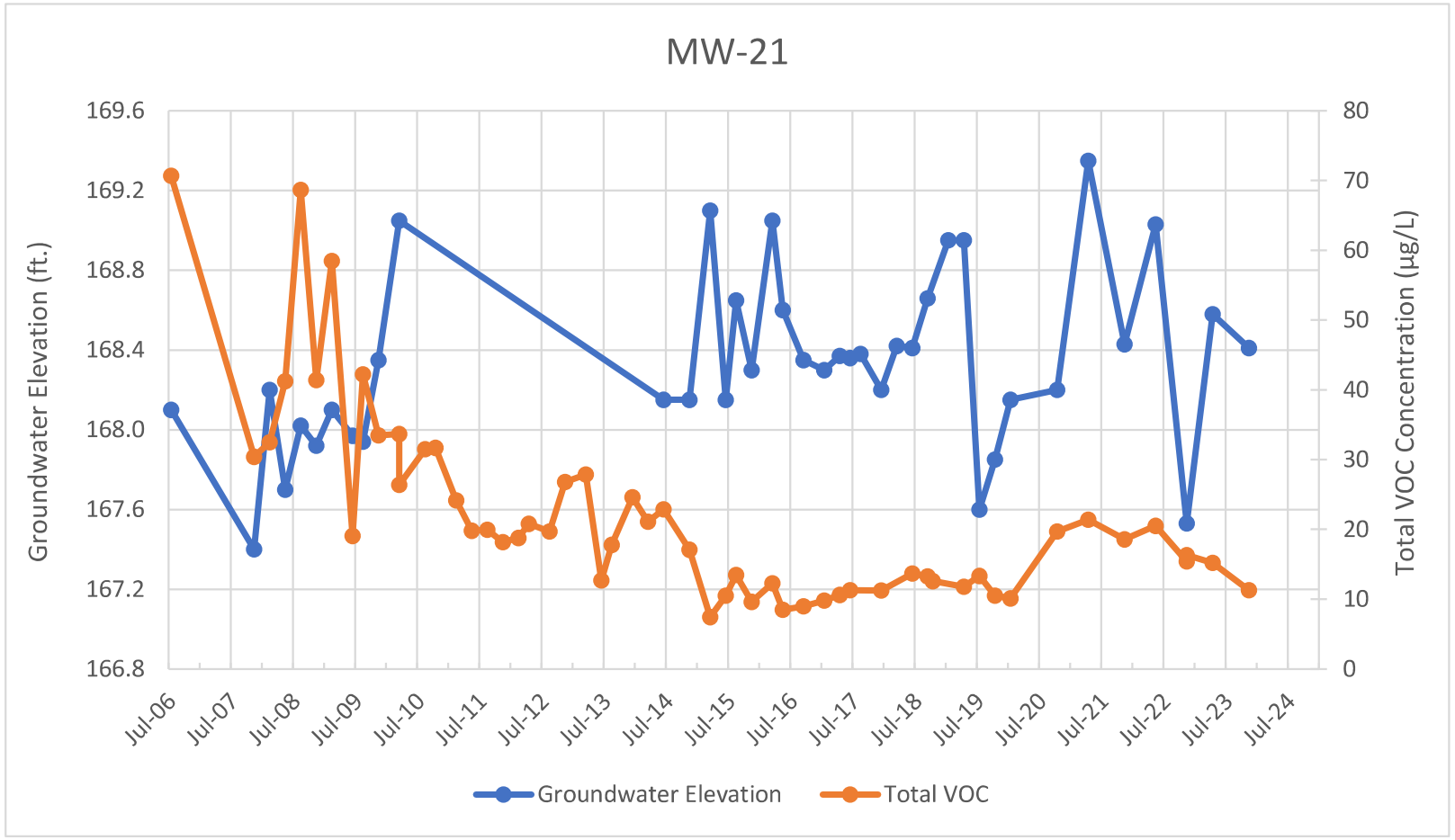

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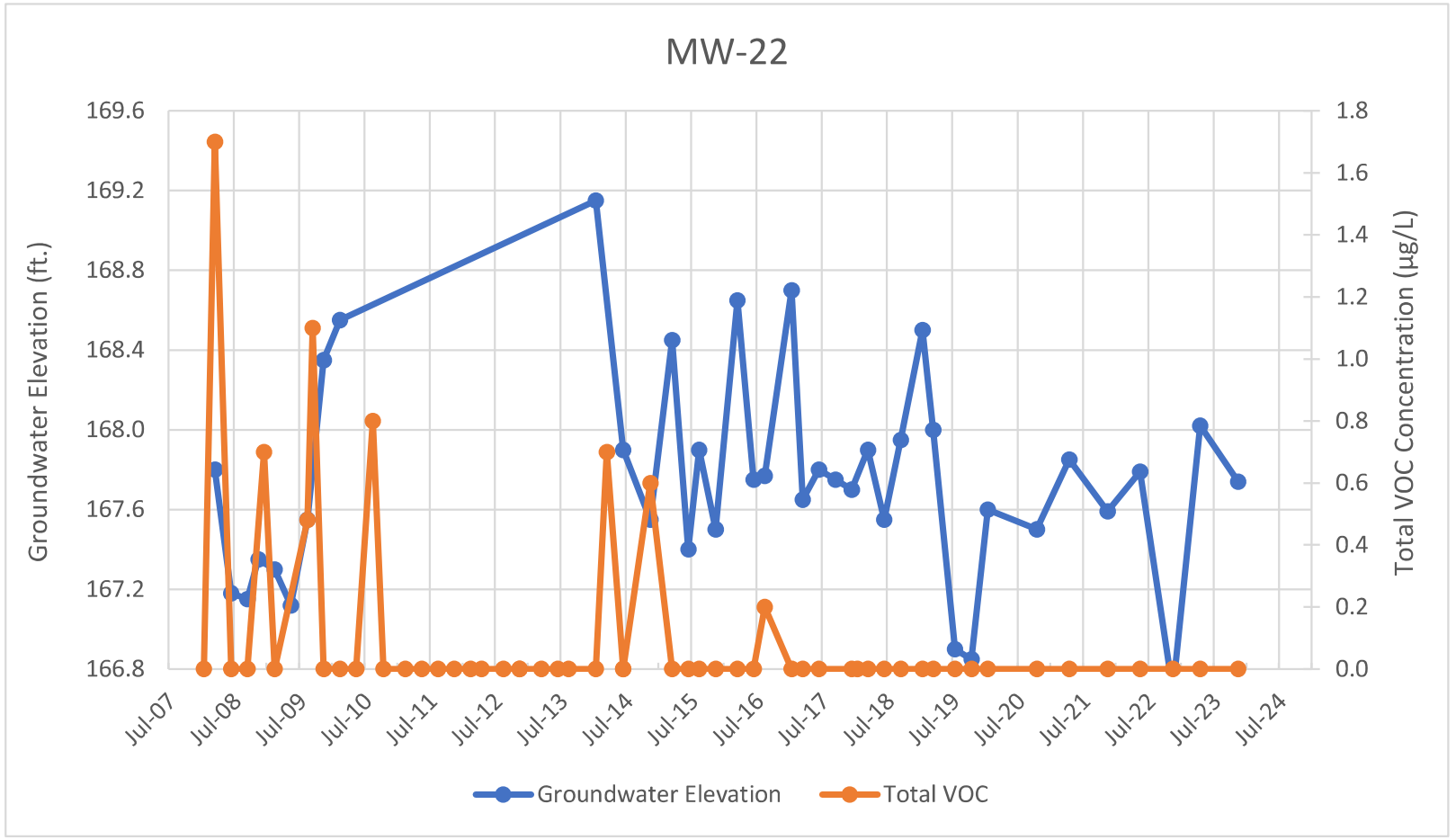

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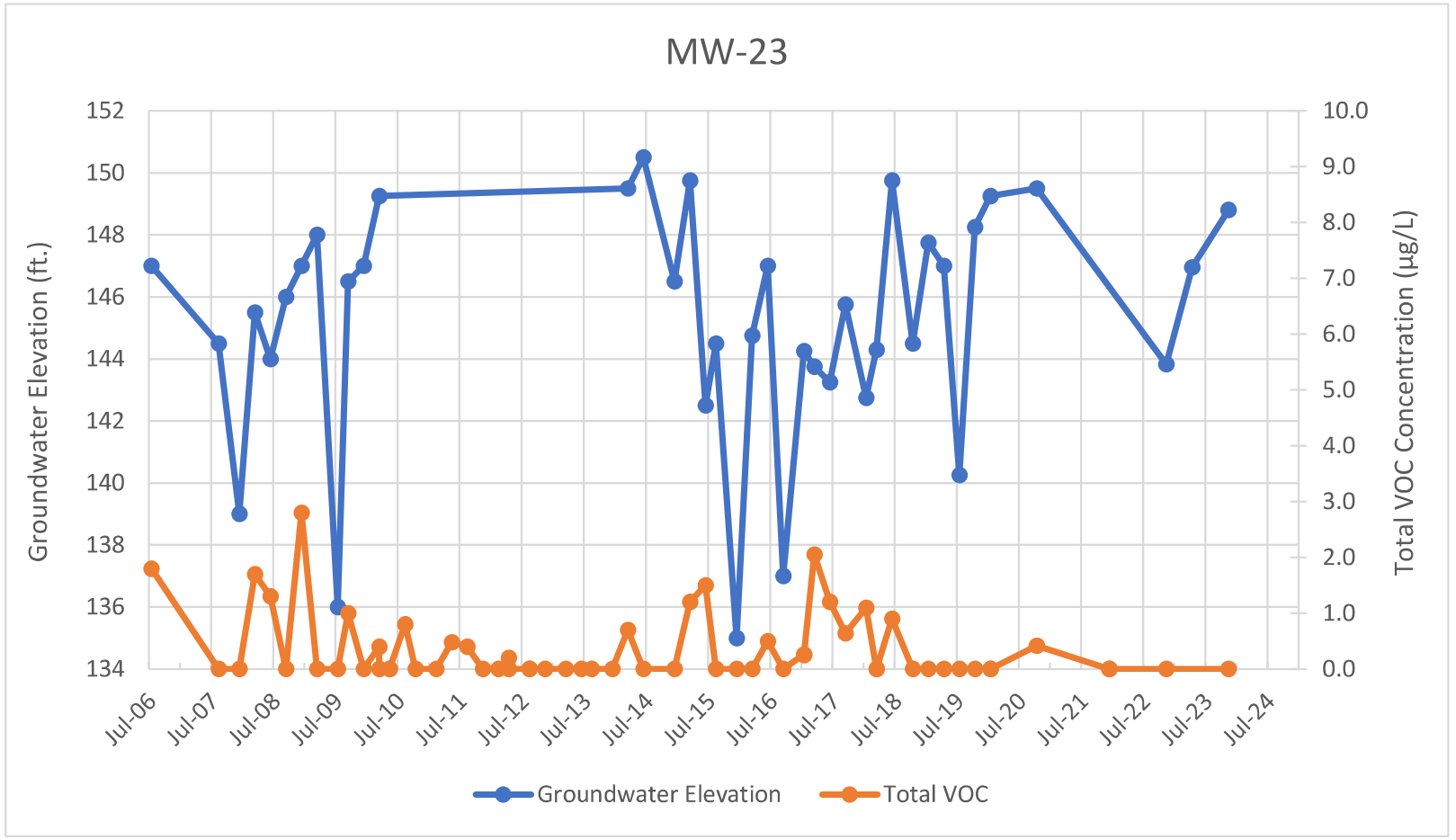

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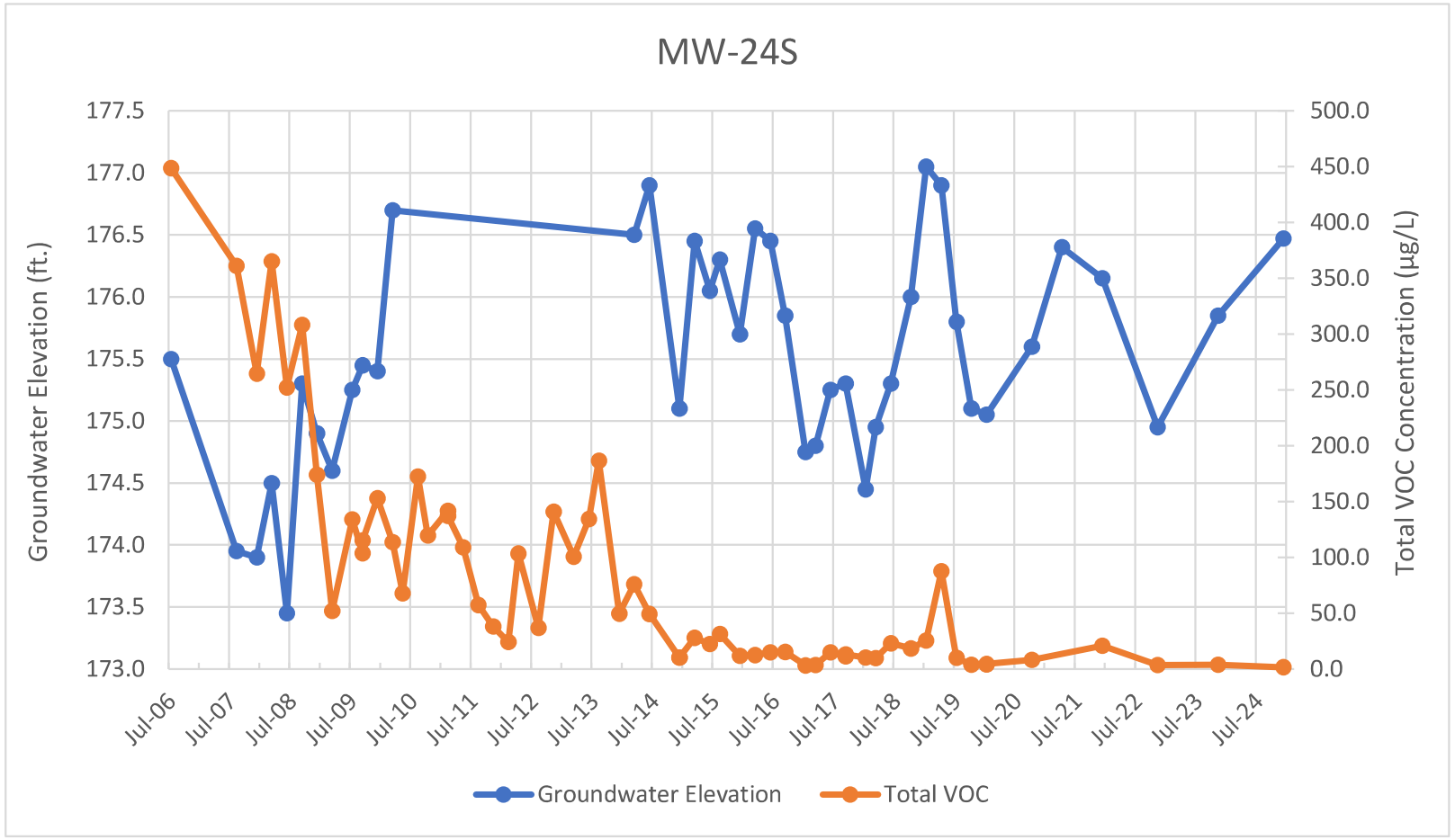

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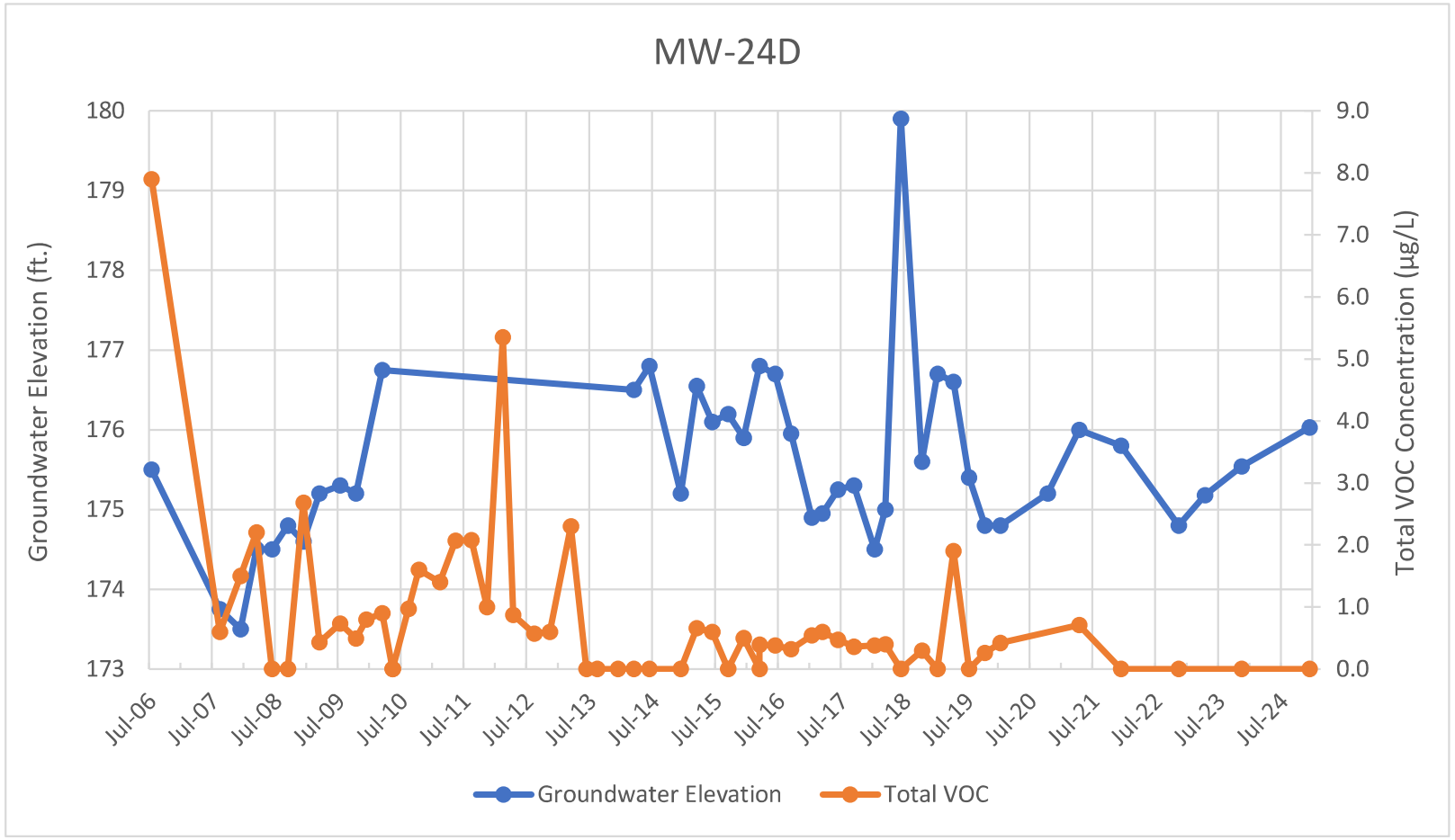

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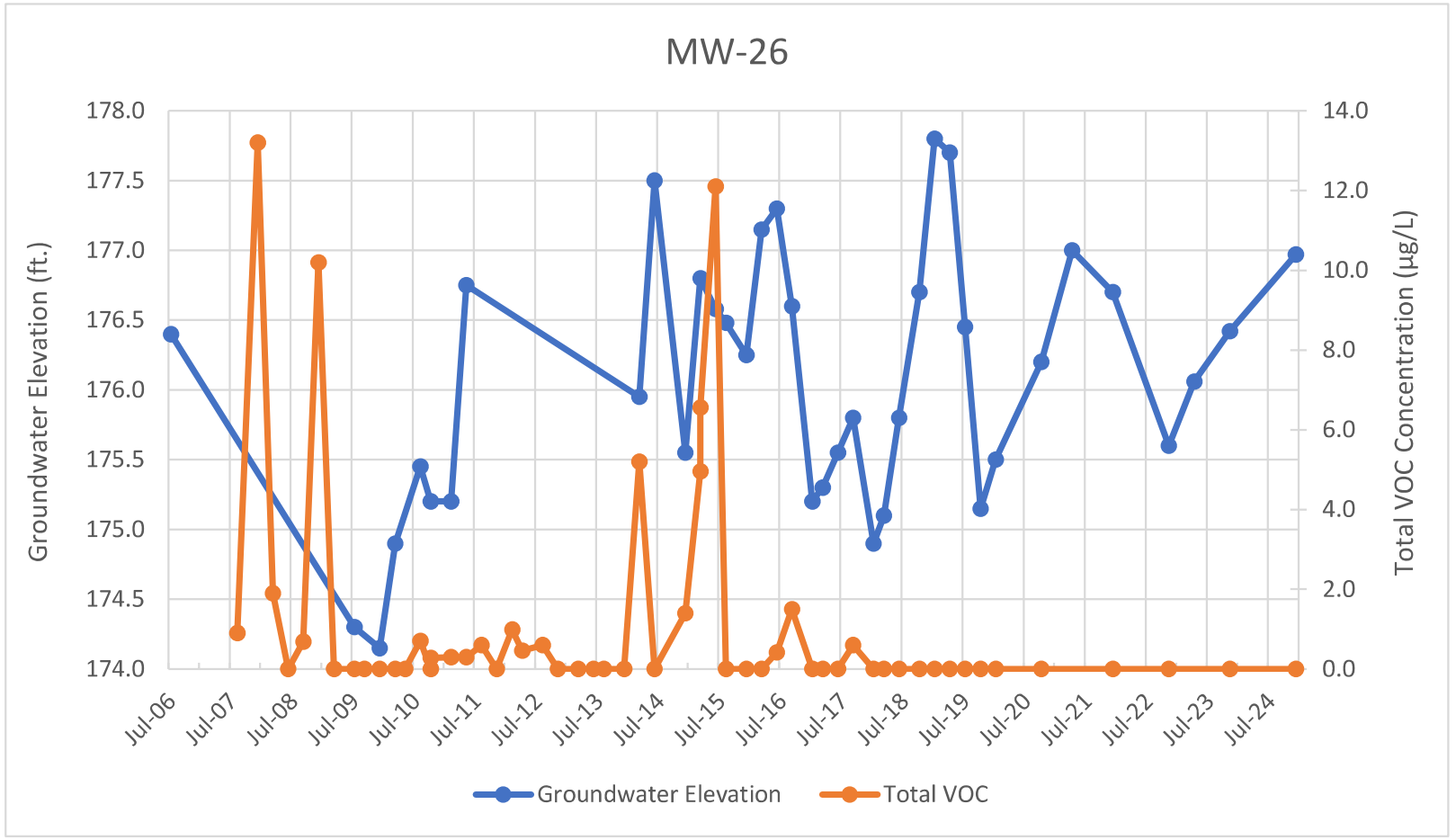

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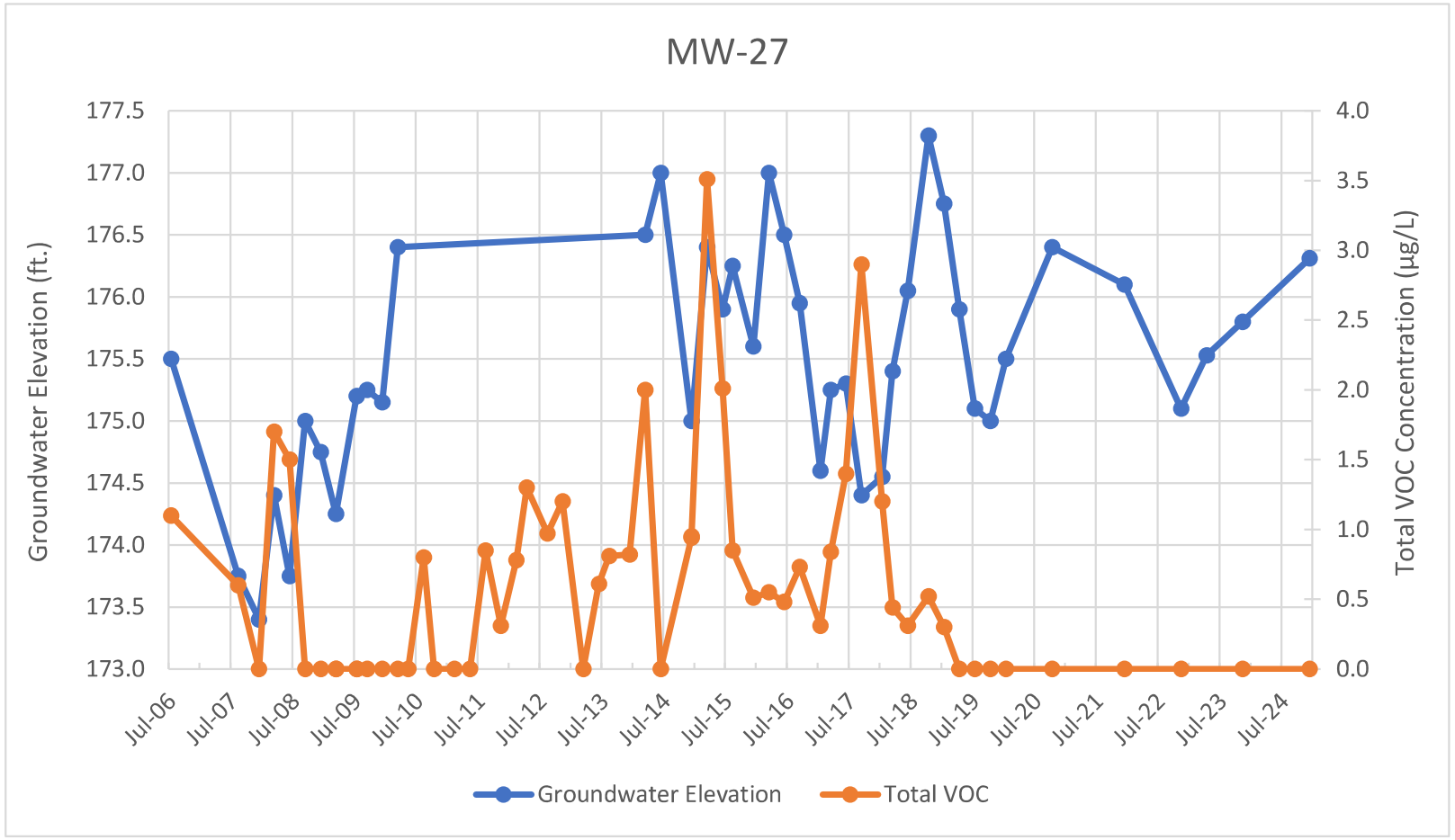

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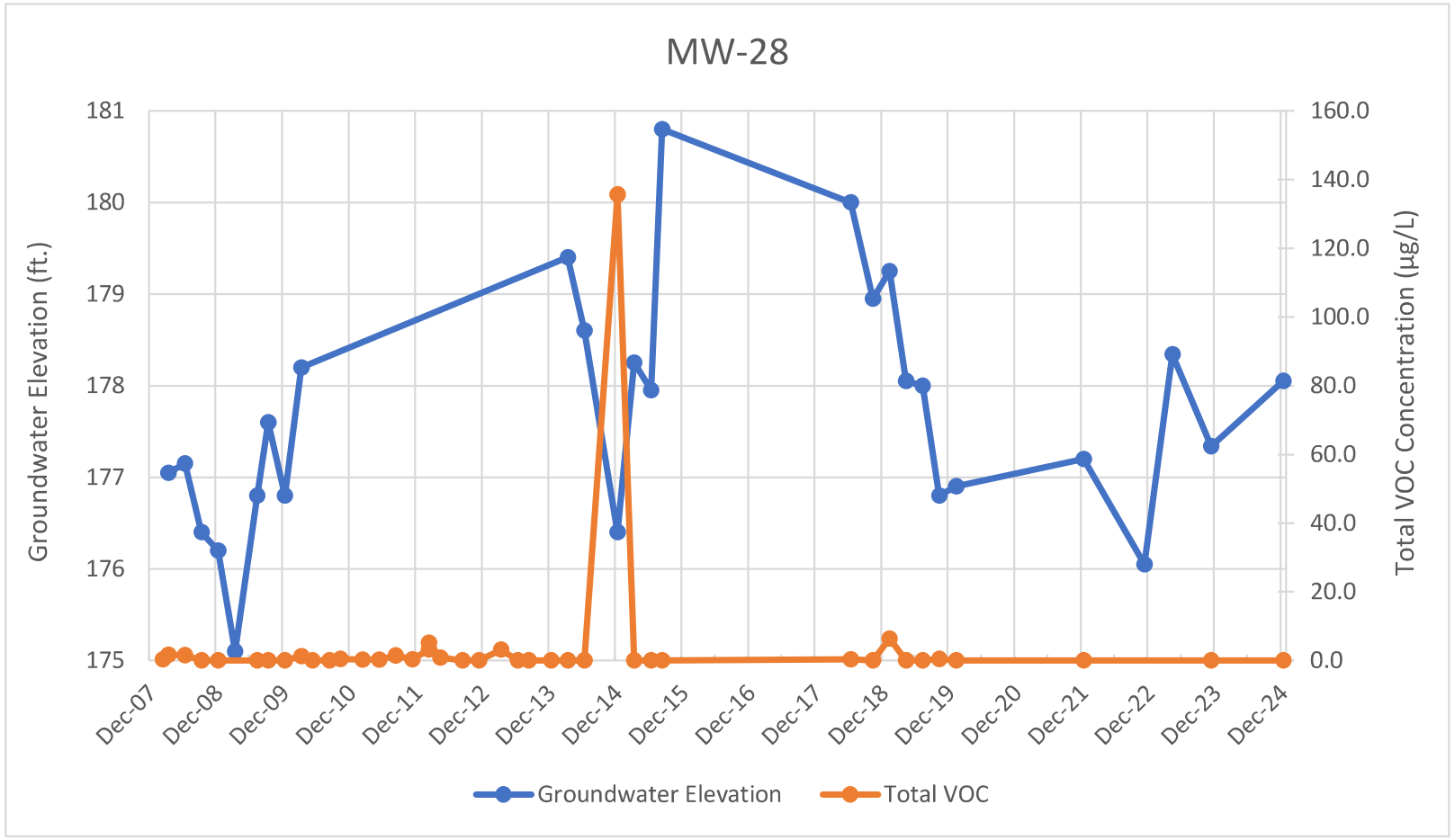

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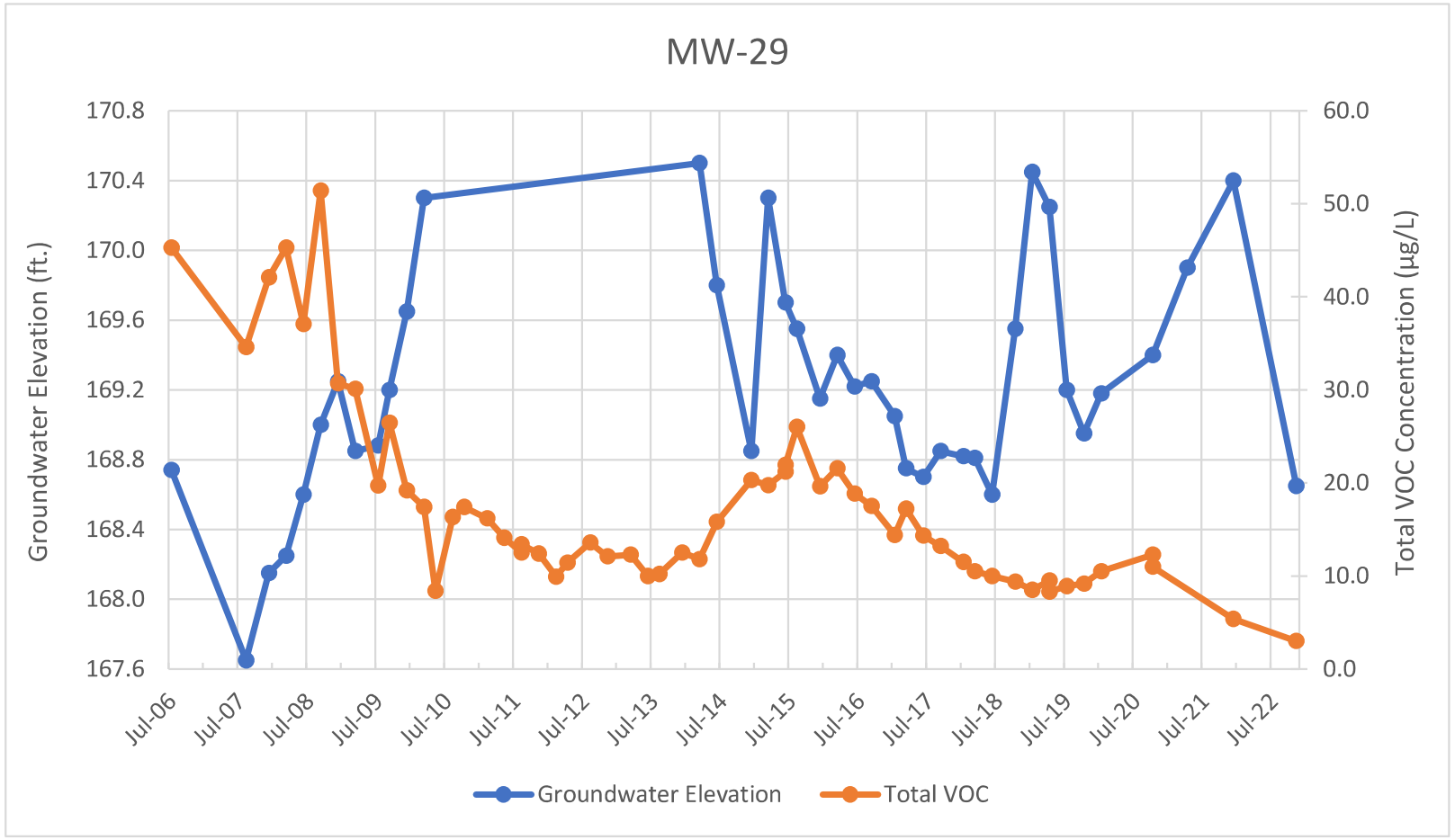

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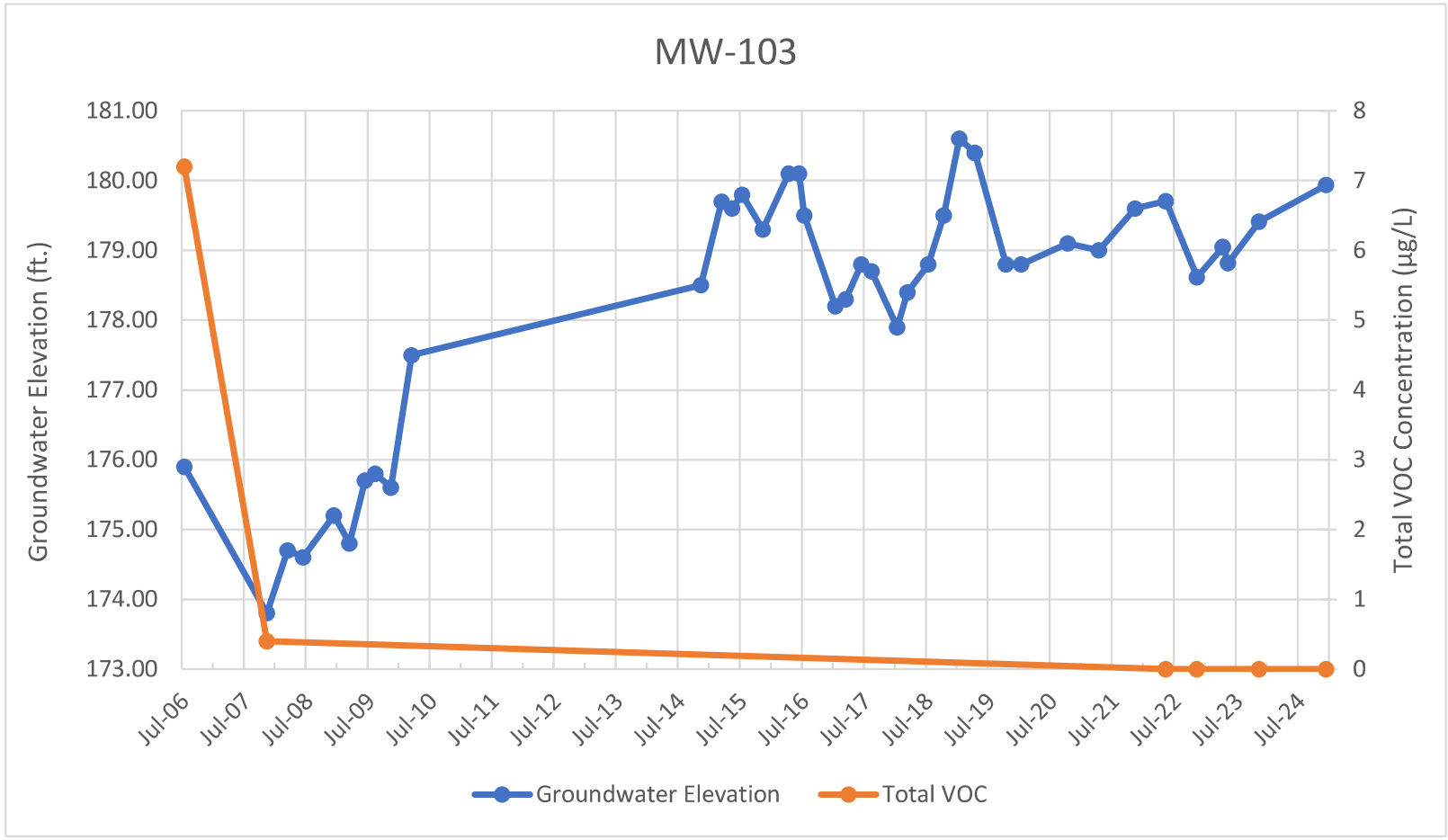

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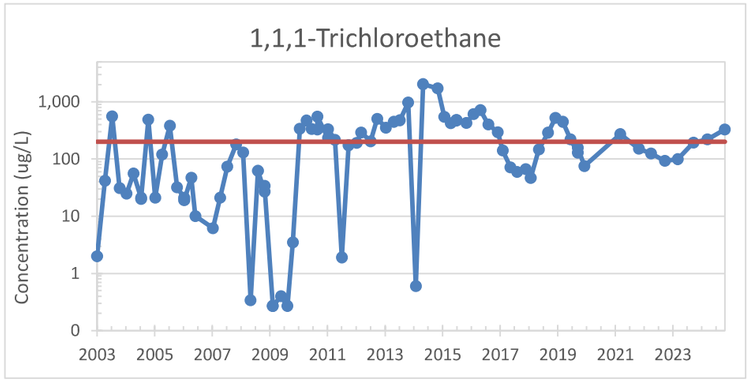
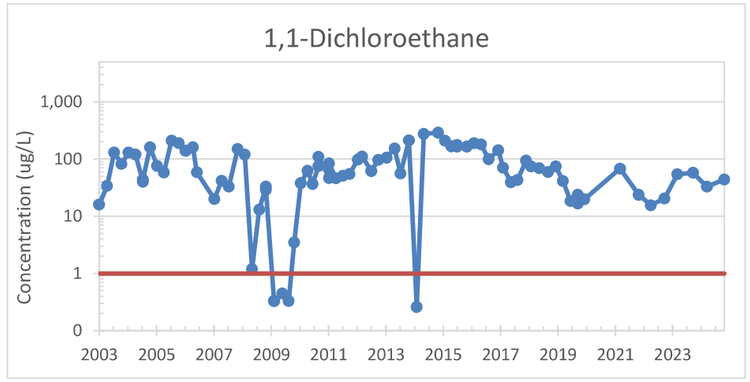
APPENDIX E

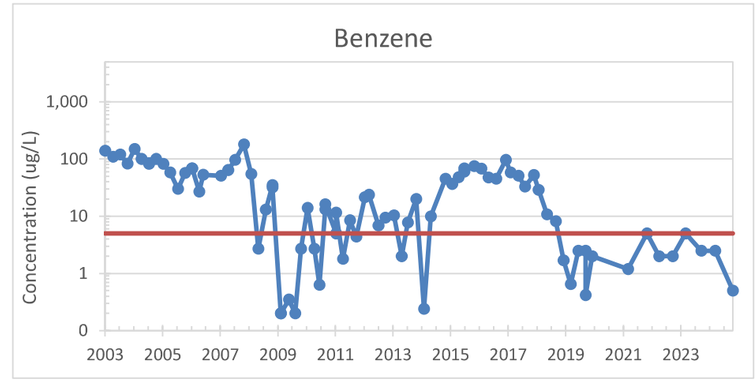
CONSTITUENTS OF CONCERN CONCENTRATIONS VS TIME GRAPHS WITH MCLS

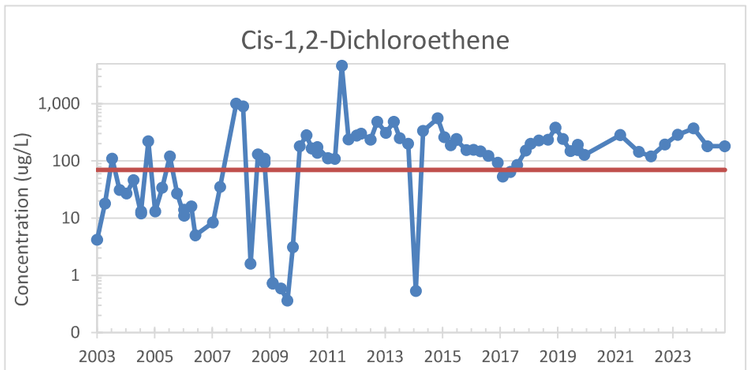
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

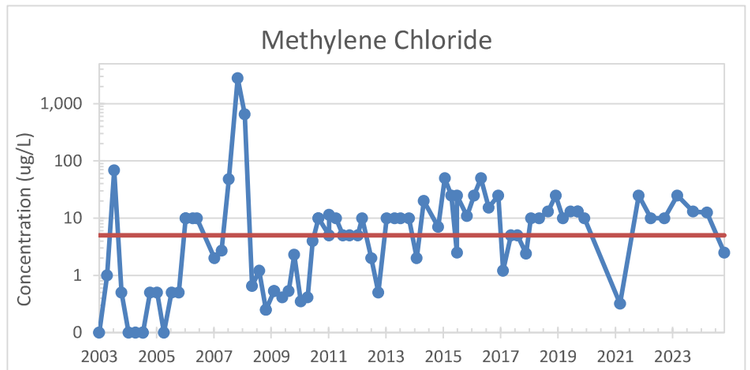
APPENDIX E-1 MW-1S

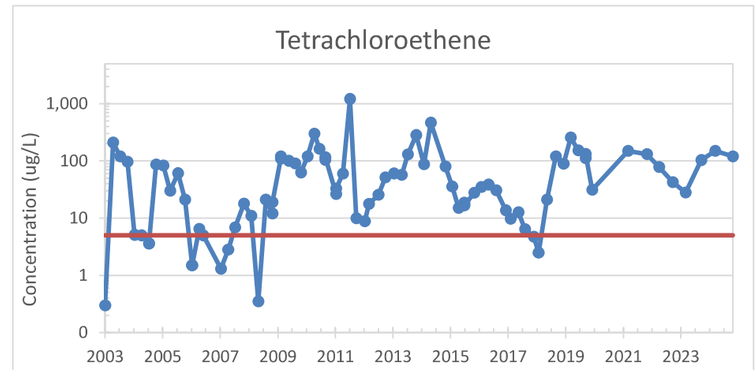


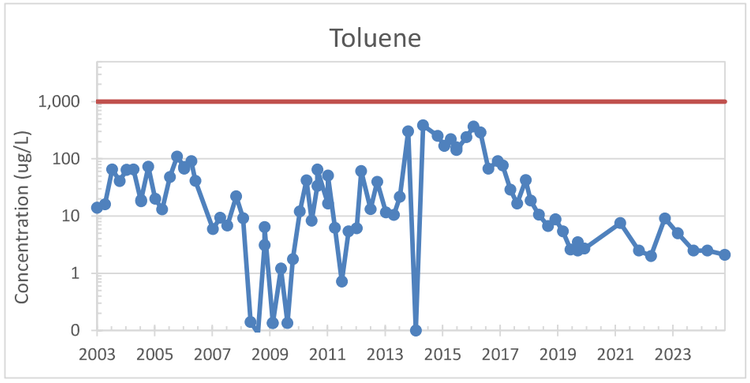


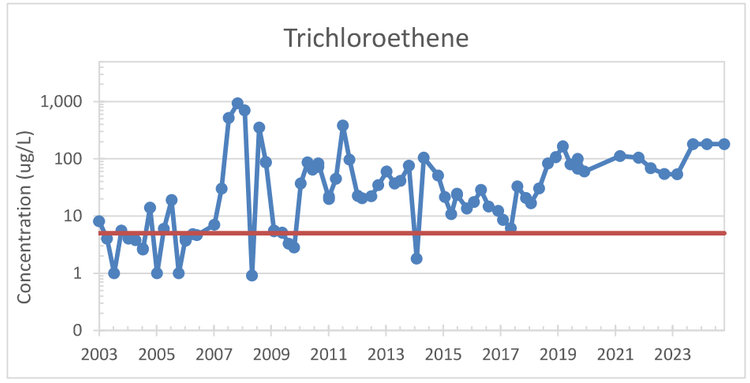


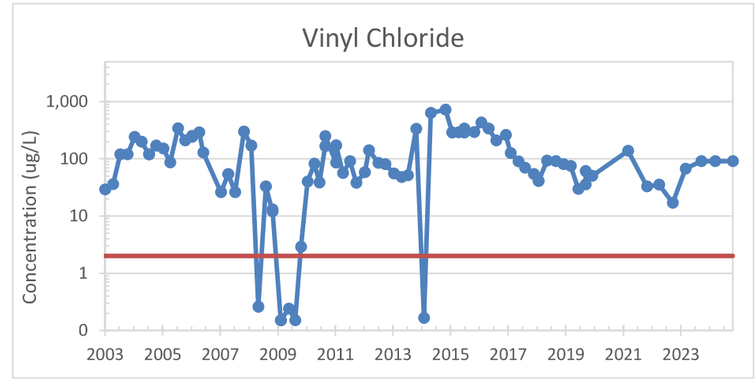










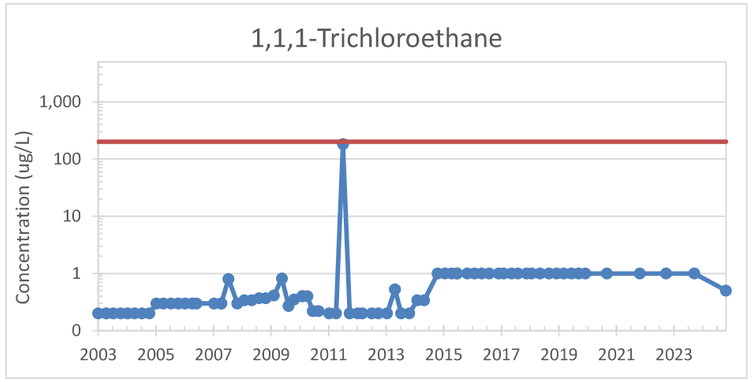


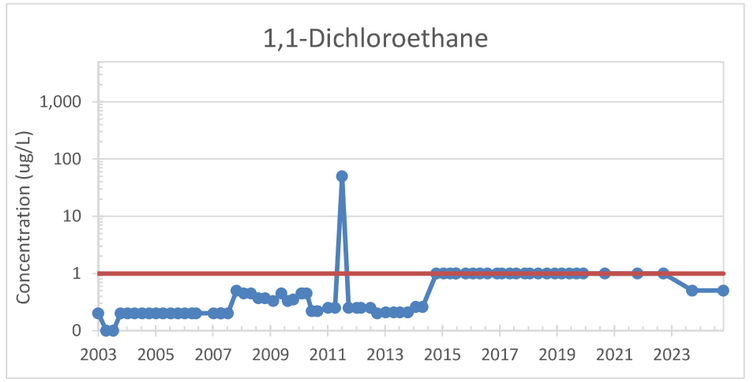
GWPS PLOTTED AS RED LINE

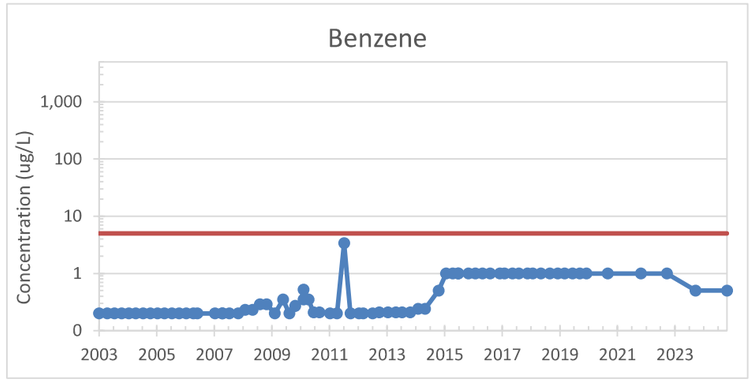
GeoSouth
Environmental Solutions

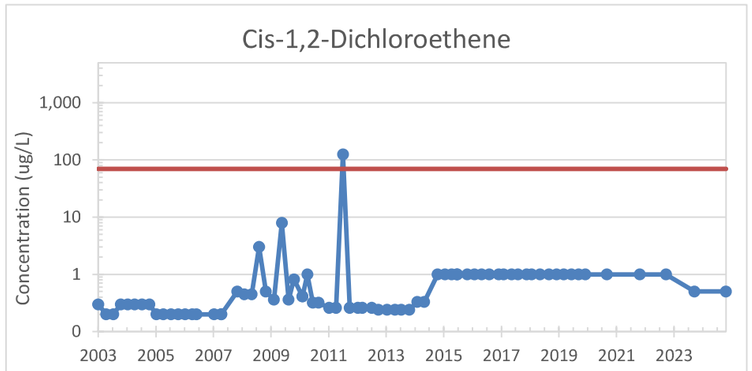
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

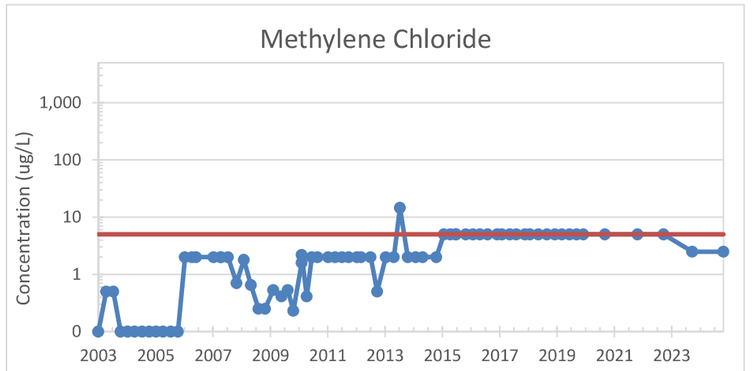
APPENDIX E-2 MW-2S

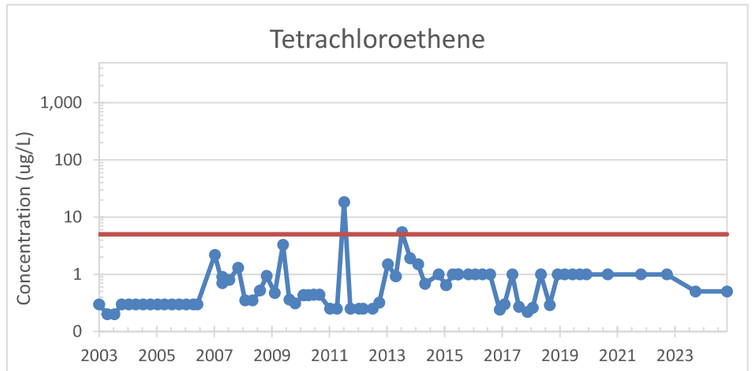


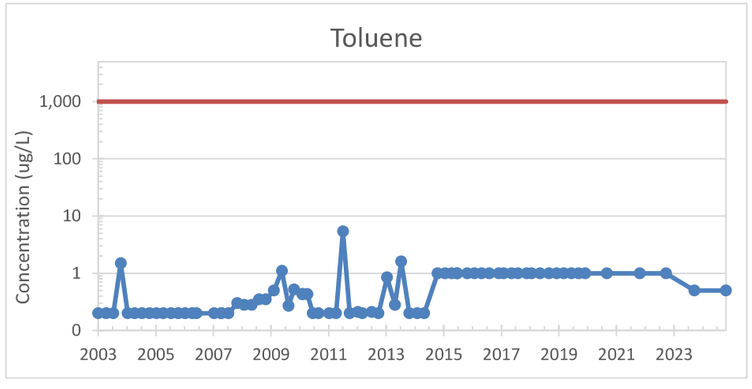


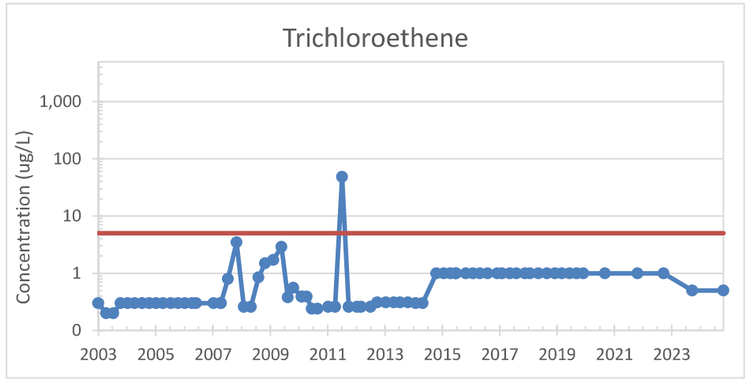


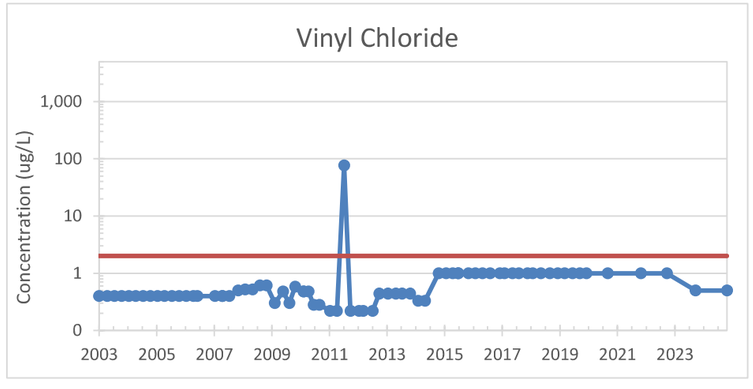








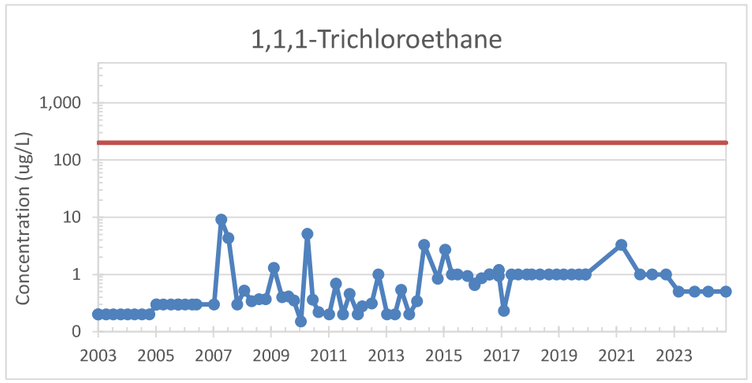


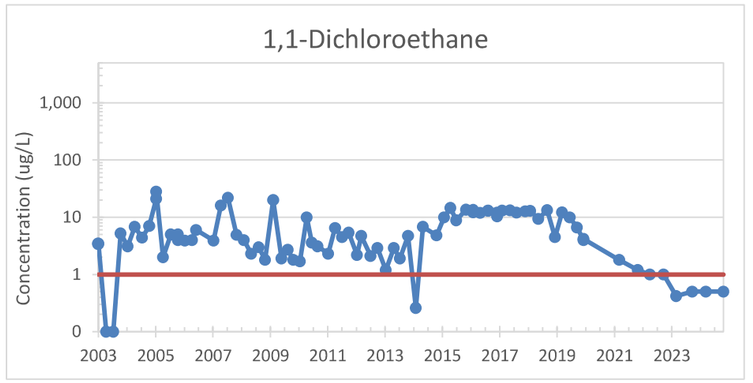


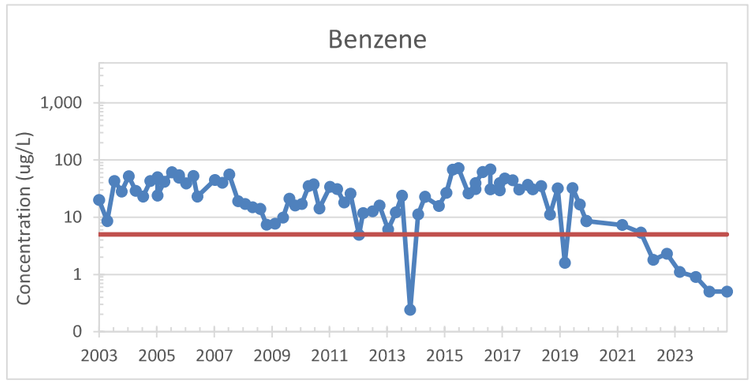
GWPS PLOTTED AS RED LINE

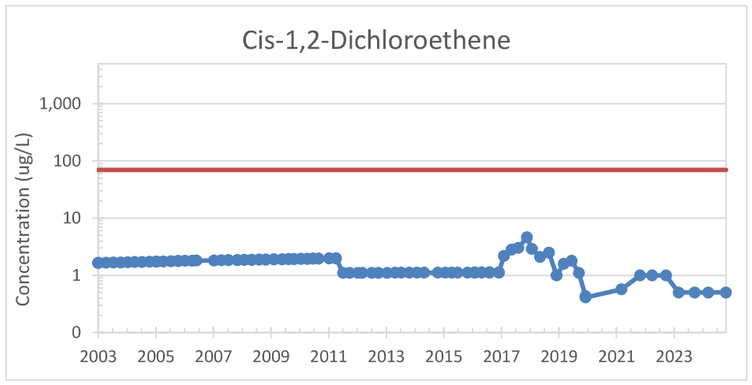
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

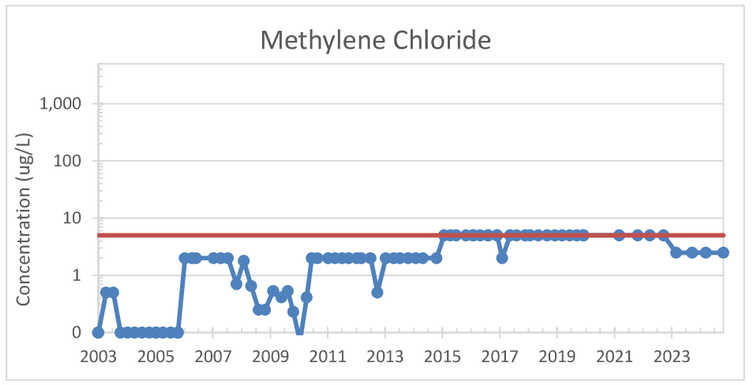
APPENDIX E-3 MW-4S

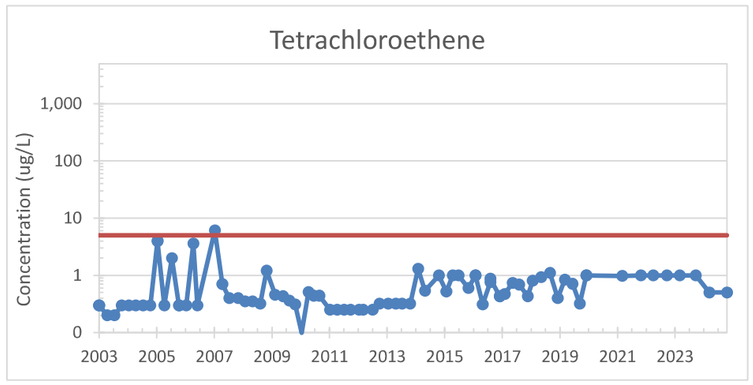


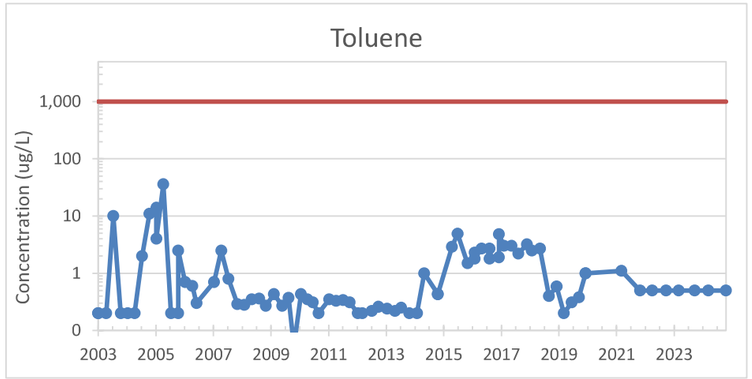


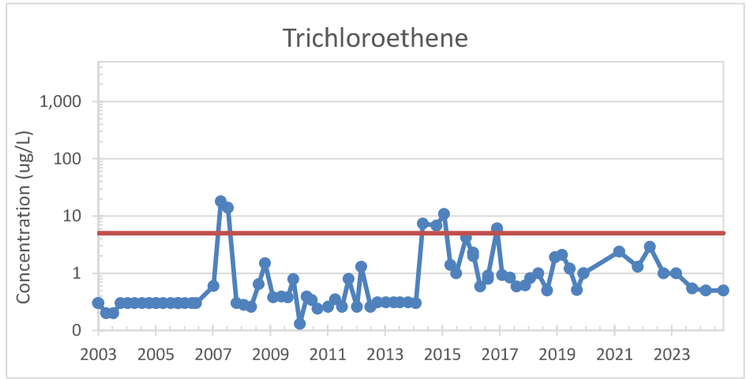


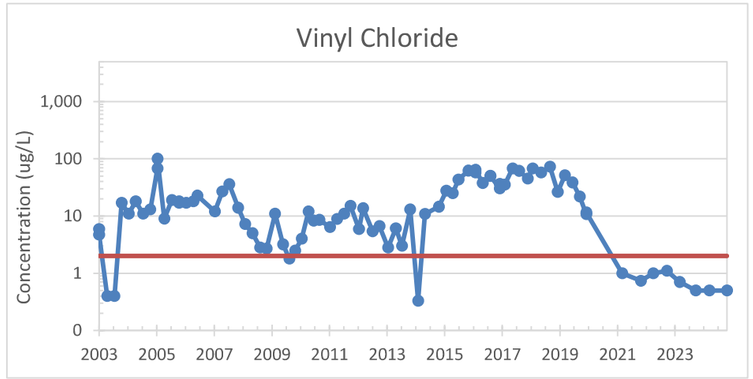








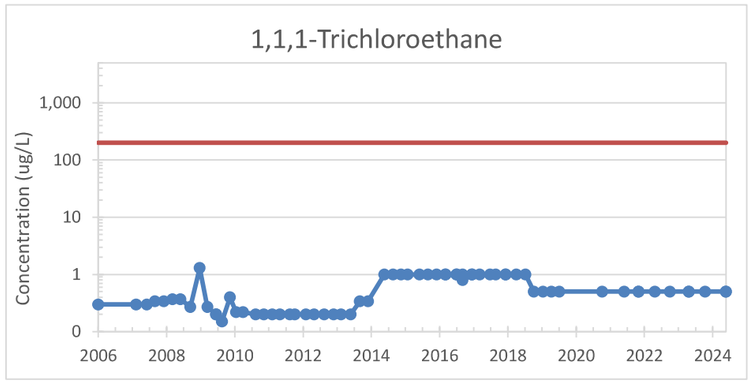


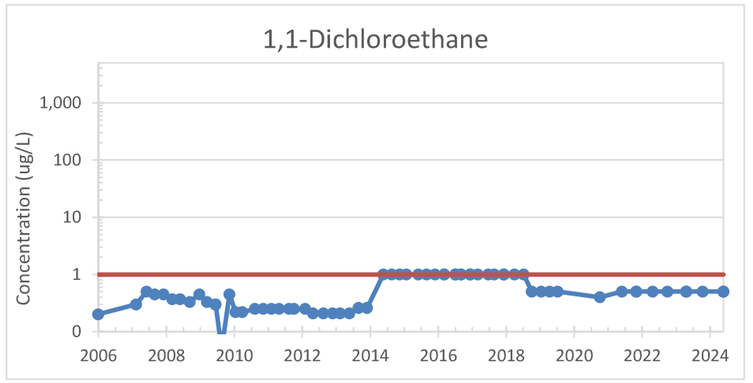


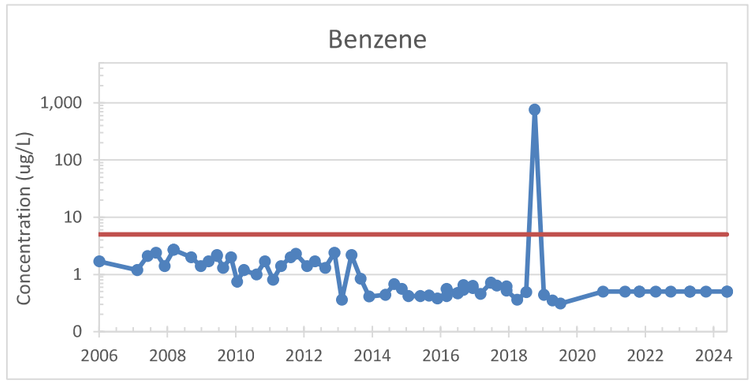
GWPS PLOTTED AS RED LINE

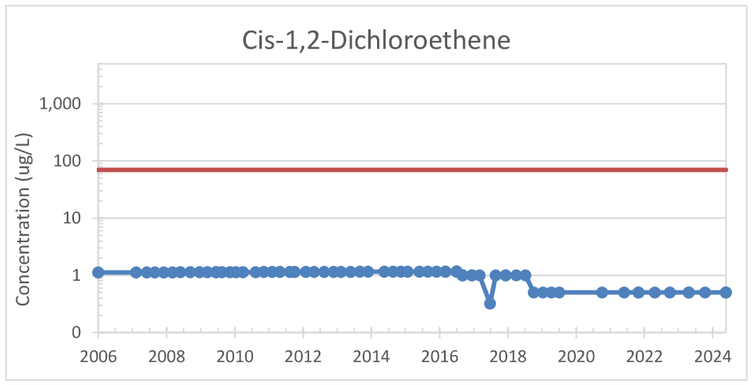
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

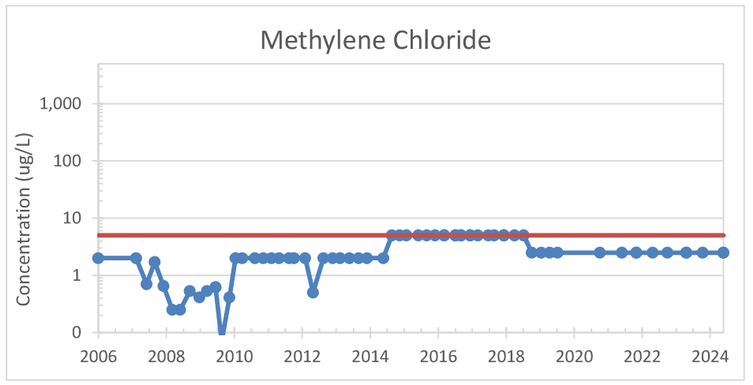
APPENDIX E-4 MW-5S

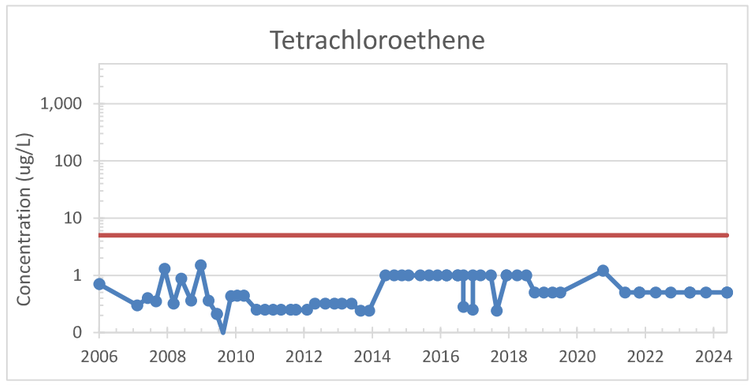


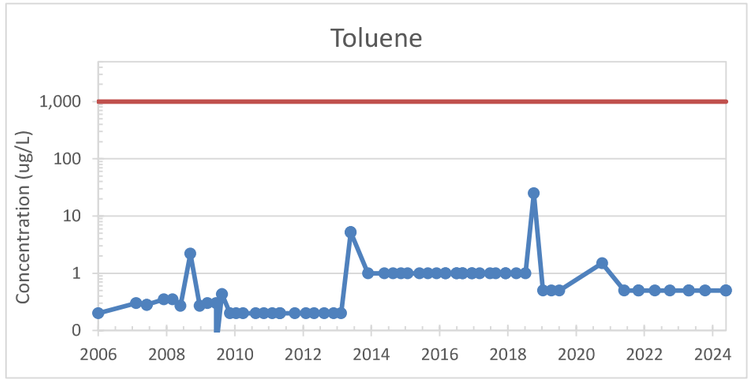


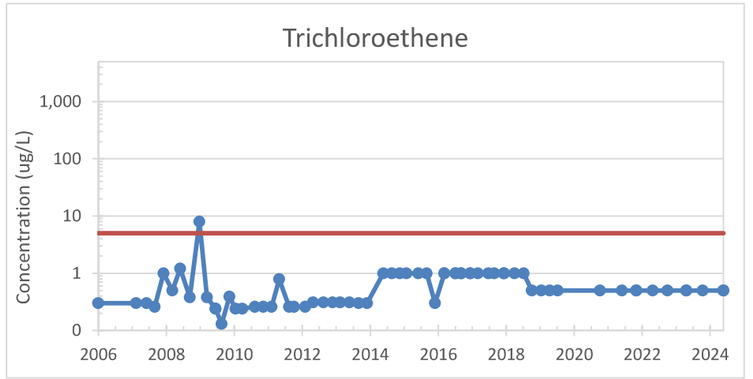


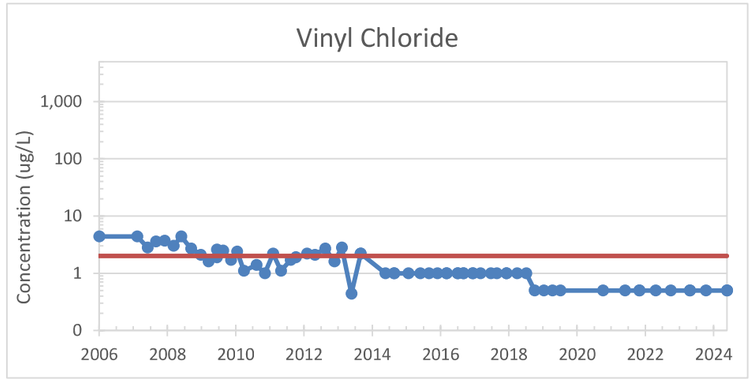










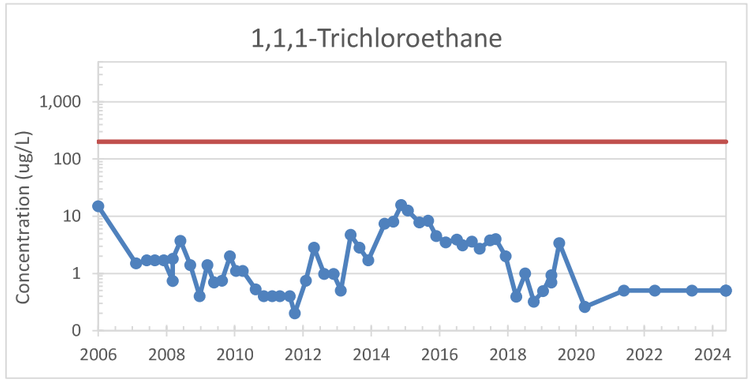


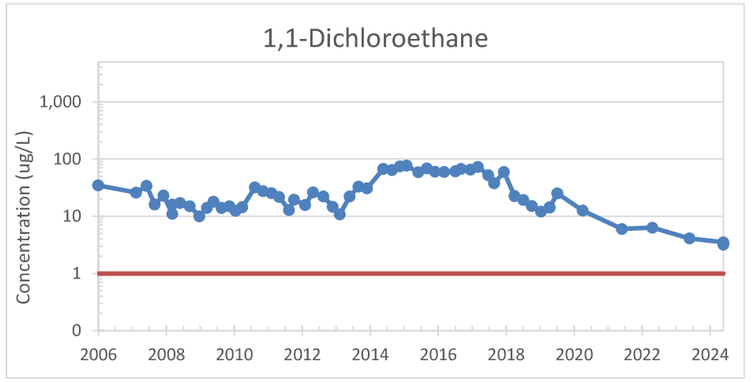
GWPS PLOTTED AS RED LINE

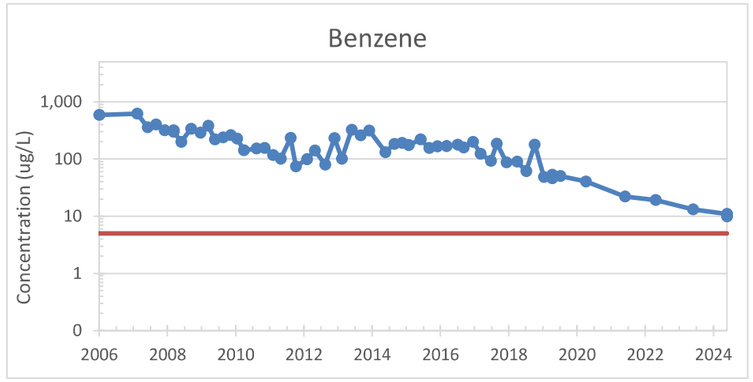
GeoSouth
Environmental Solutions

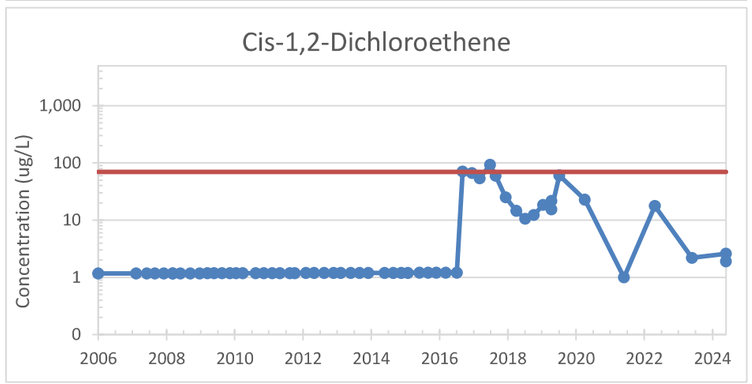
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

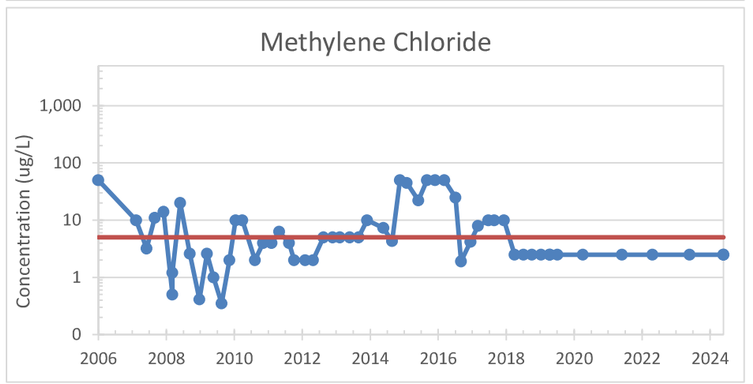
APPENDIX E-5 MW-6S

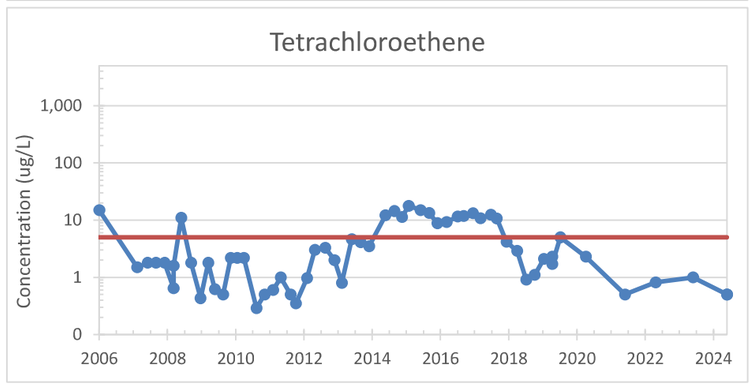


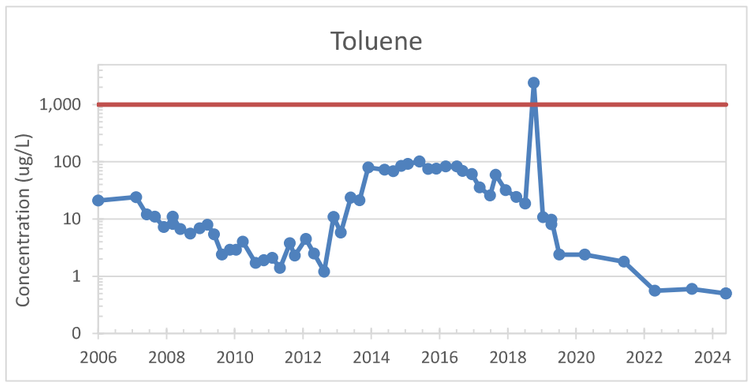


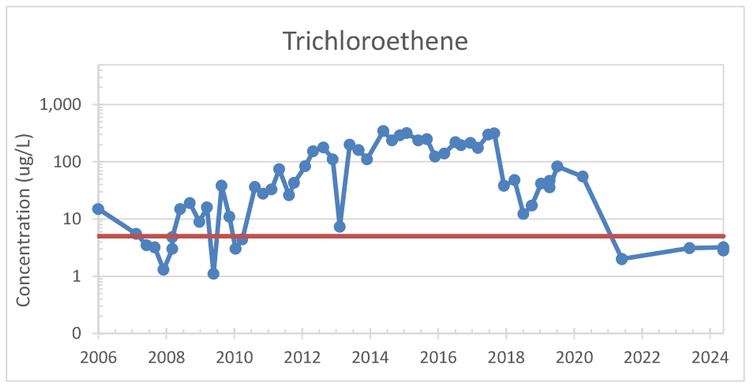


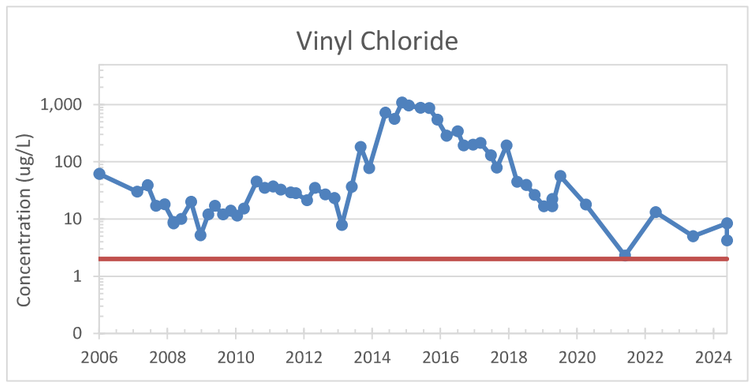








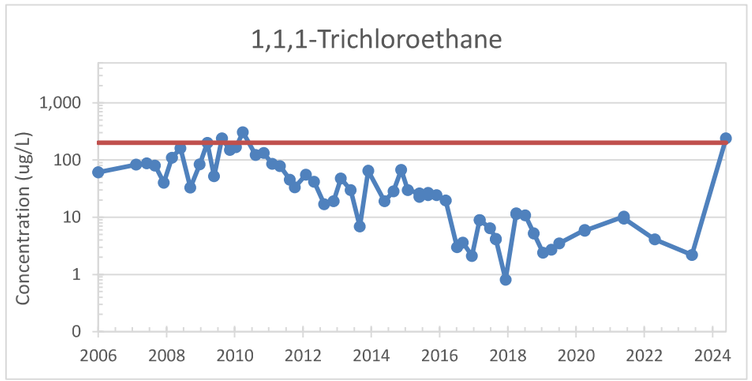


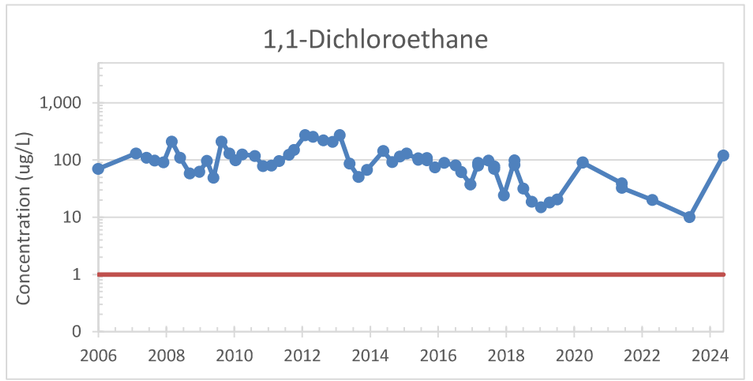


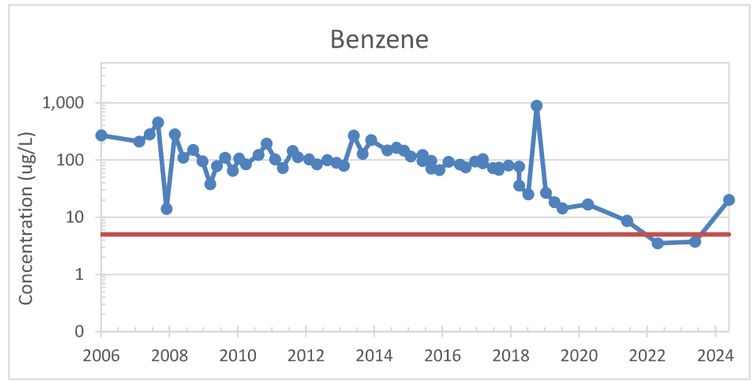
GWPS PLOTTED AS RED LINE

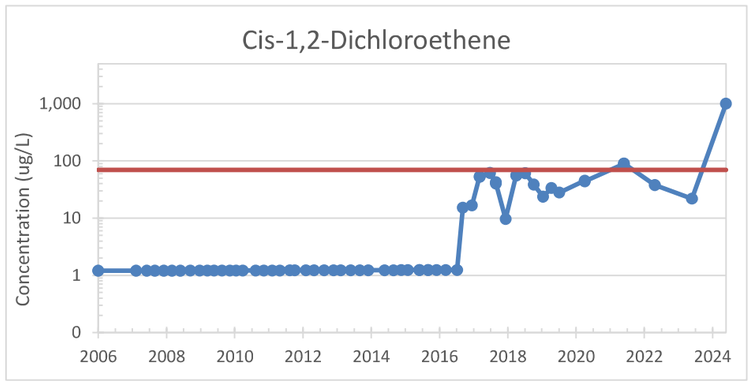
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

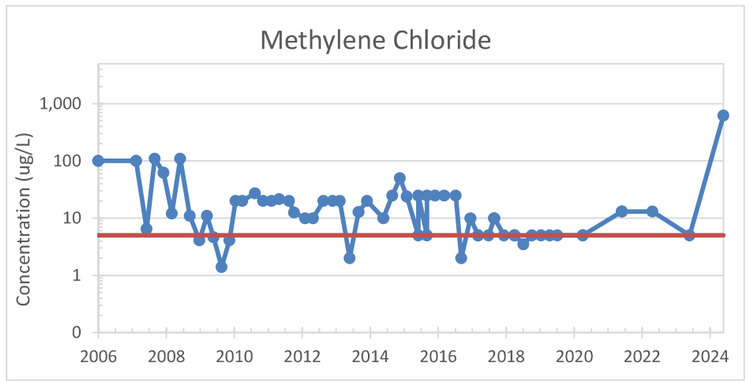
APPENDIX E-6 MW-7S

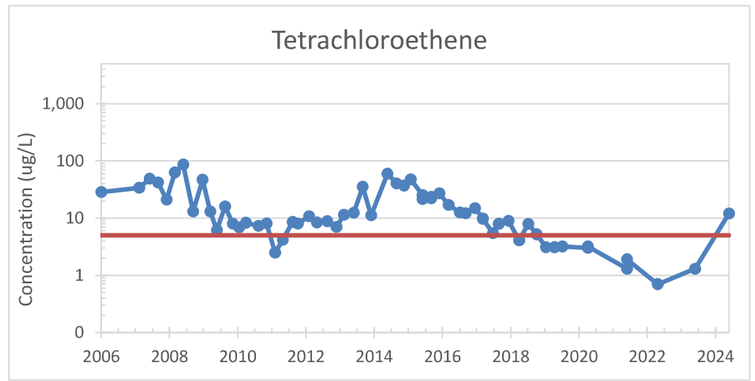


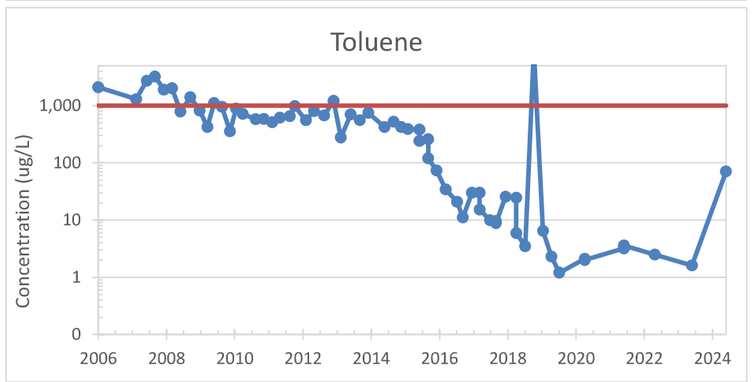


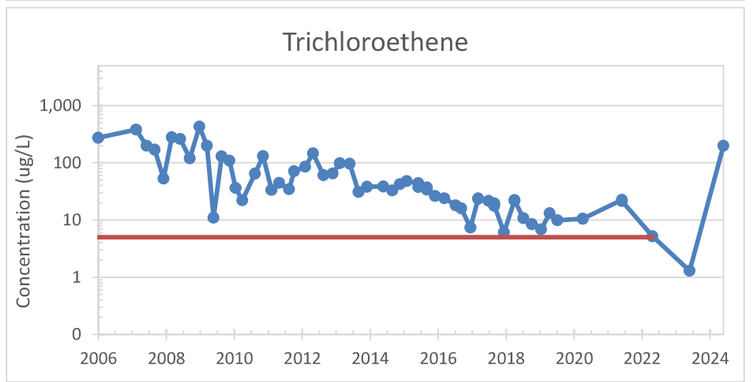


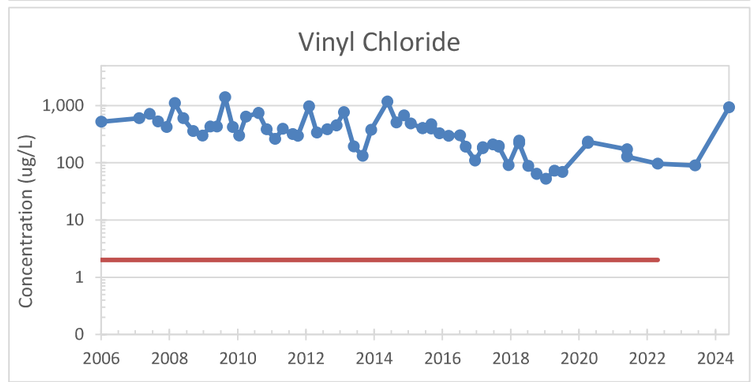








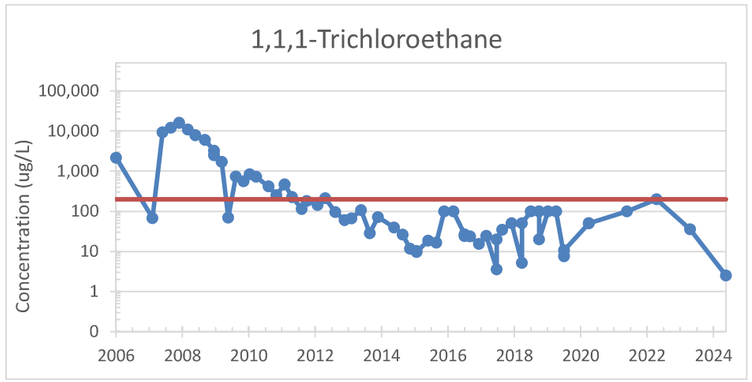


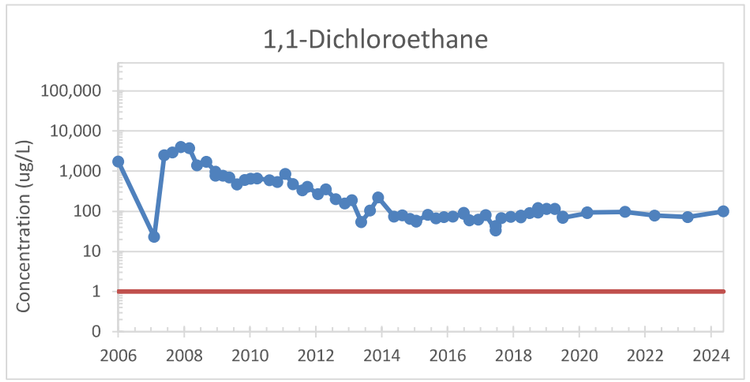


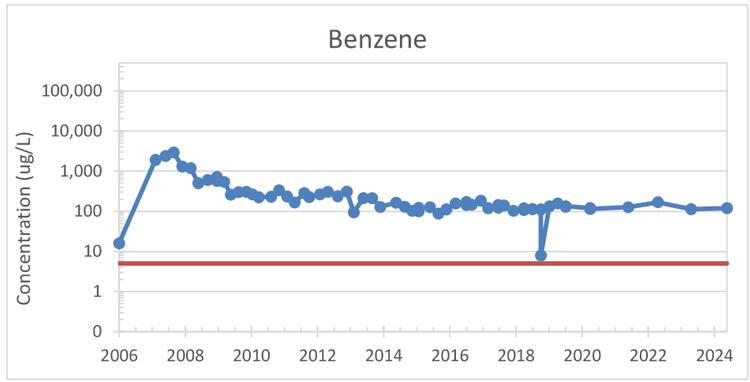
GWPS PLOTTED AS RED LINE

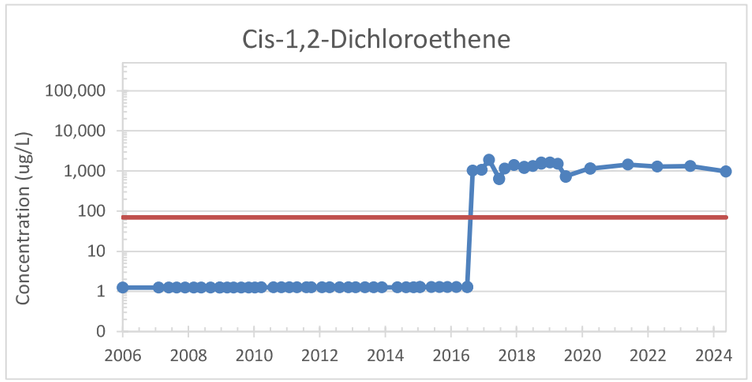
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

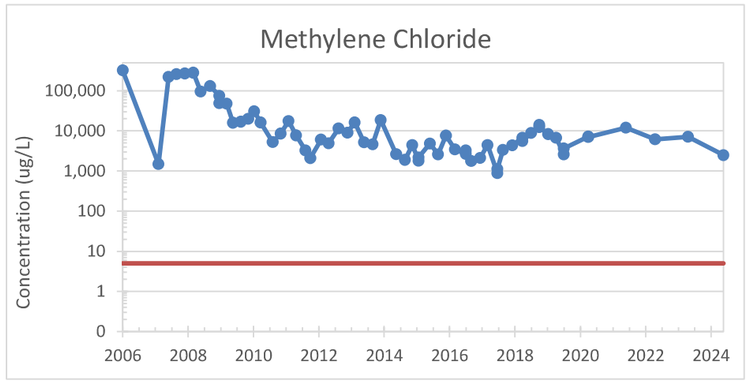
APPENDIX E-7 MW-8S

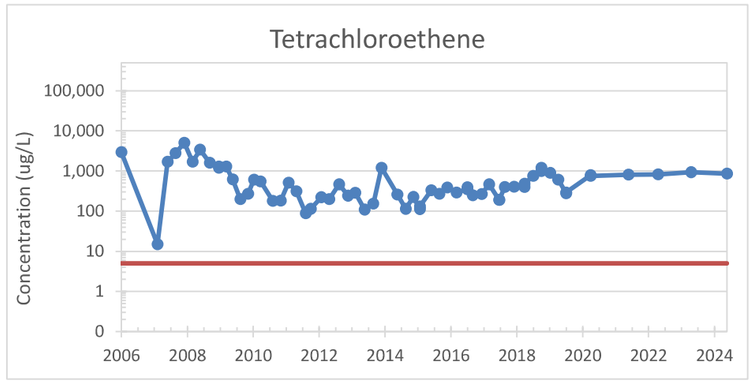


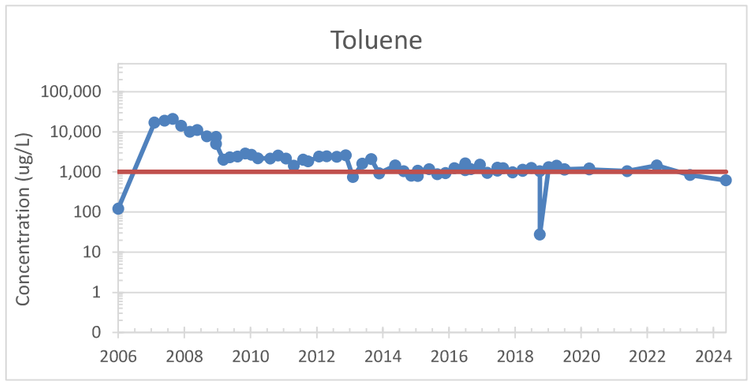


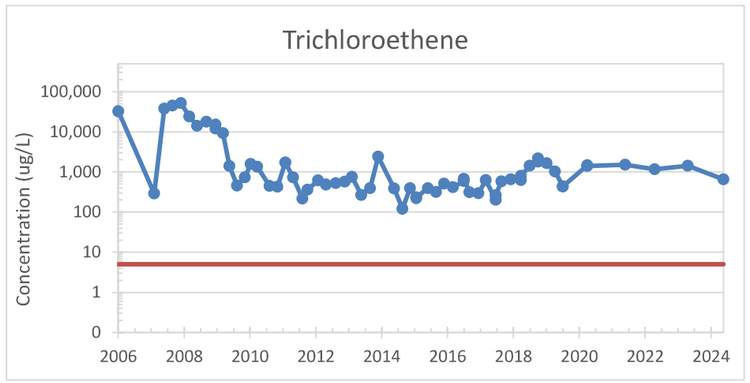


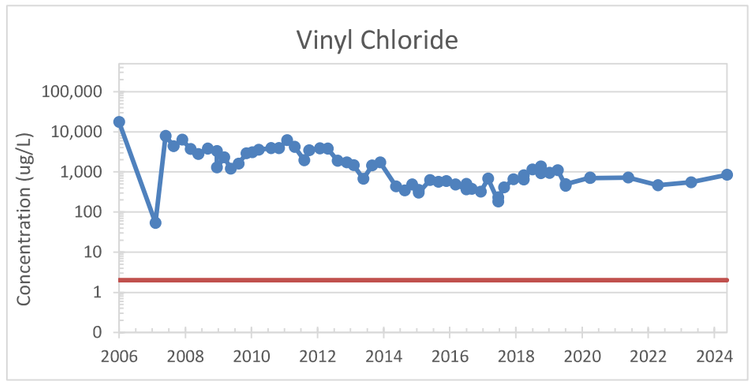








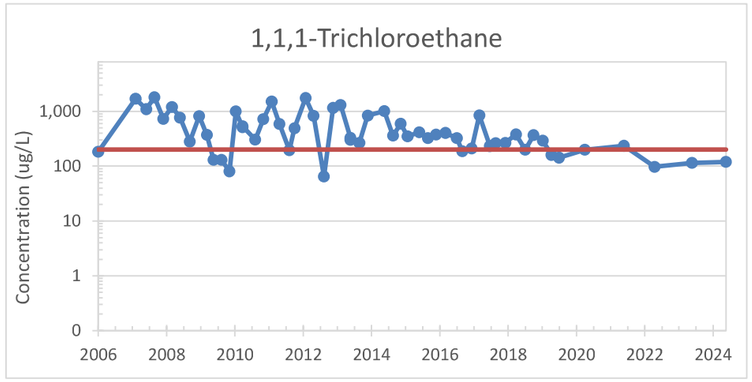


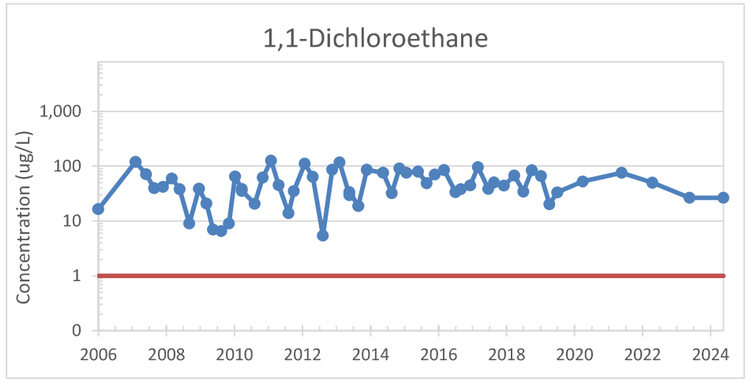


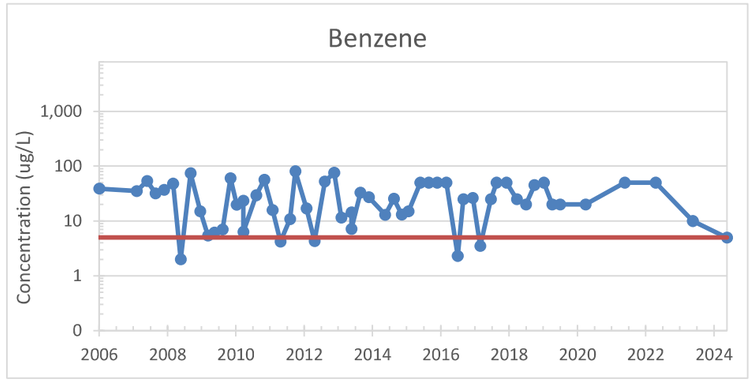
GWPS PLOTTED AS RED LINE

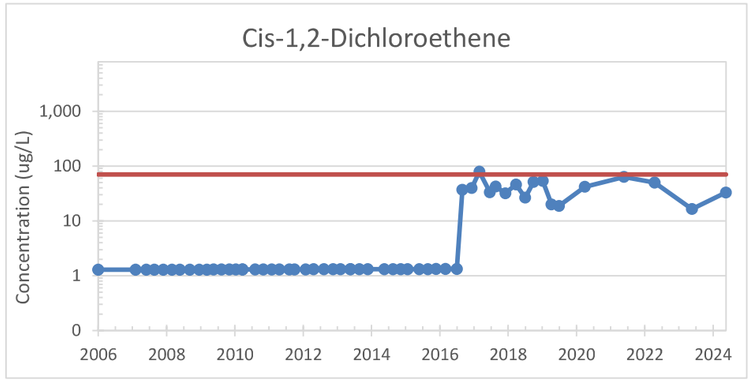
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

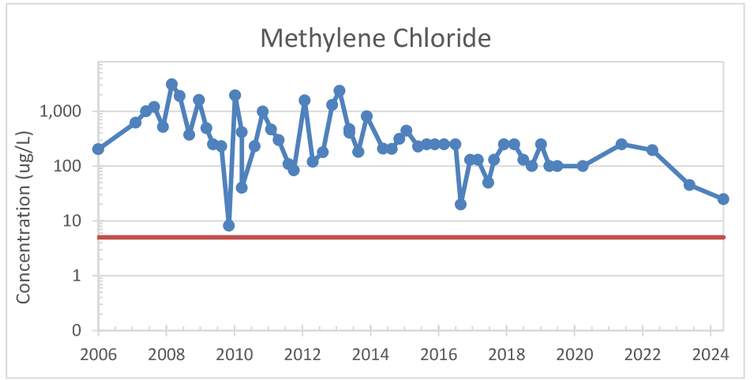
APPENDIX E-8 MW-9S

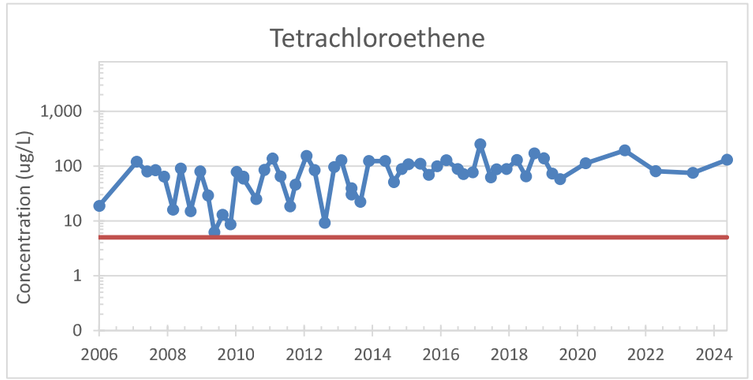


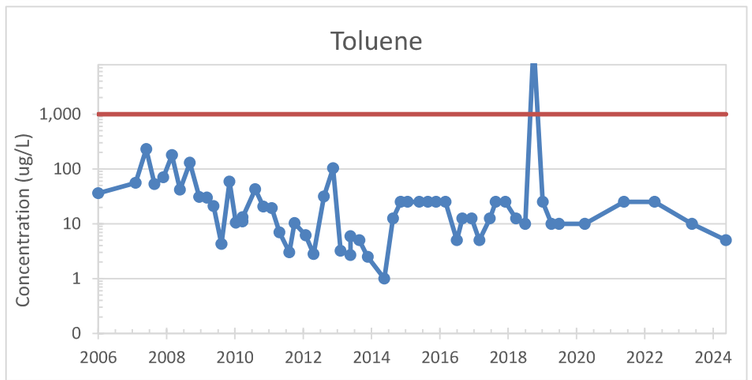


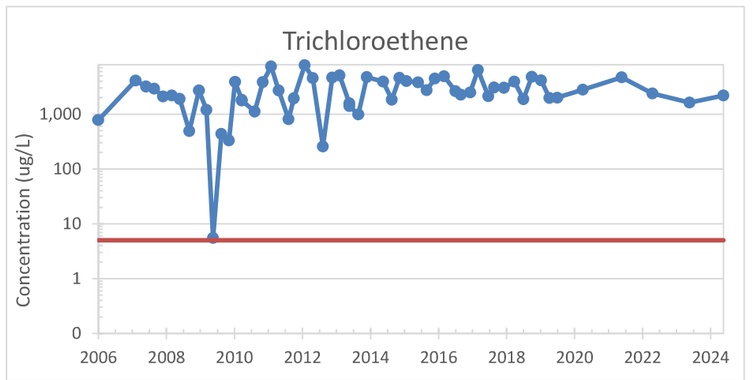


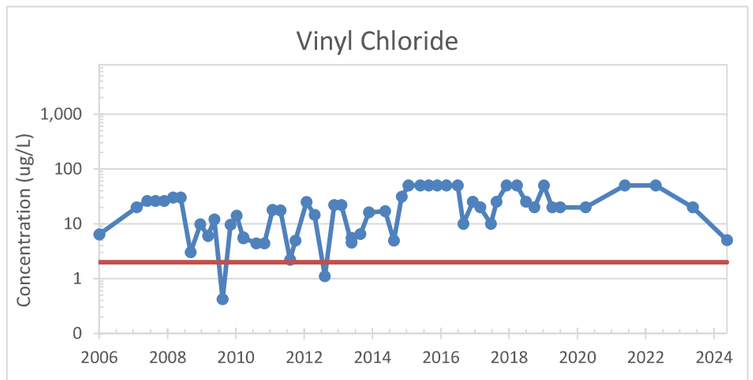










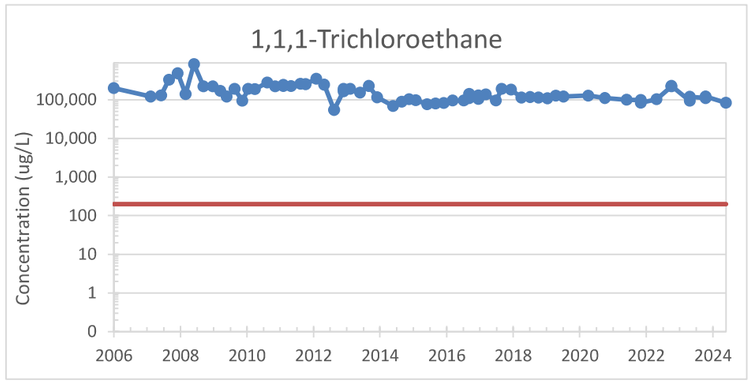


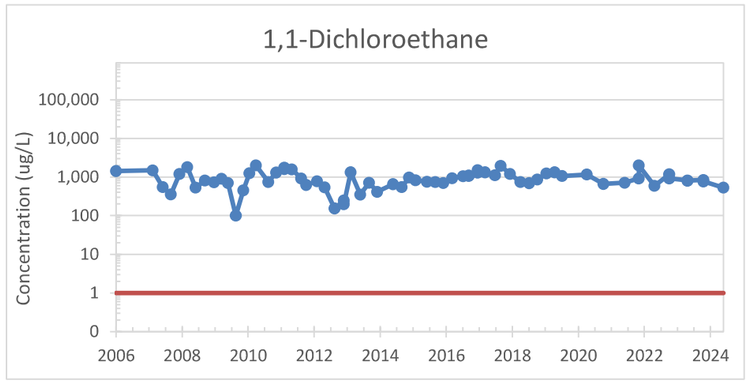
GWPS PLOTTED AS RED LINE

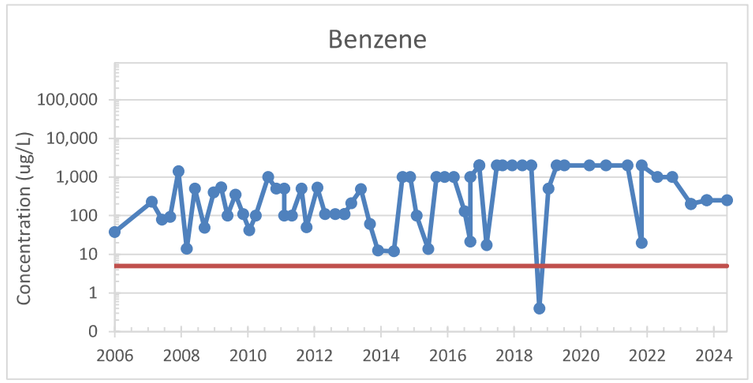
GeoSouth
Environmental Solutions

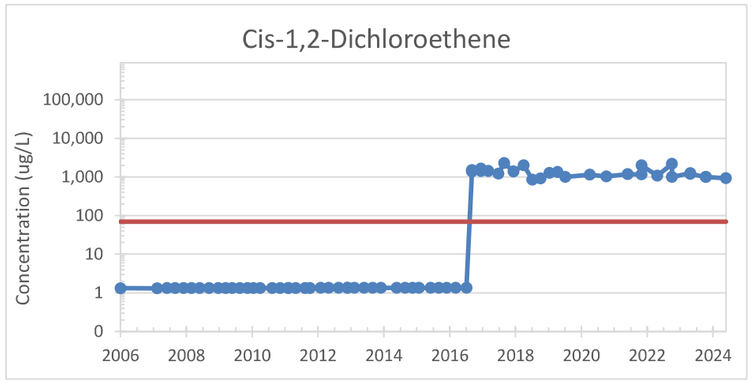
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

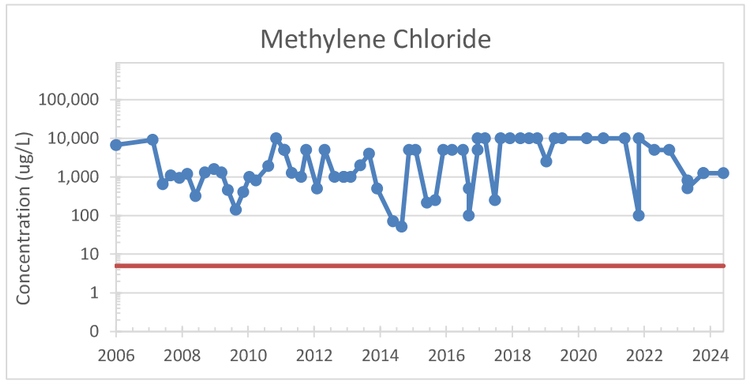
APPENDIX E-9 MW-10S

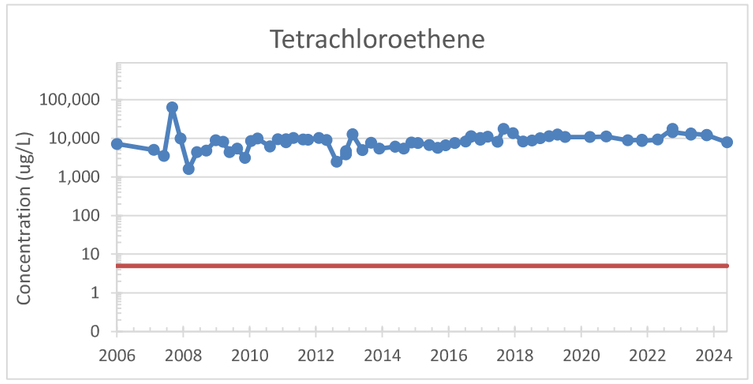


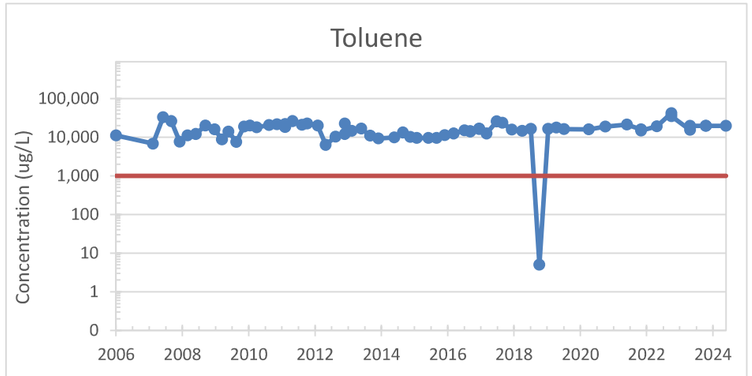


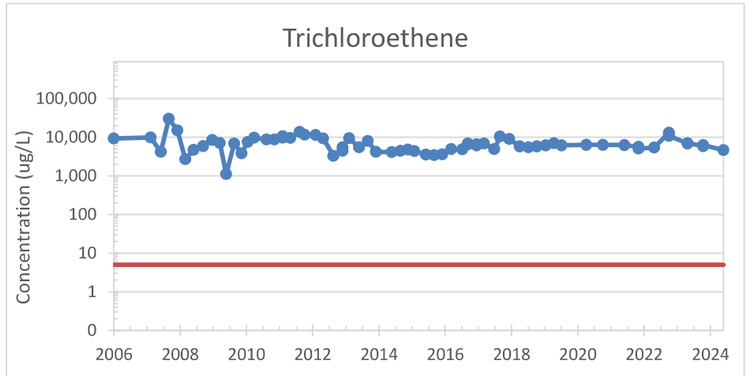


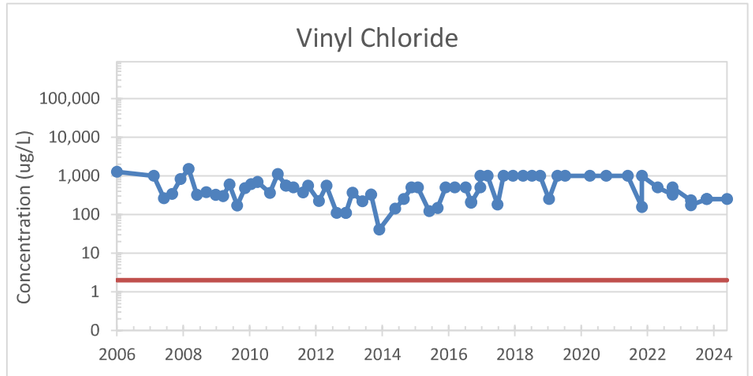










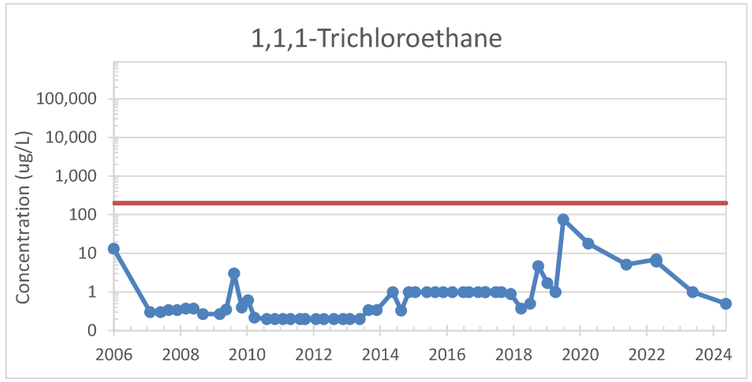


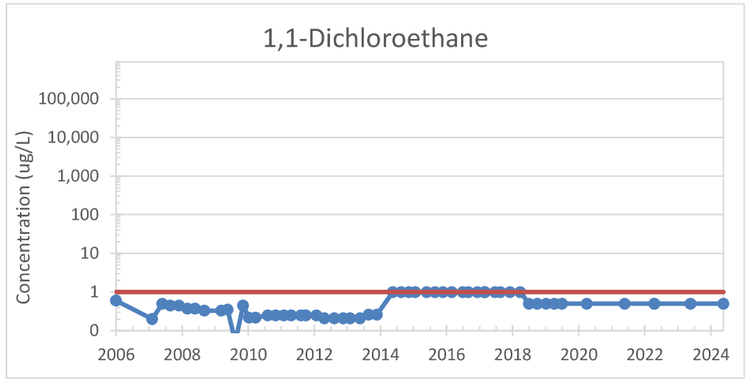
GWPS PLOTTED AS RED LINE

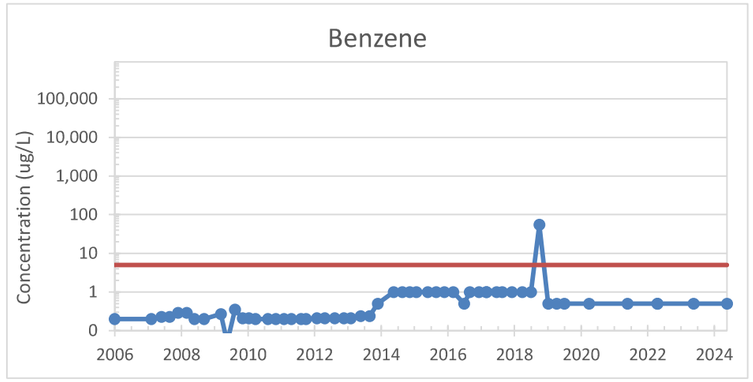
GeoSouth
Environmental Solutions

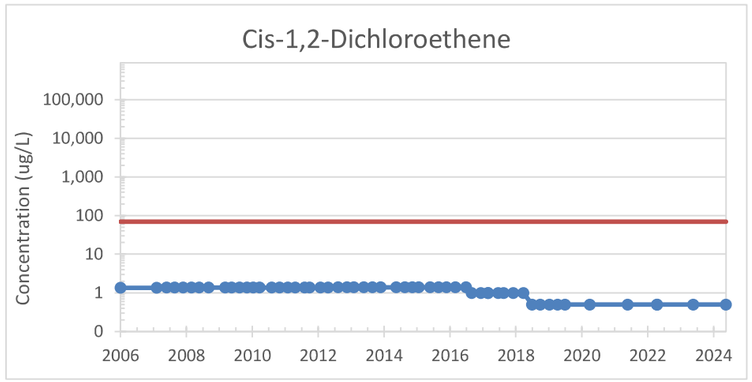
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

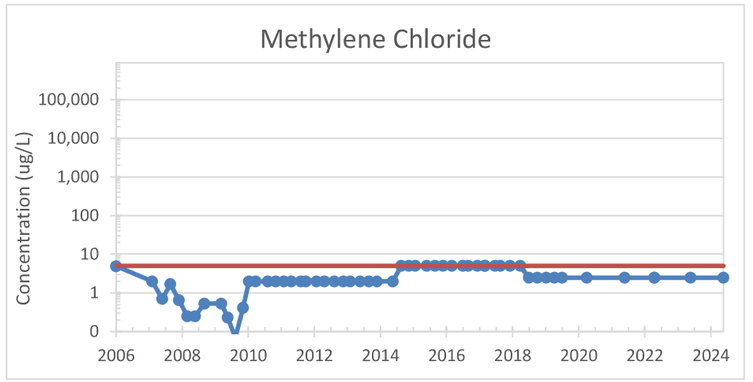
APPENDIX E-10 MW-11S

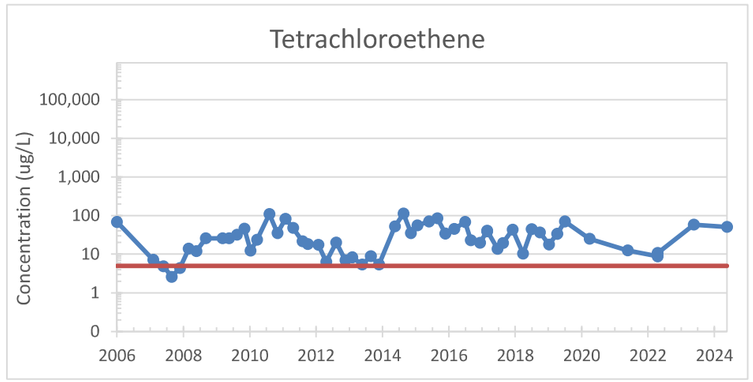


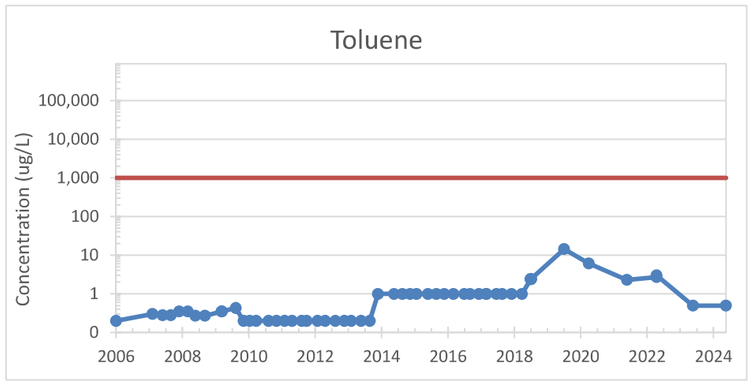


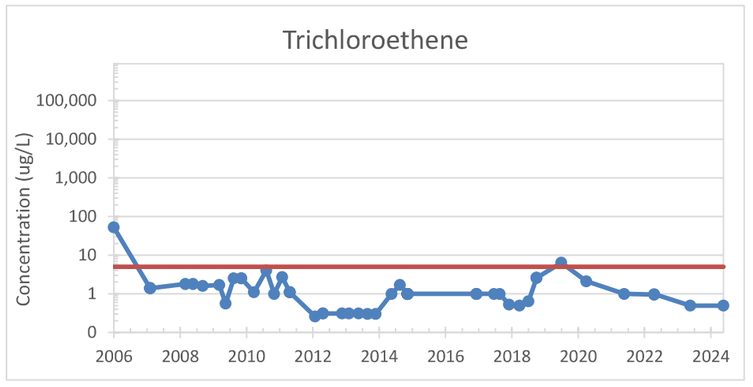


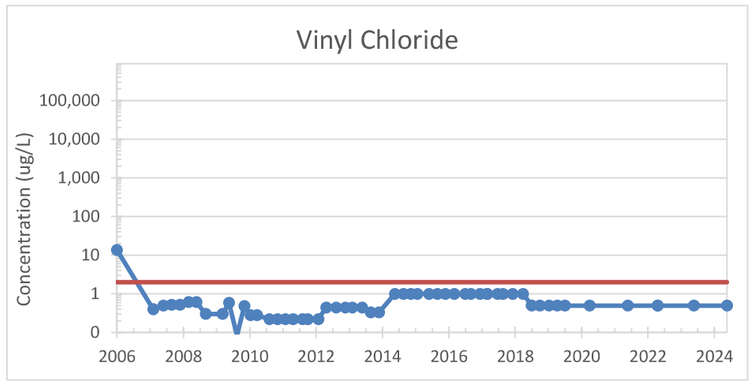








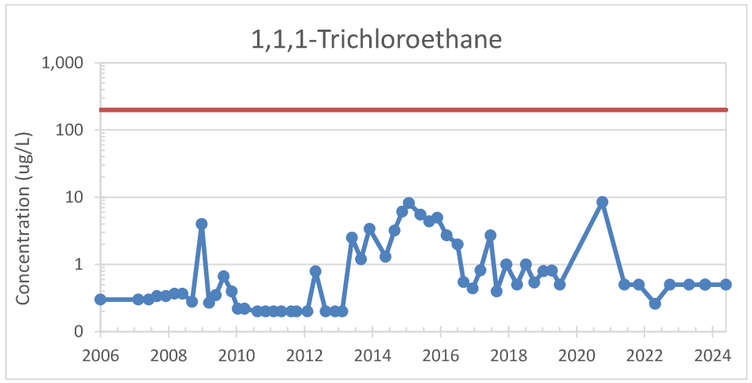


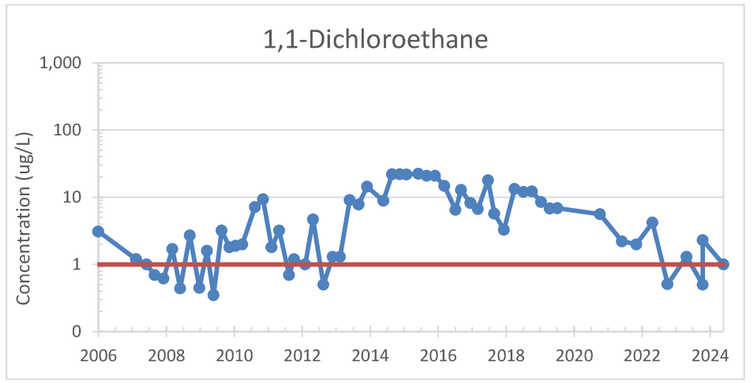


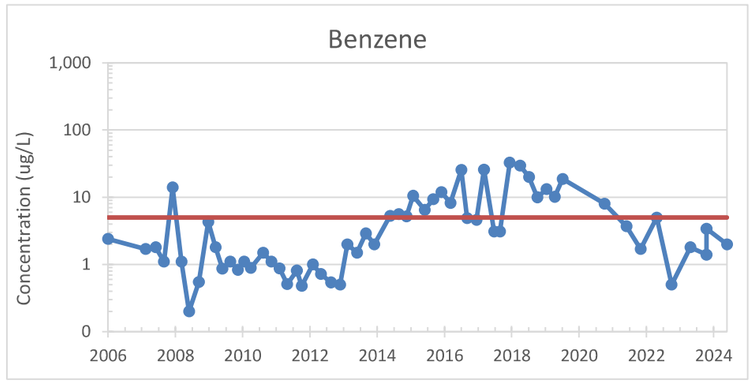
GWPS PLOTTED AS RED LINE

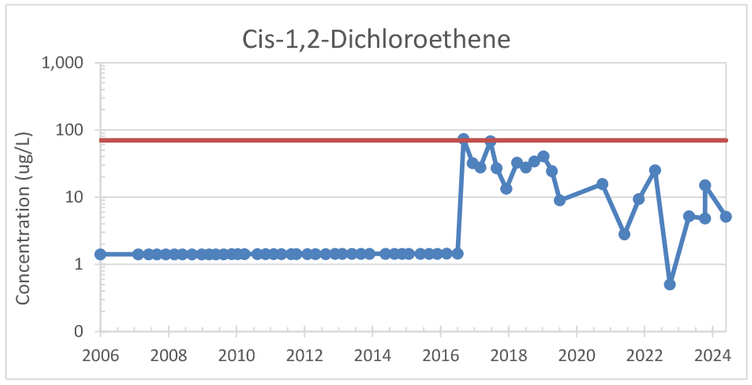
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

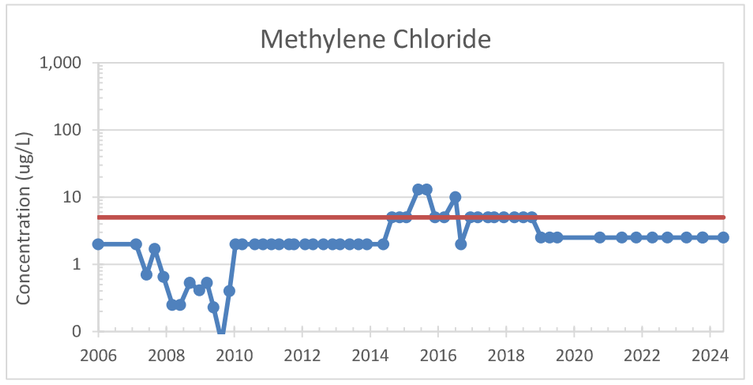
APPENDIX E-11 MW-12S

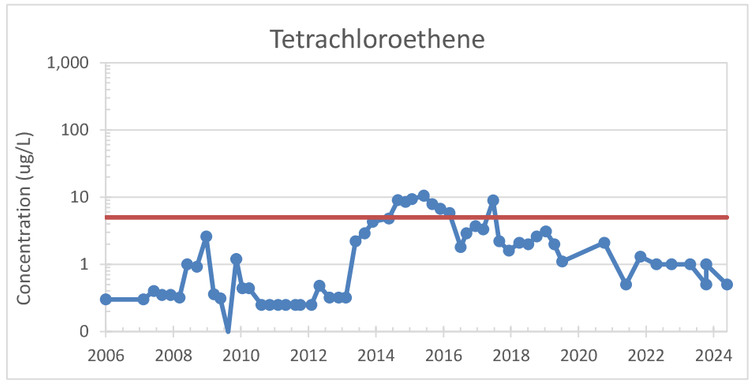


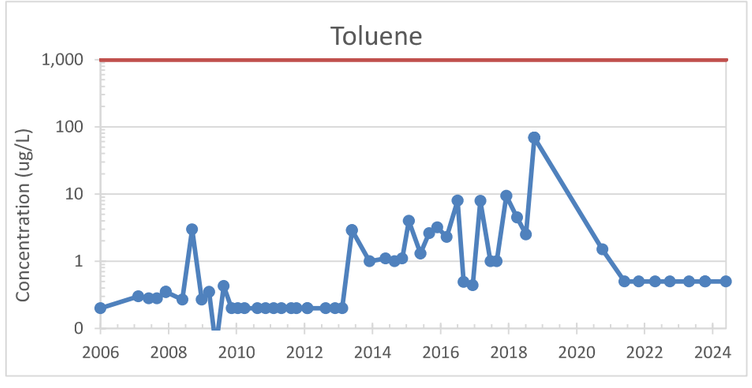


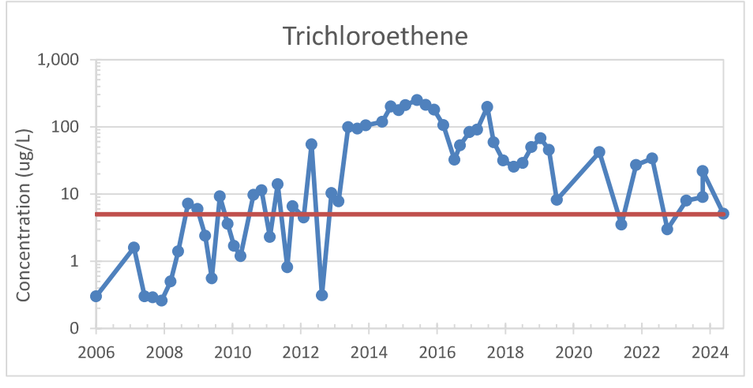


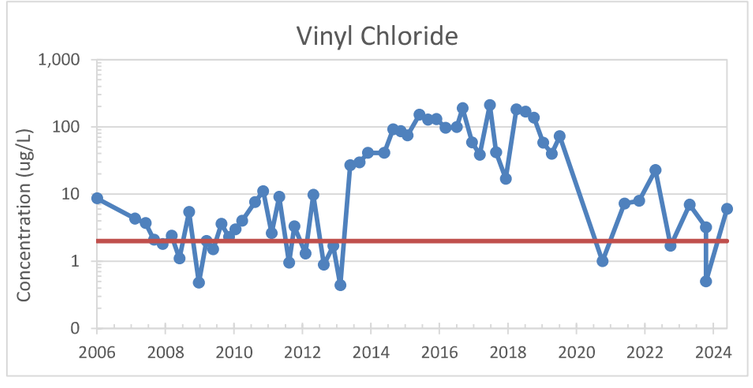








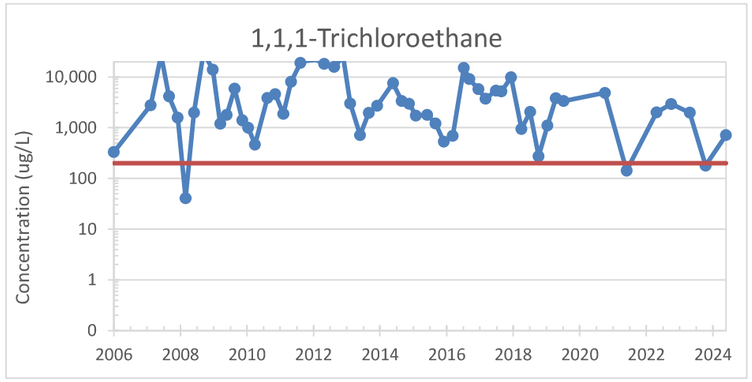


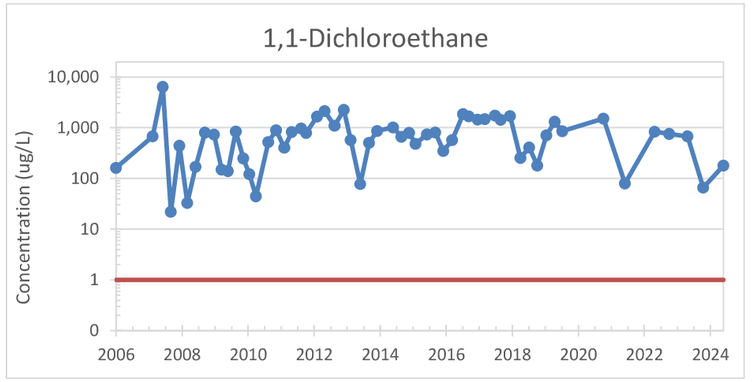


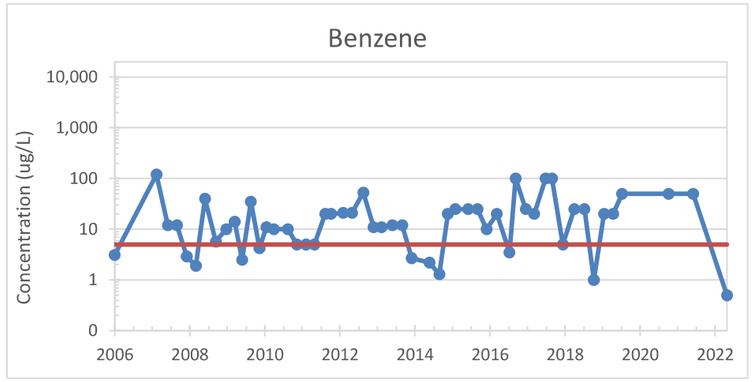
GWPS PLOTTED AS RED LINE

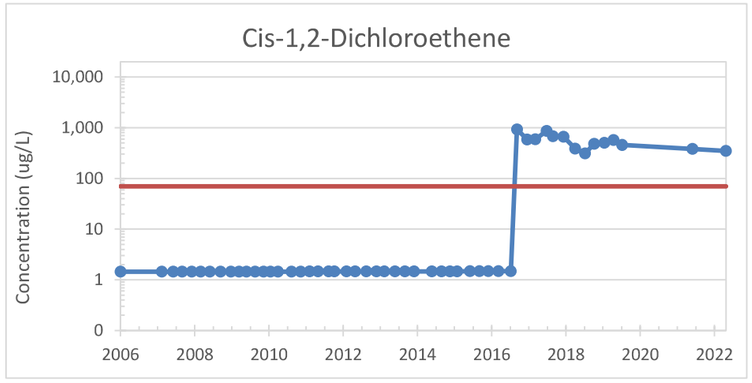
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

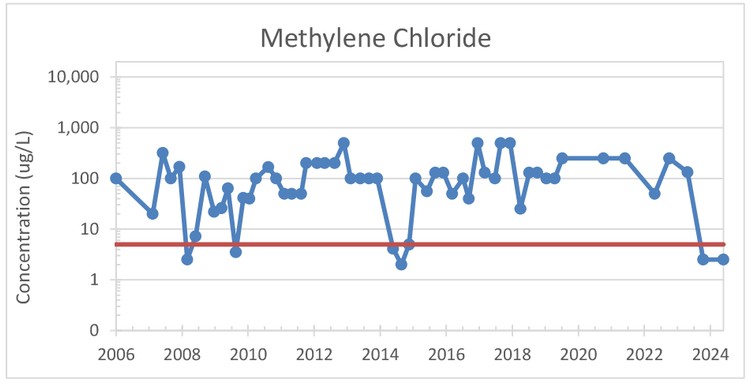
APPENDIX E-12 MW-13S

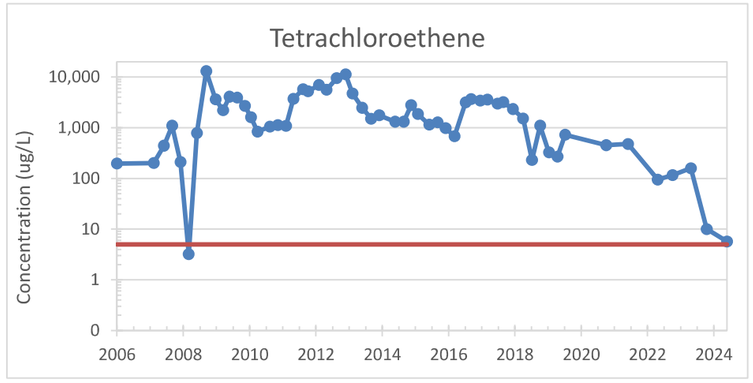


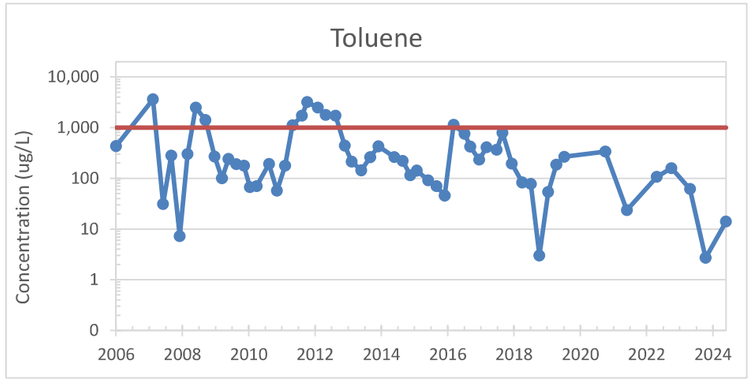


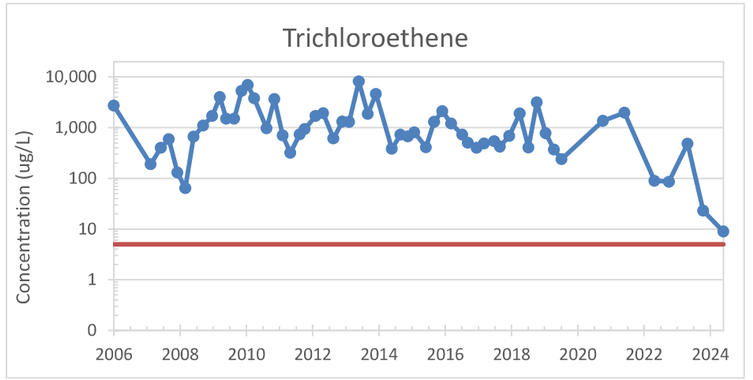


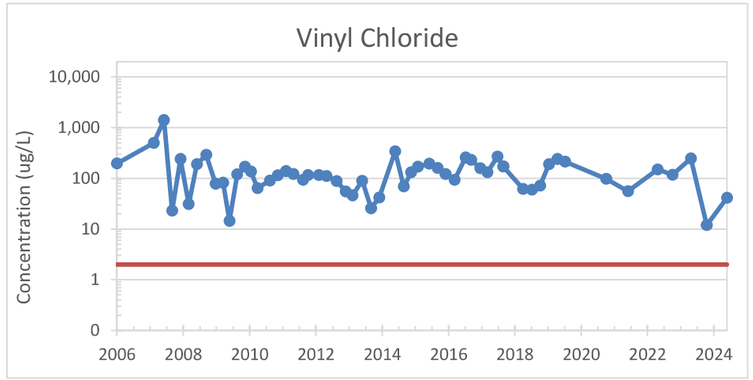








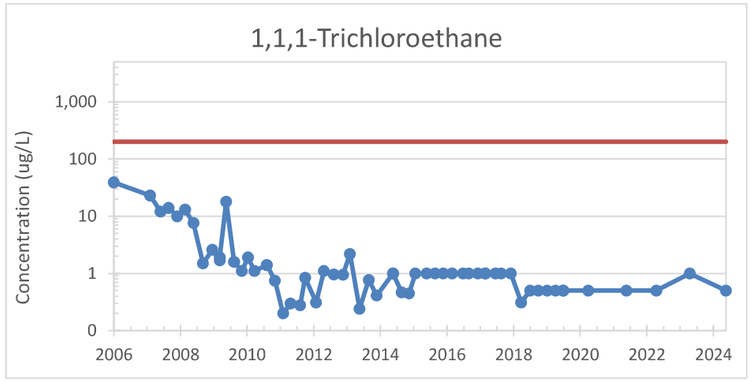


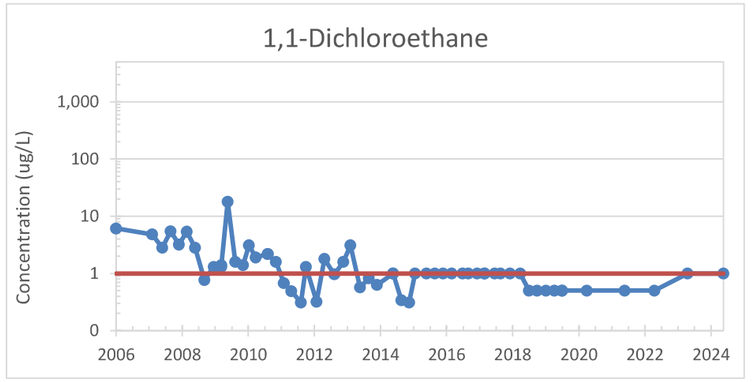


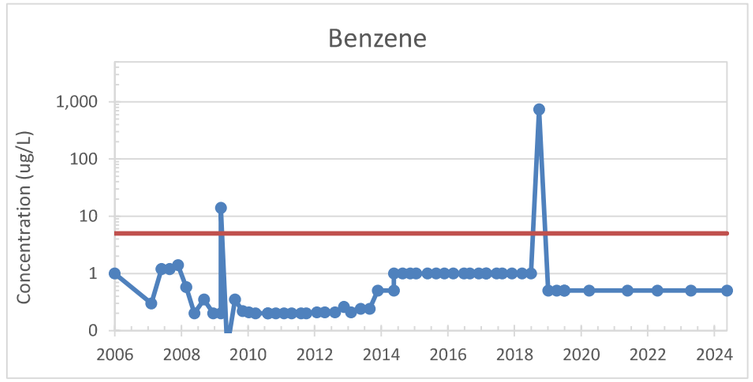
GWPS PLOTTED AS RED LINE

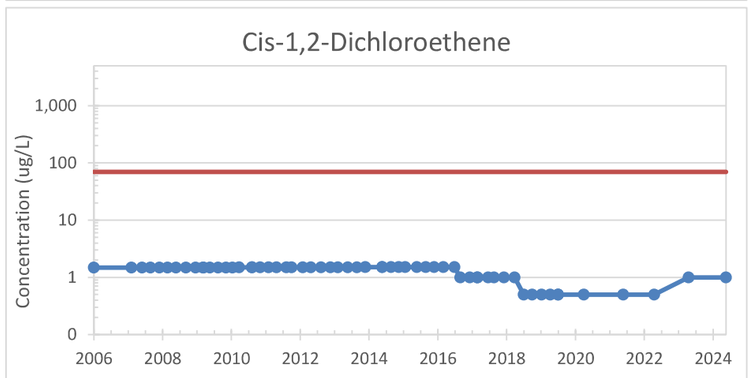
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

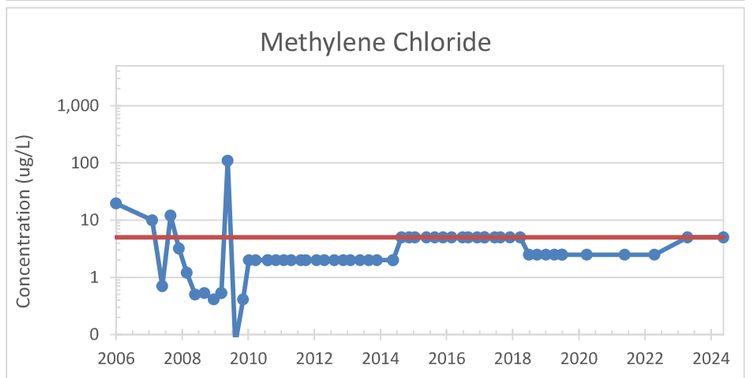
APPENDIX E-13 MW-24S

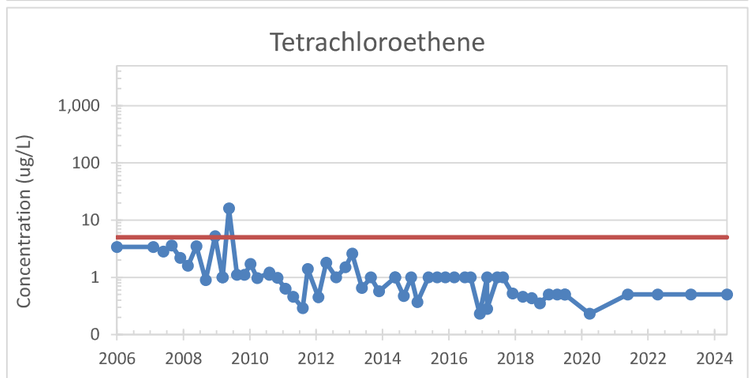


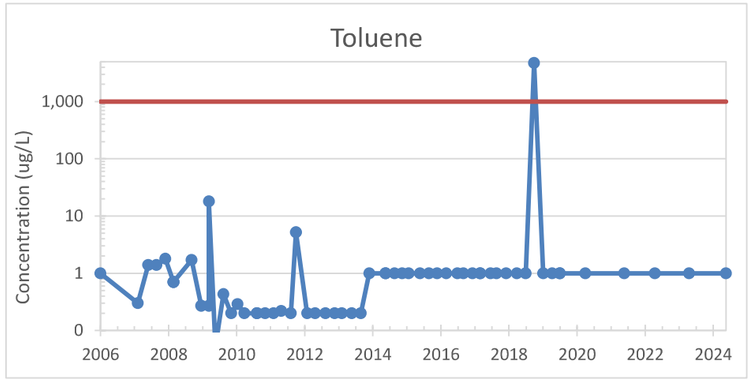


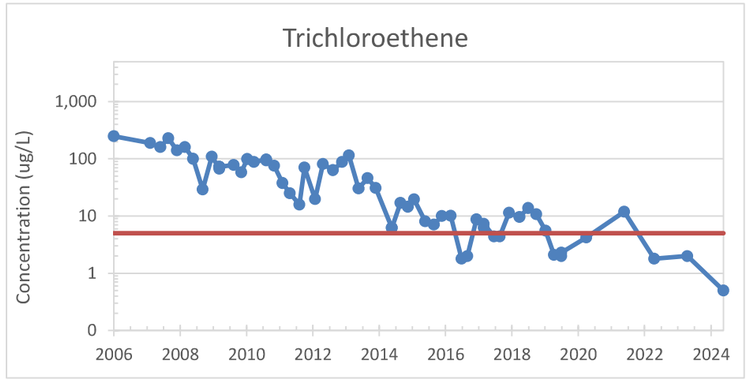


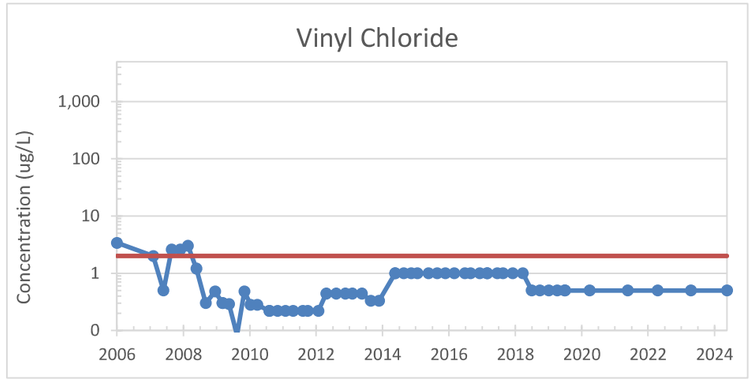








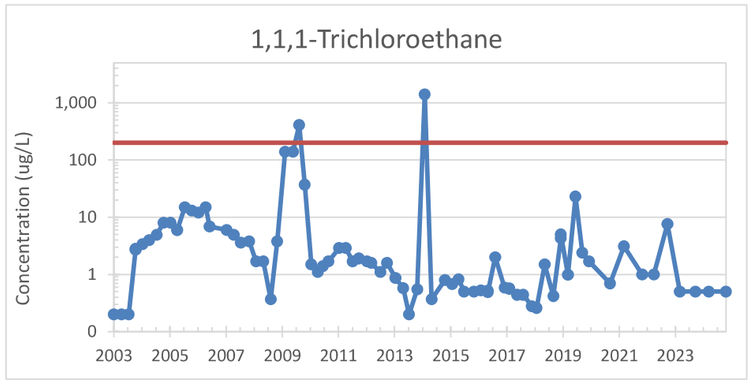


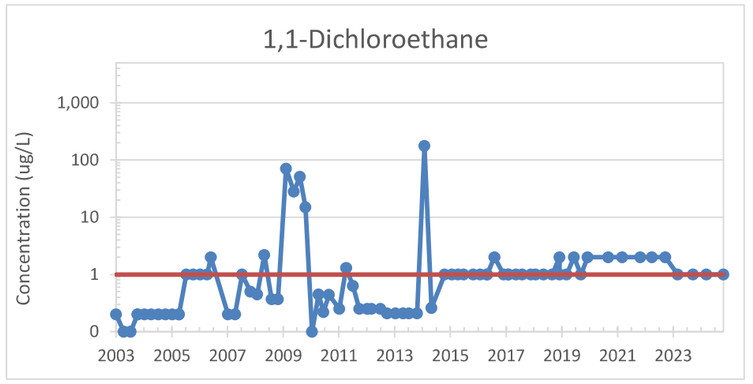


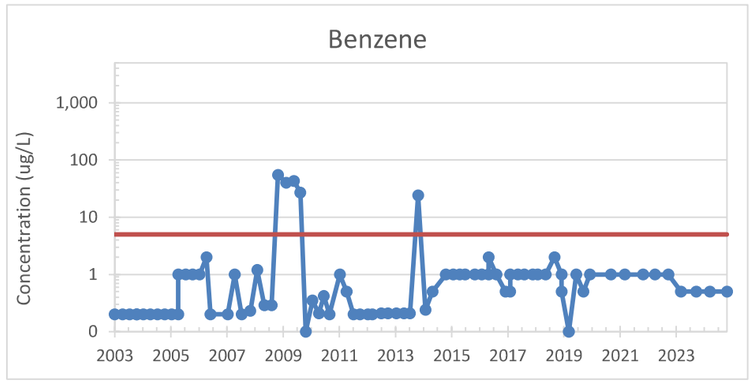
GWPS PLOTTED AS RED LINE

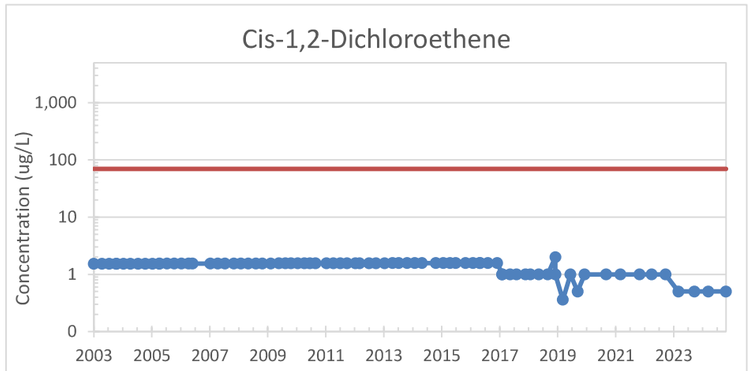
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

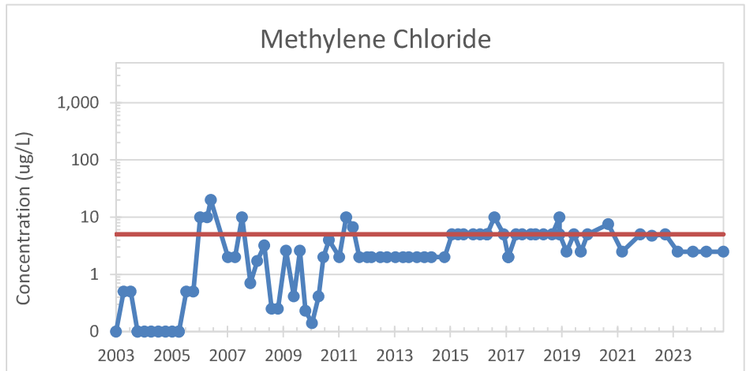
APPENDIX E-14 MW-1D

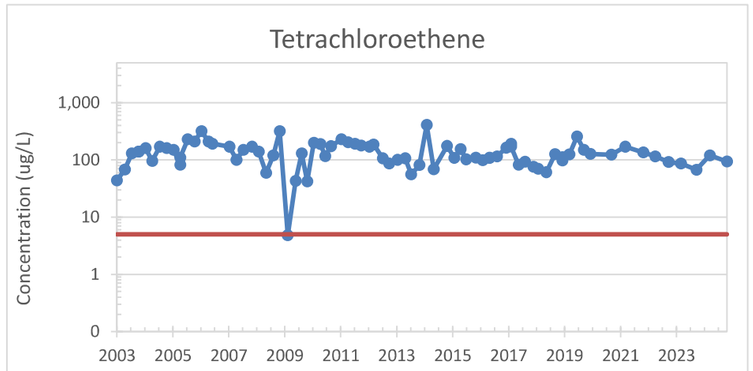


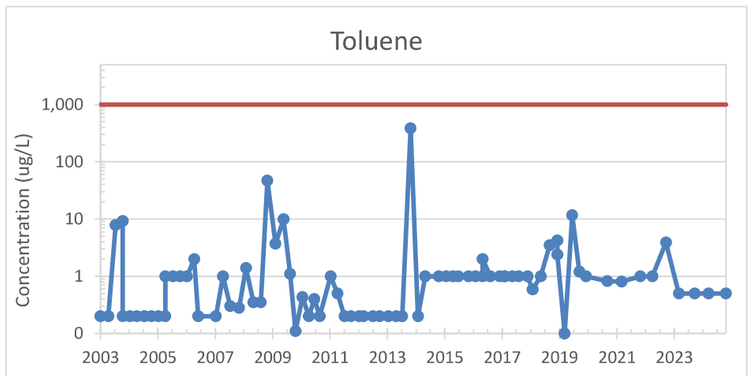


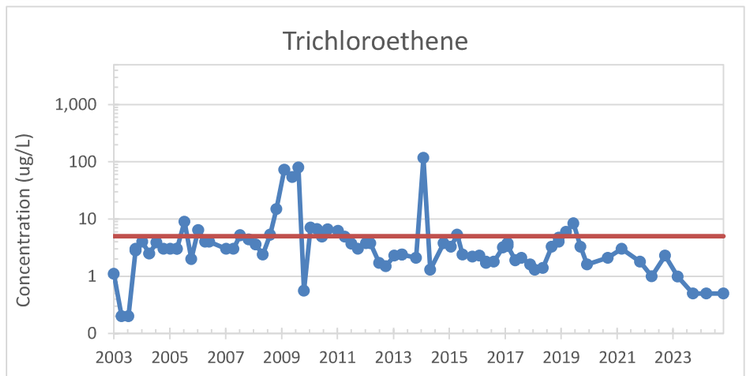


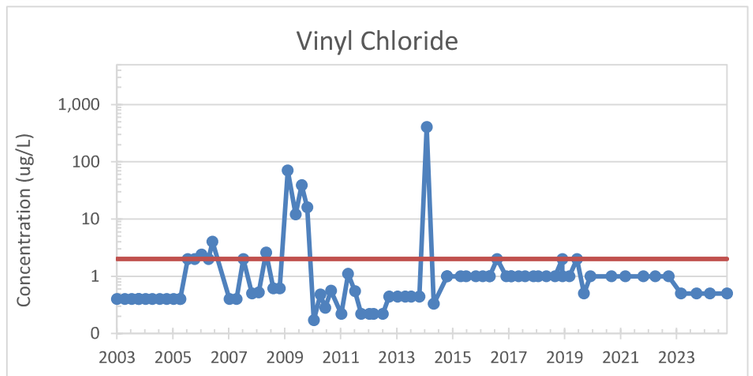










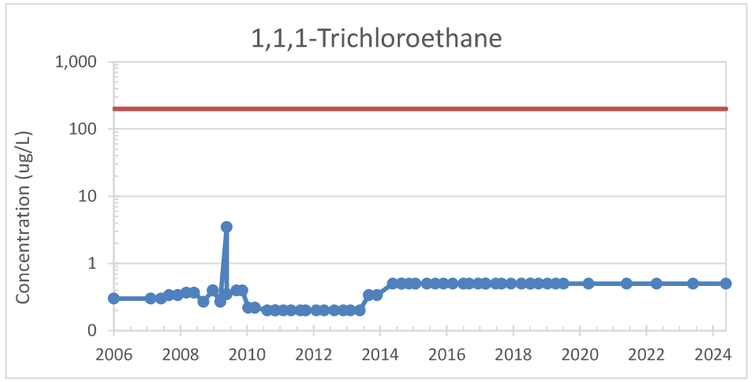


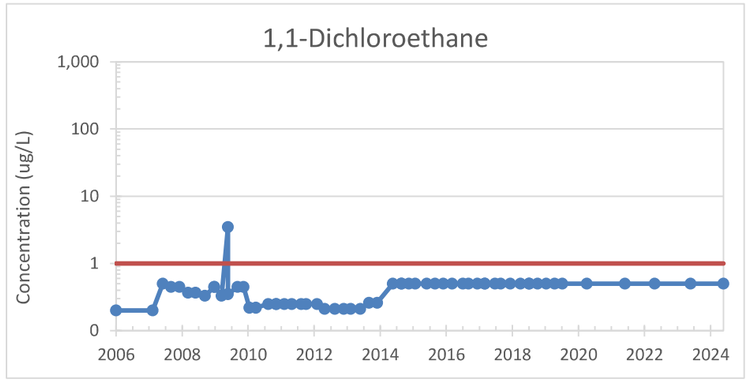
GWPS PLOTTED AS RED LINE

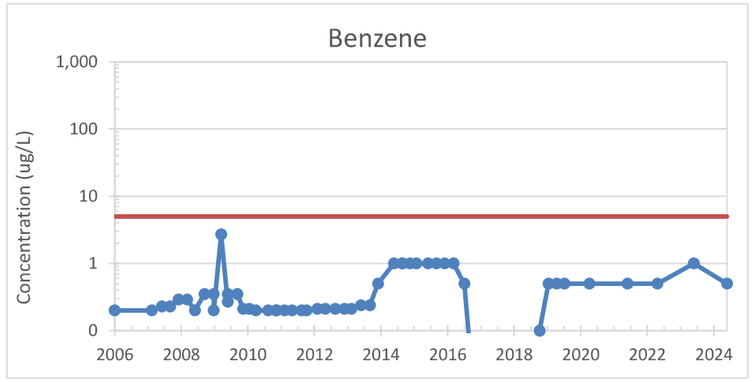
GeoSouth
Environmental Solutions

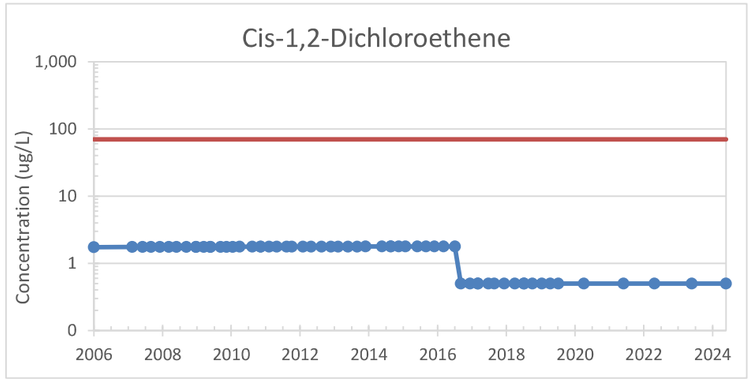
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

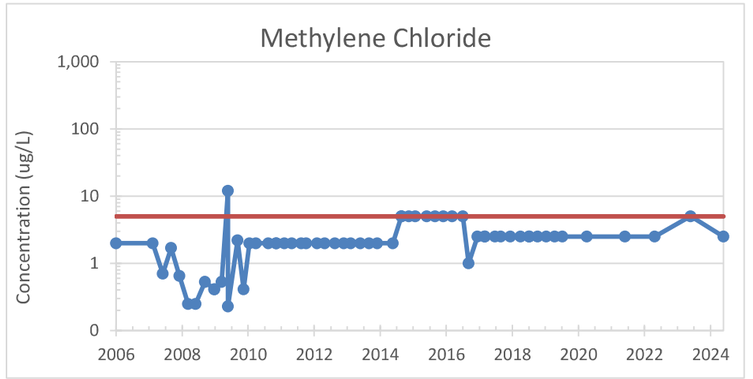
APPENDIX E-15 MW-6D

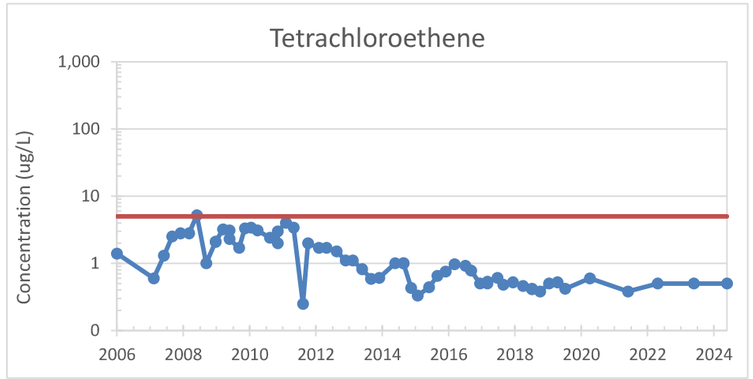


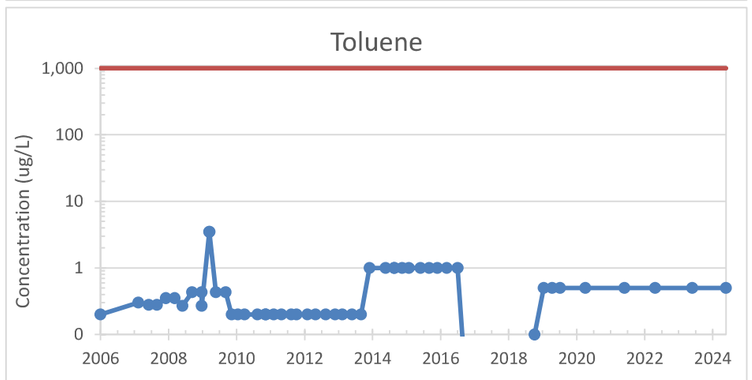


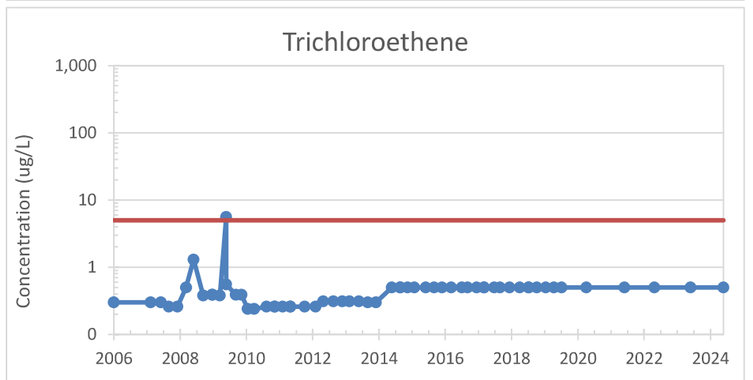


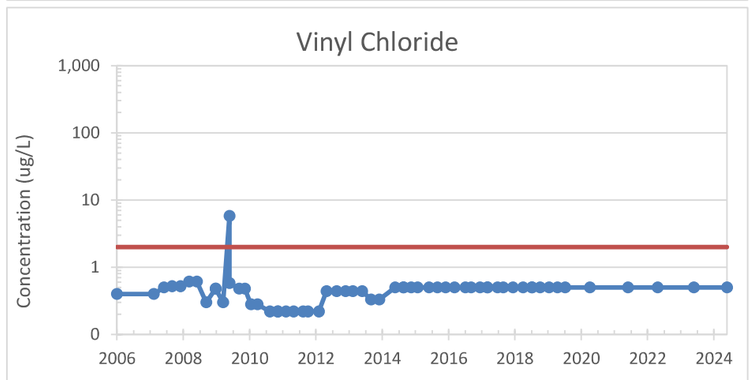










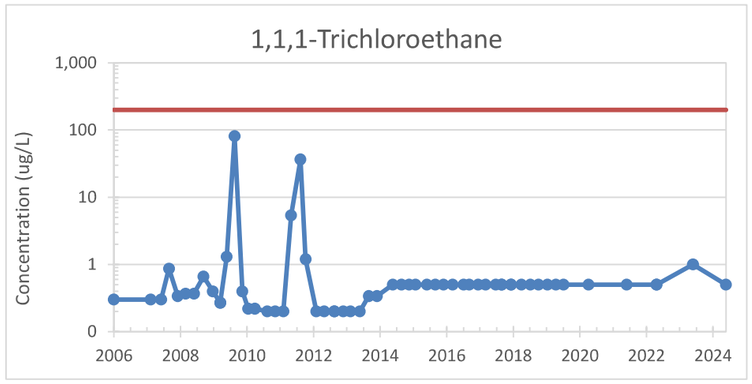


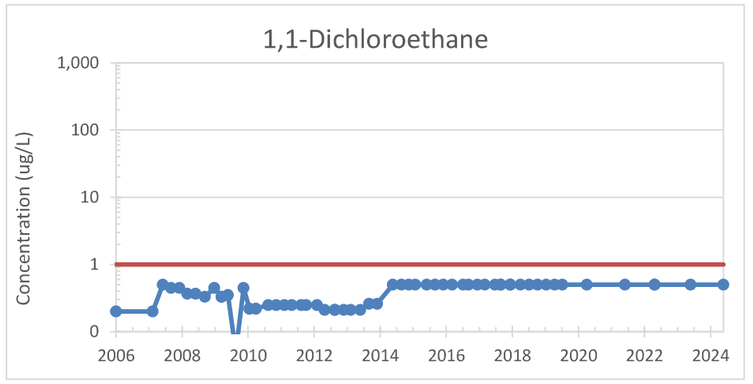
GWPS PLOTTED AS RED LINE

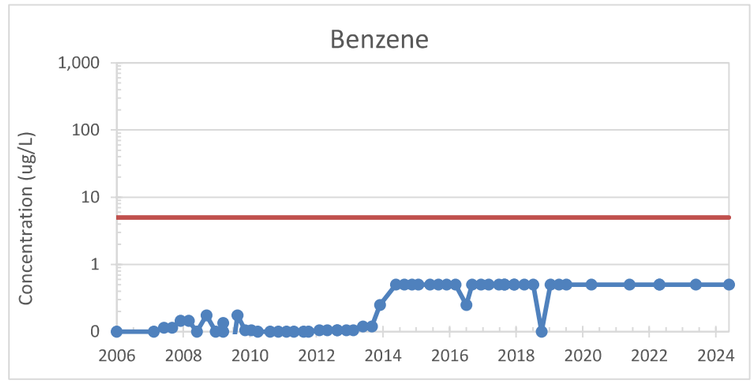
GeoSouth
Environmental Solutions

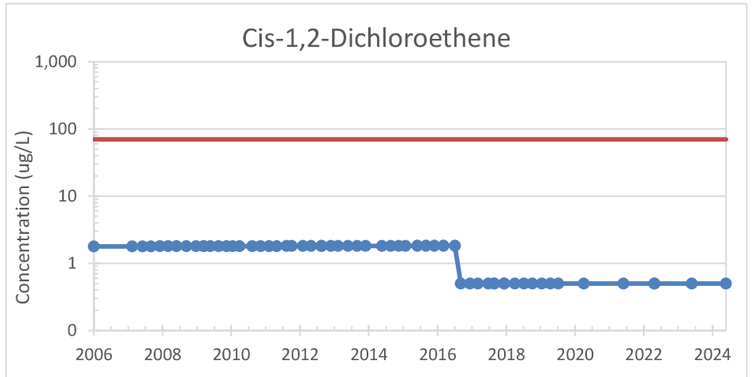
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

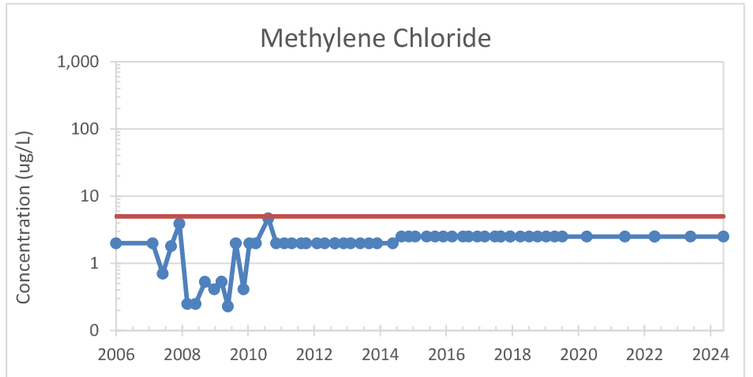
APPENDIX E-16 MW-7D

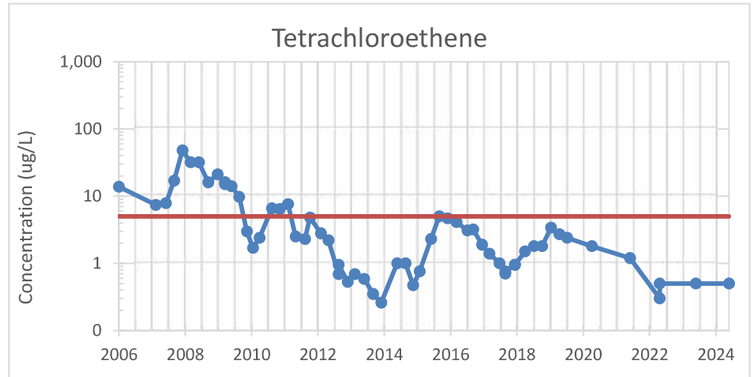


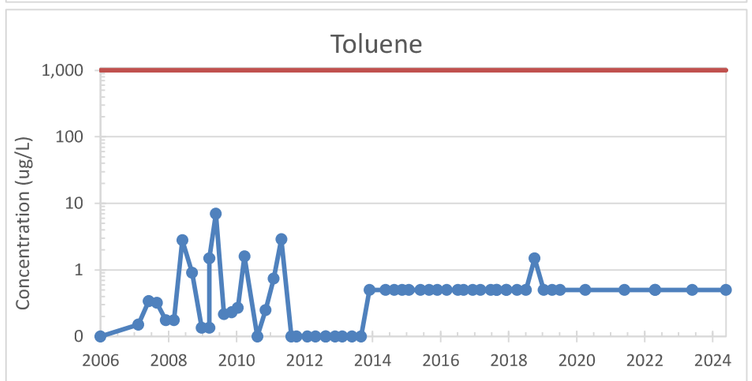


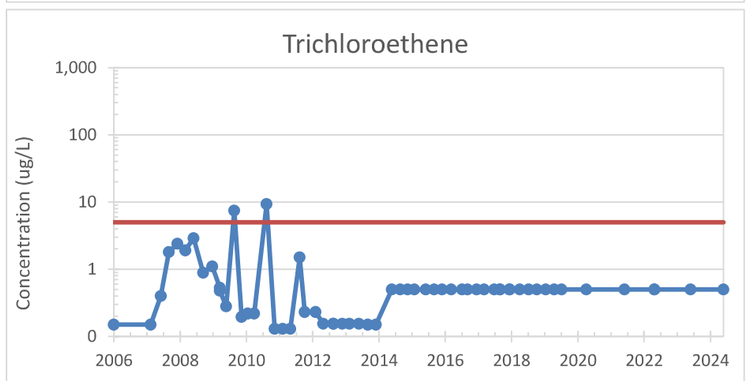


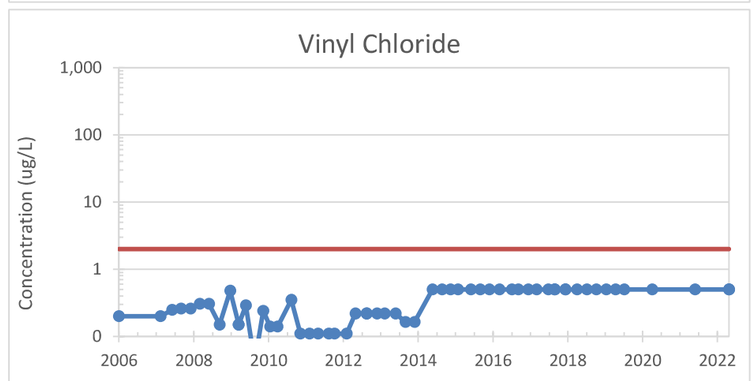










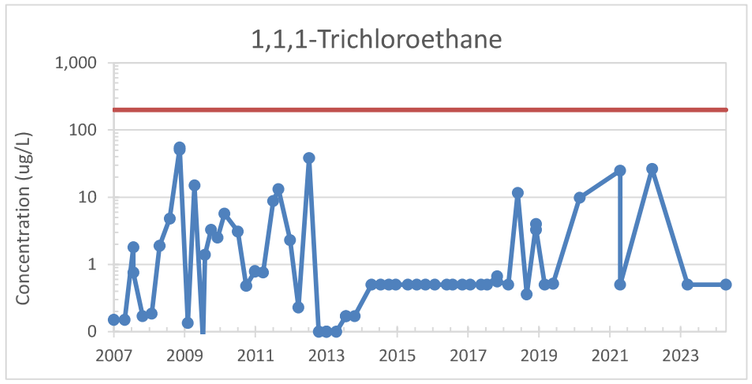


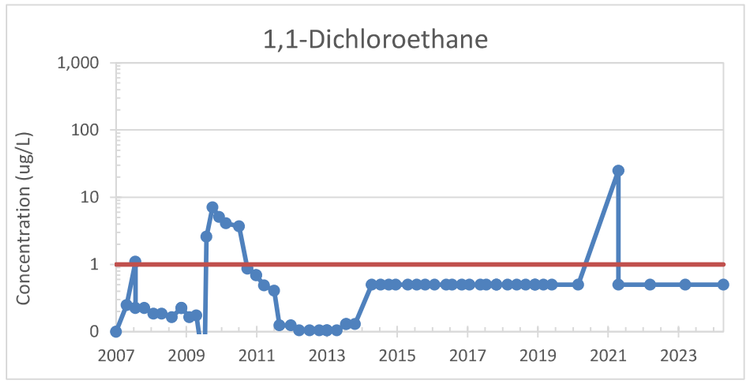
GWPS PLOTTED AS RED LINE

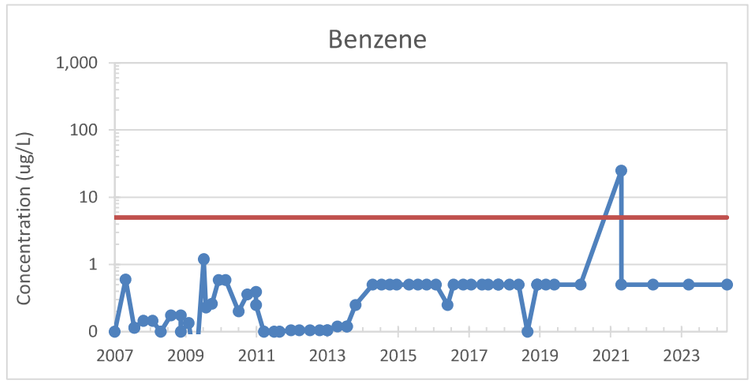
GeoSouth
Environmental Solutions

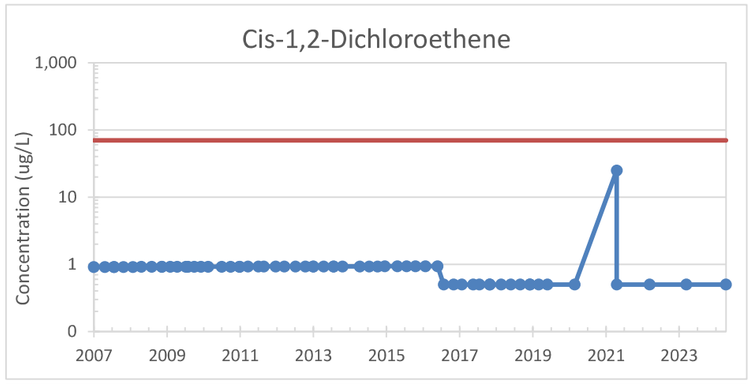
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

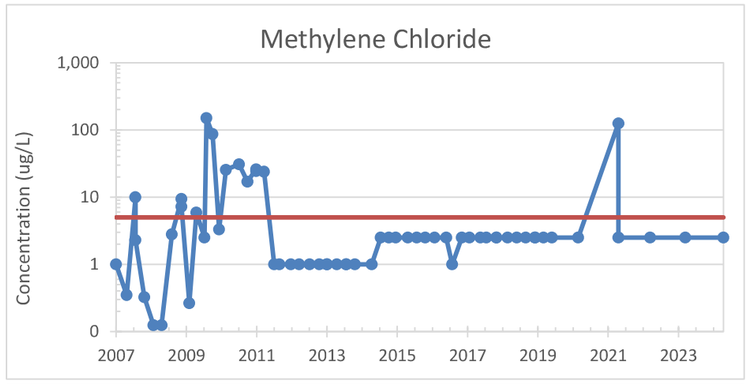
APPENDIX E-17 MW-8DR

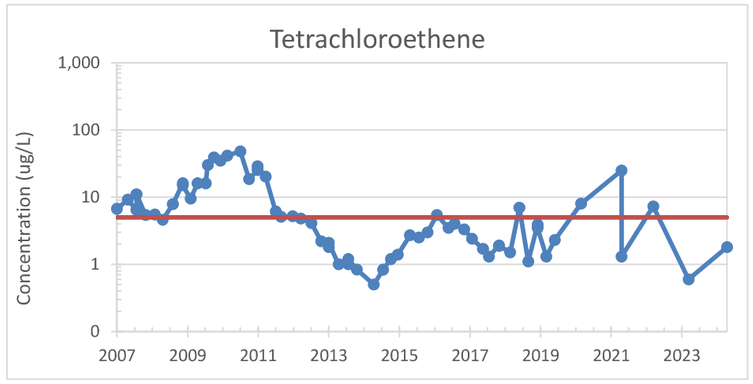


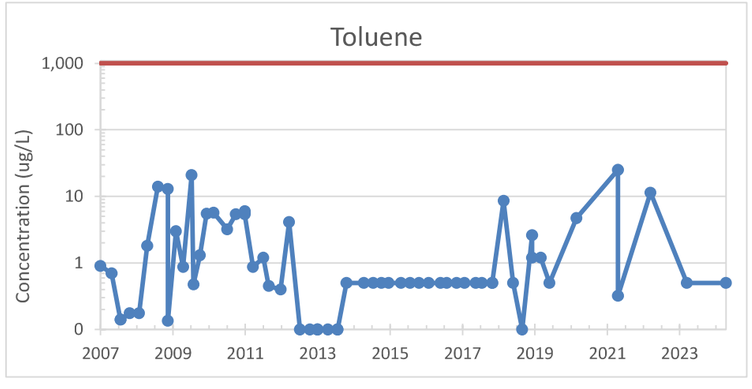


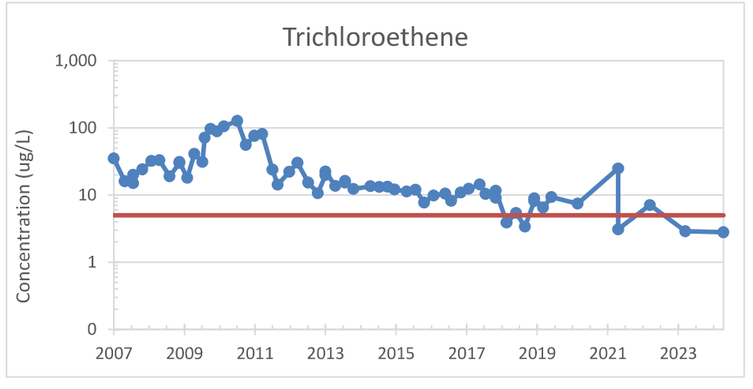


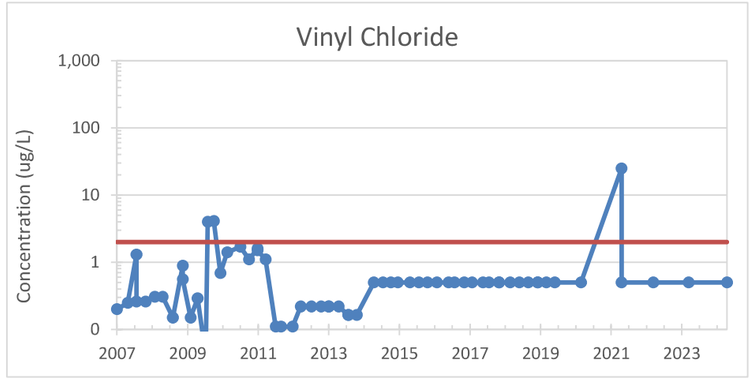








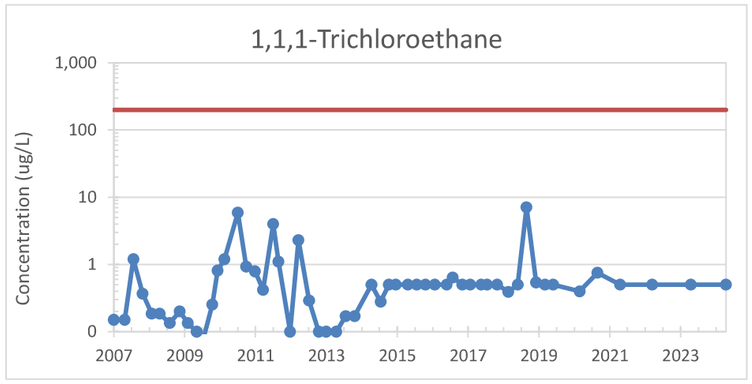


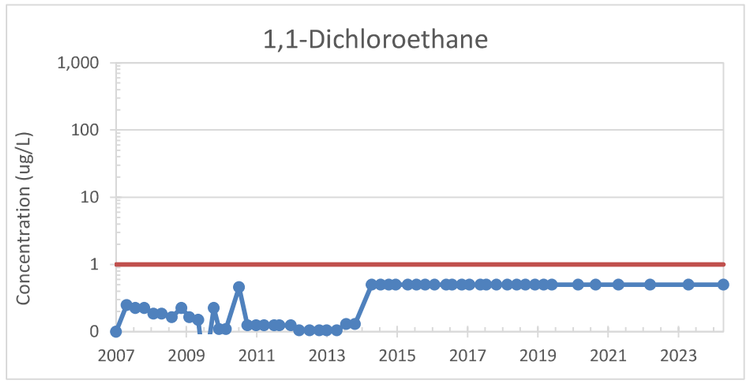


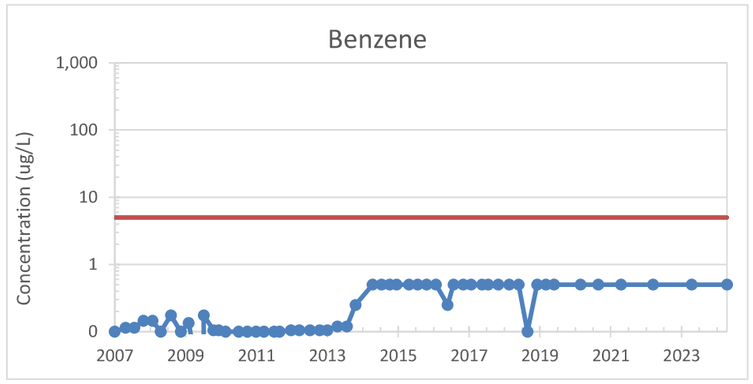
GWPS PLOTTED AS RED LINE

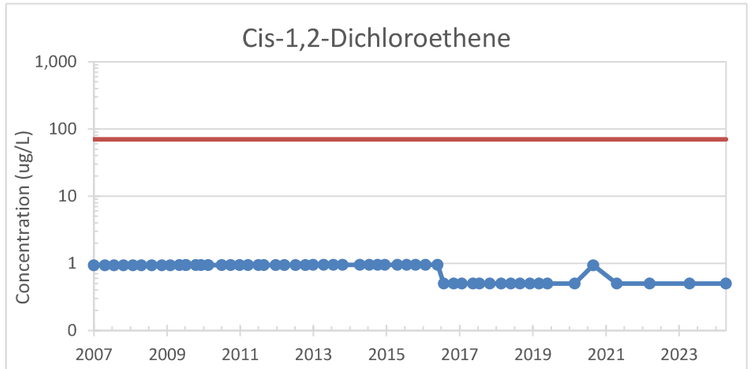
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

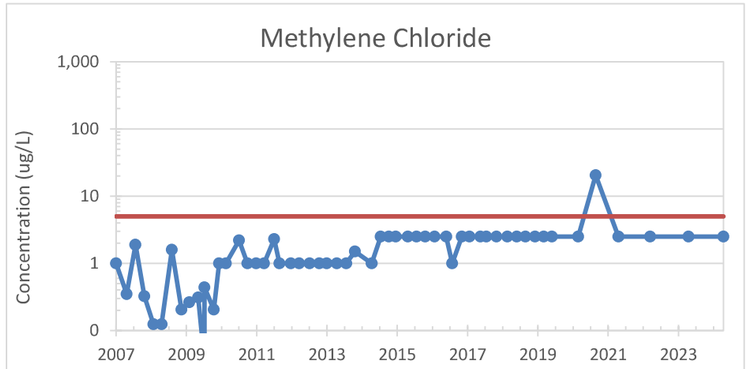
APPENDIX E-18 MW-9D

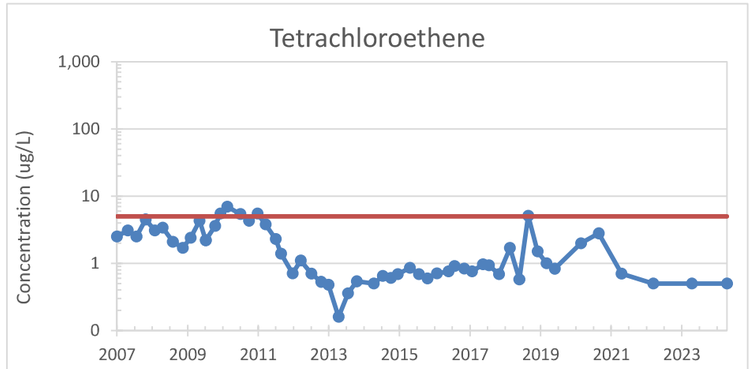


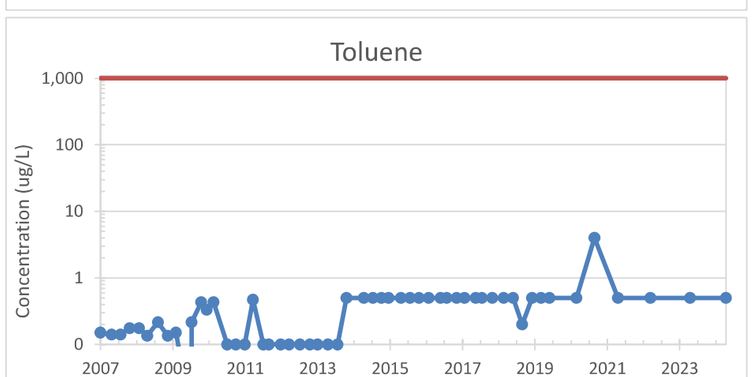


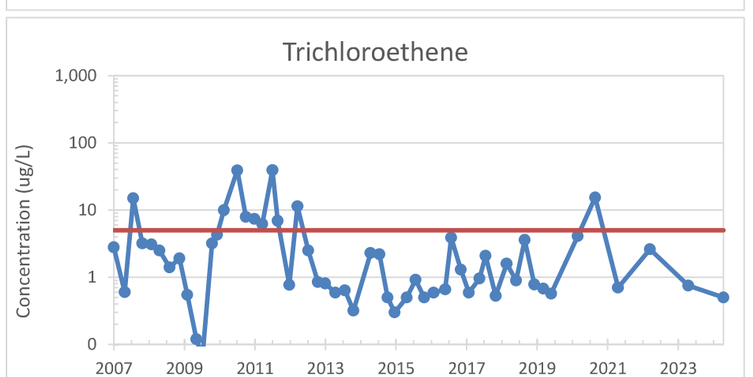


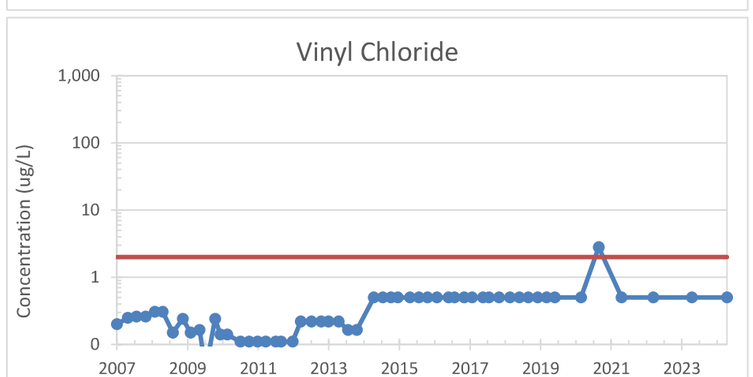








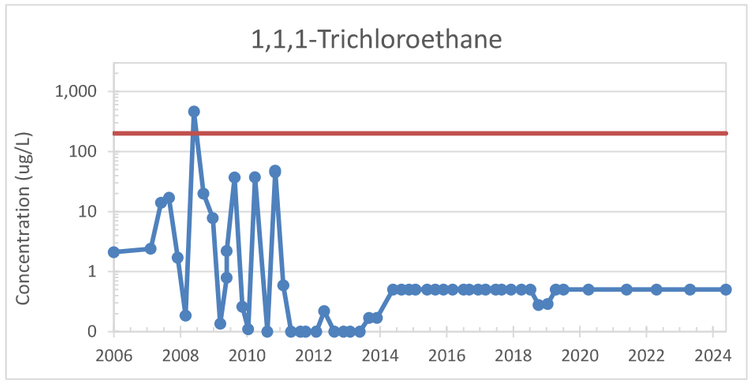


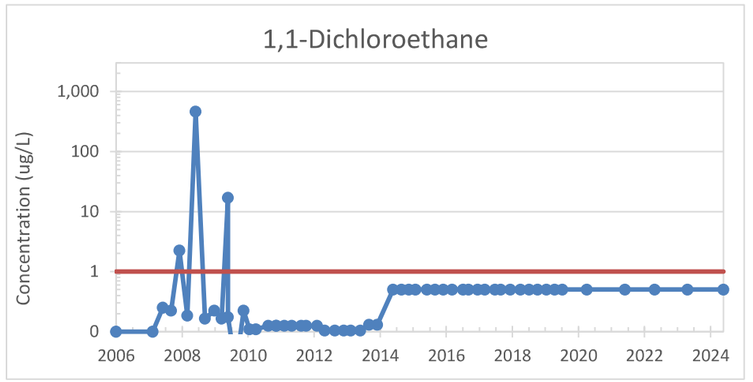


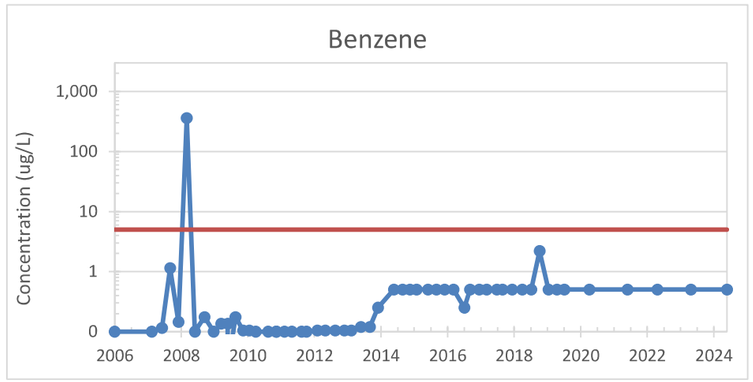
GWPS PLOTTED AS RED LINE

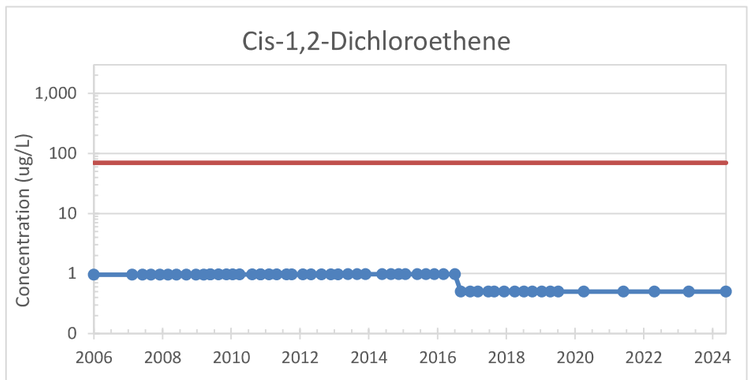
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

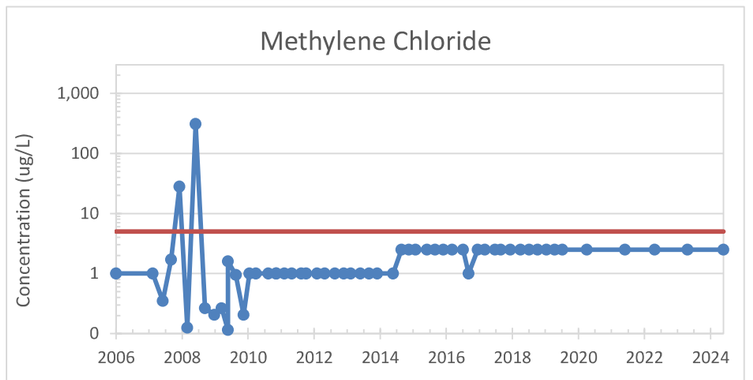
APPENDIX E-19 MW-10D

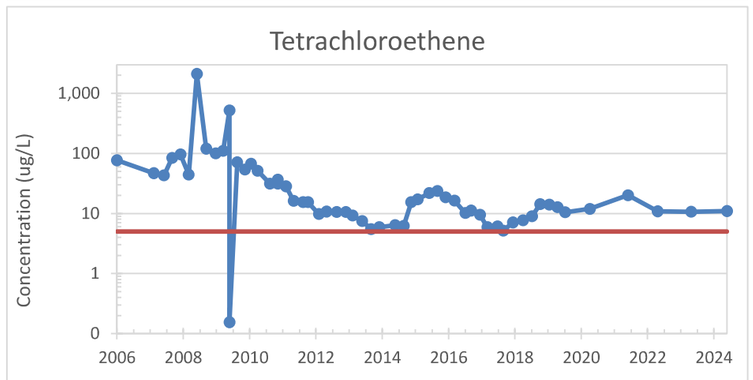


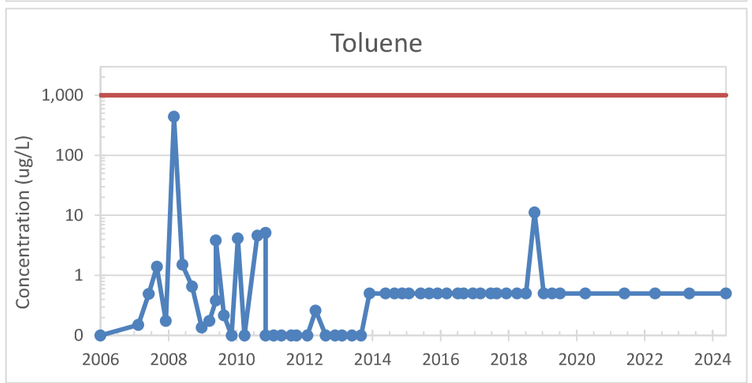


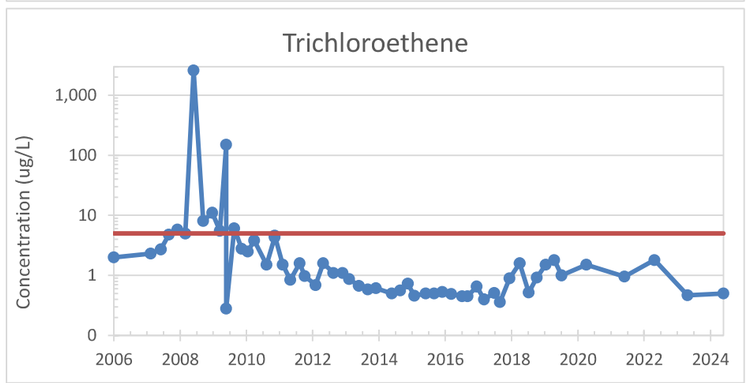


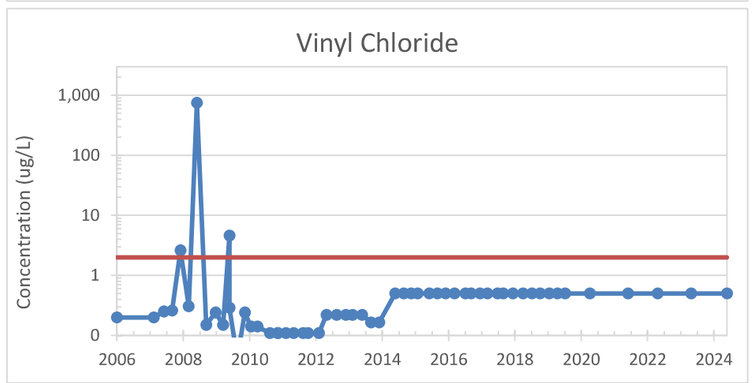








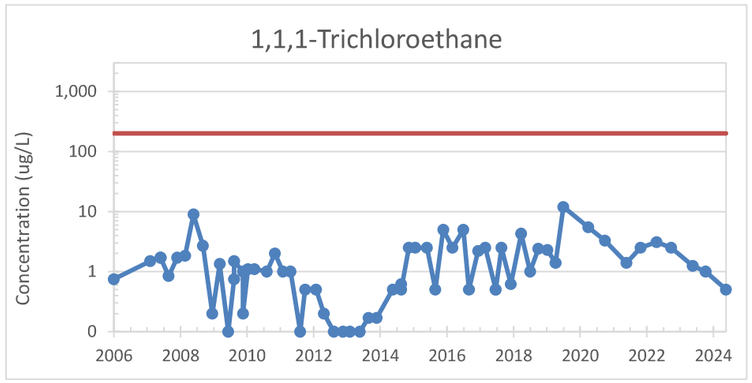


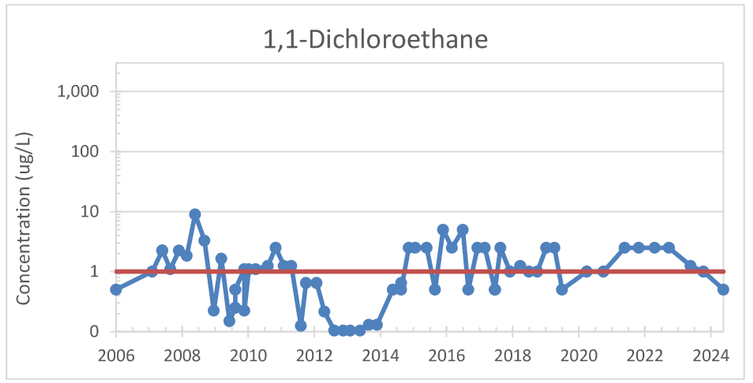


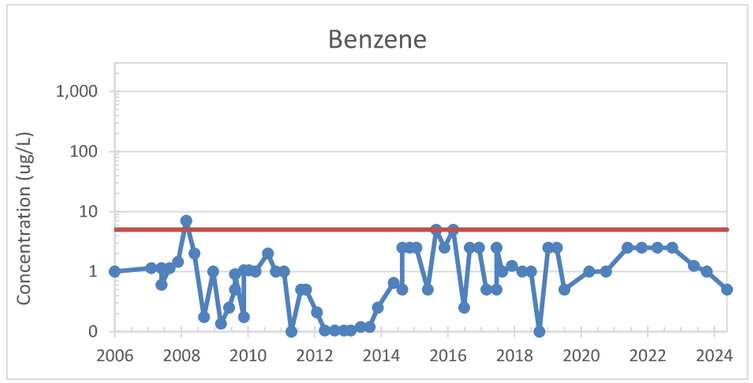
GWPS PLOTTED AS RED LINE

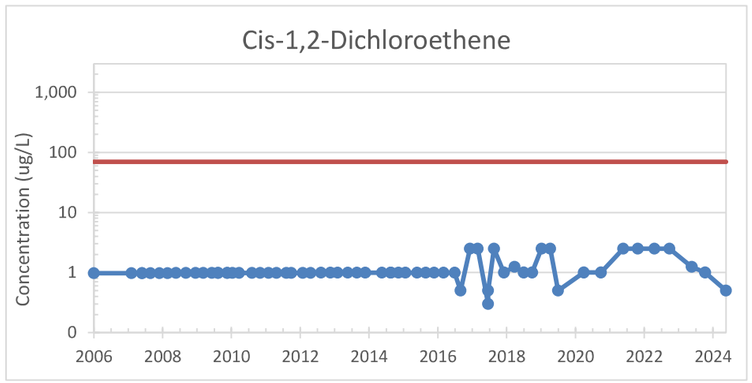
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

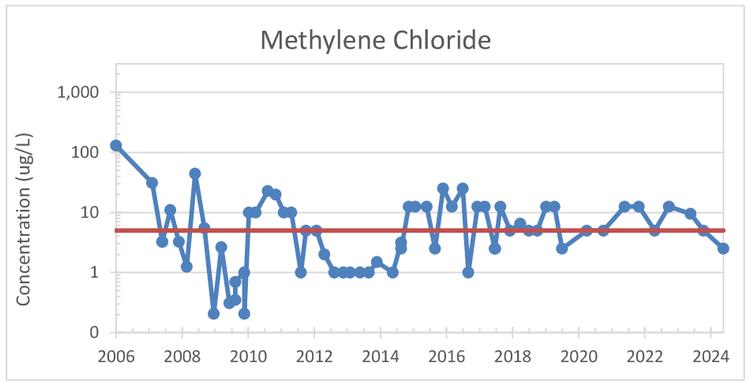
APPENDIX E-20 MW-11D

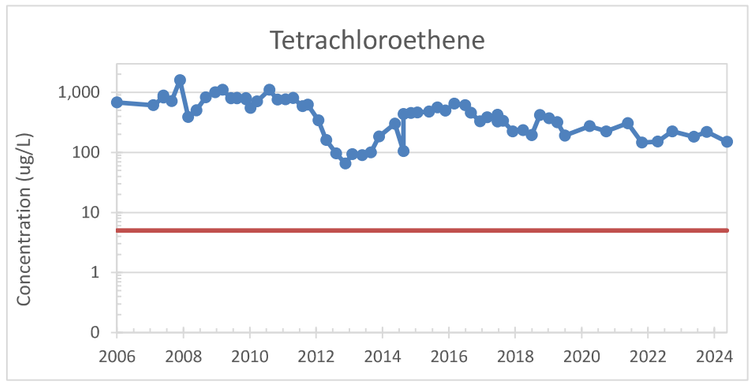


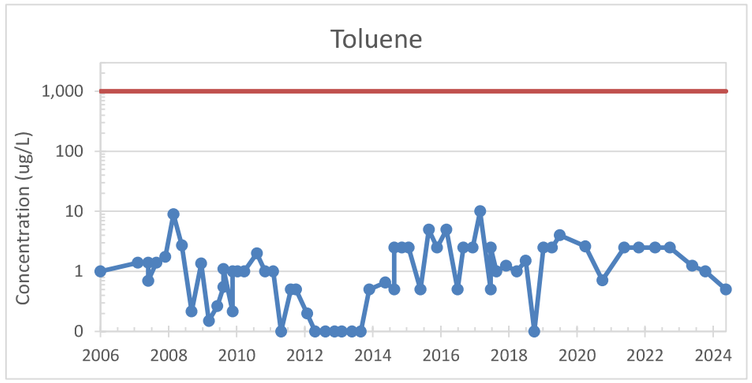


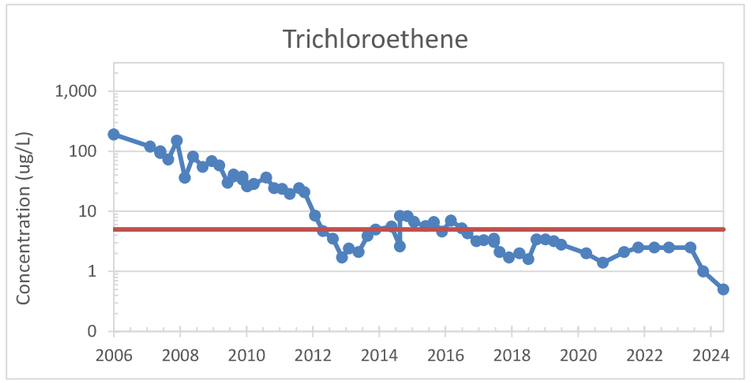


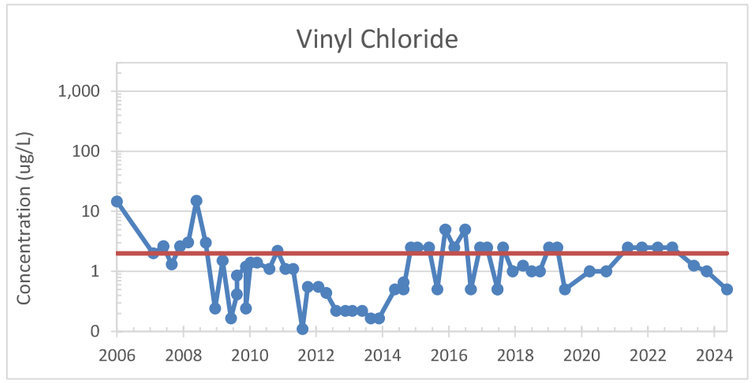








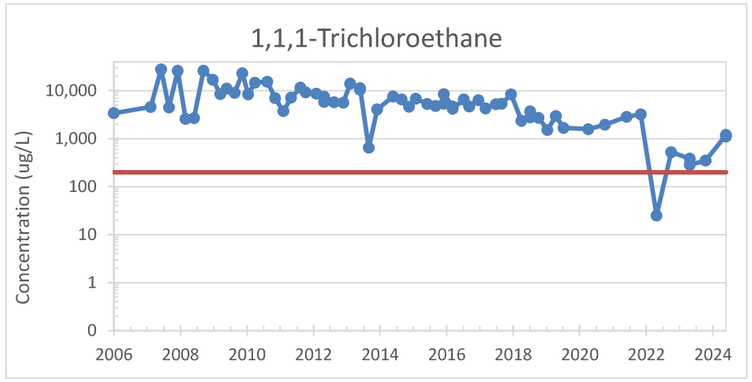


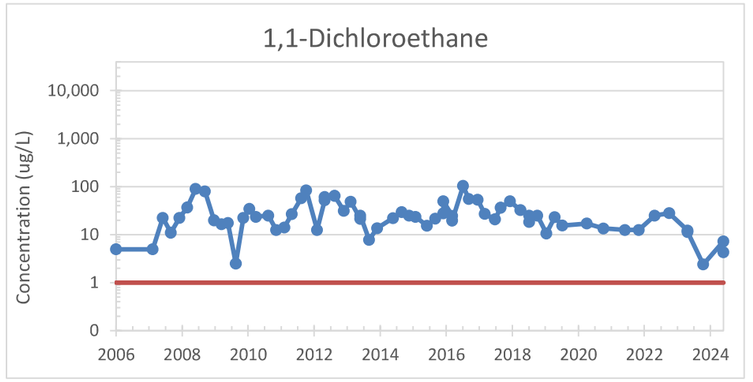


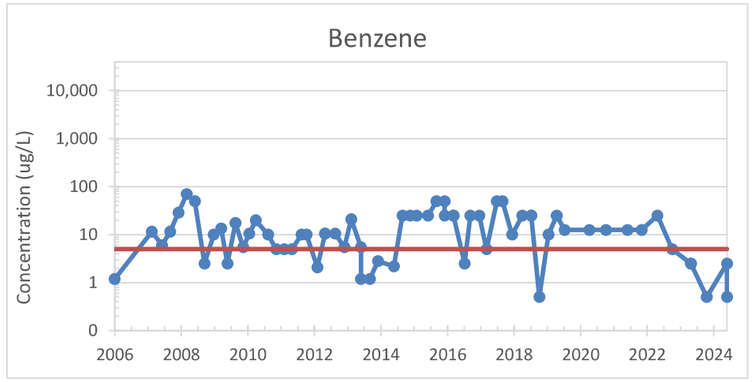
GWPS PLOTTED AS RED LINE

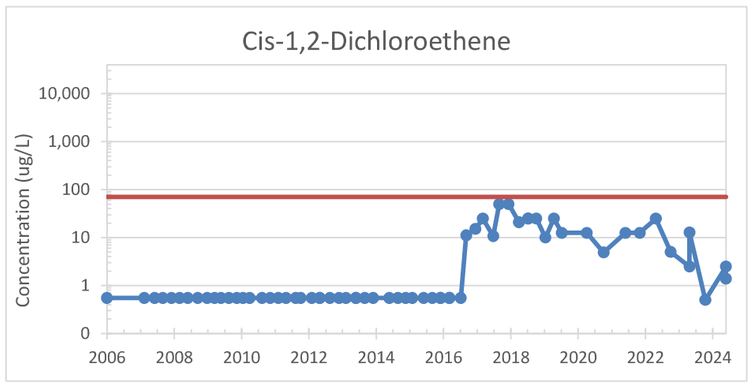
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

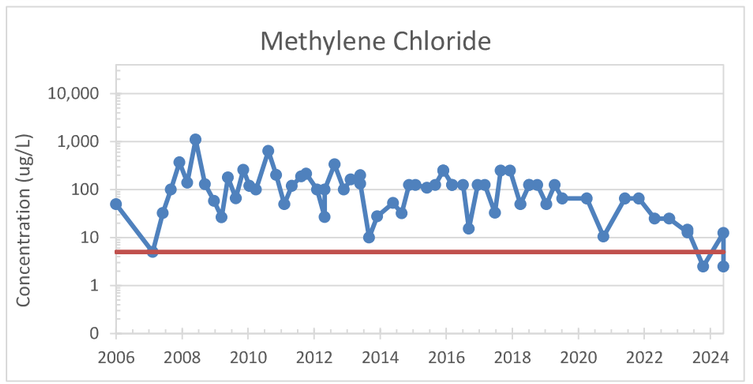
APPENDIX E-21 MW-13D

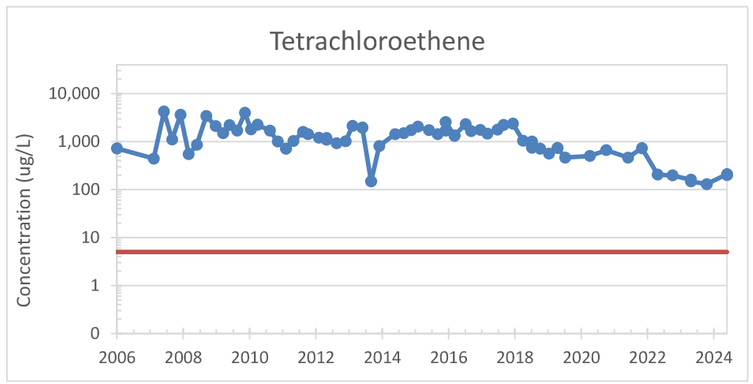


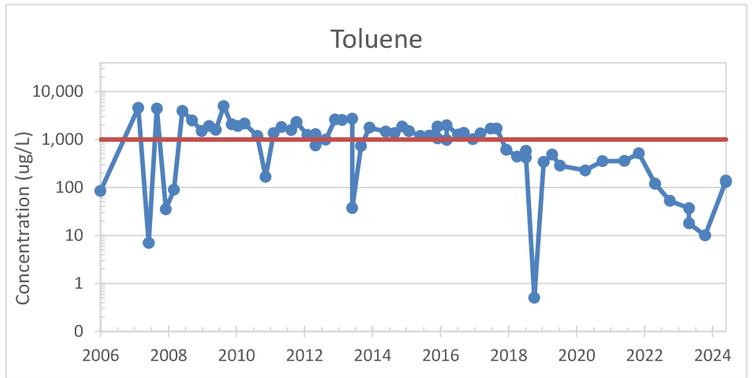


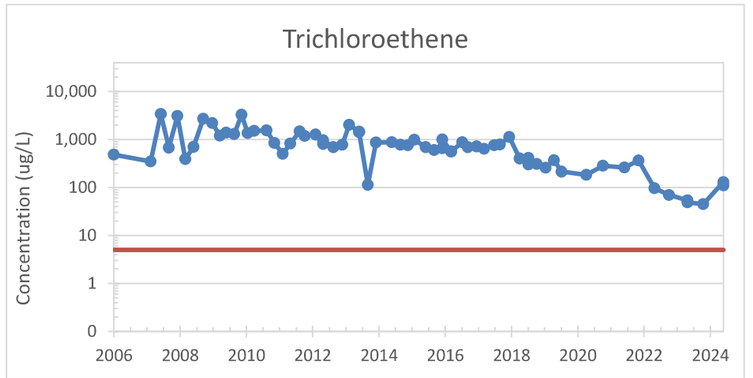


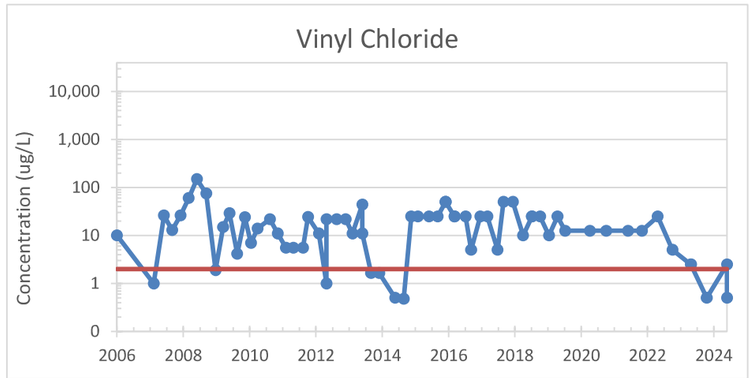










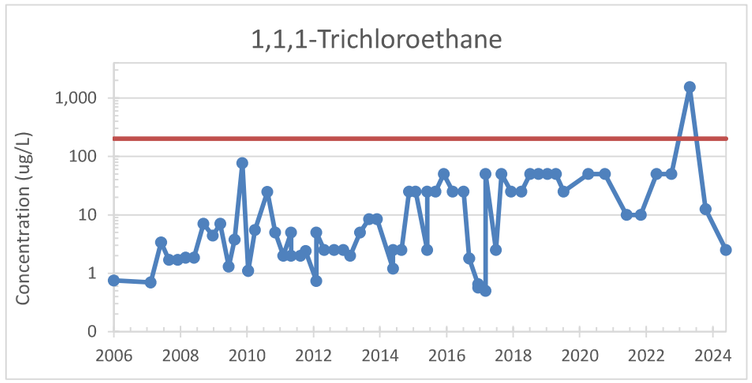


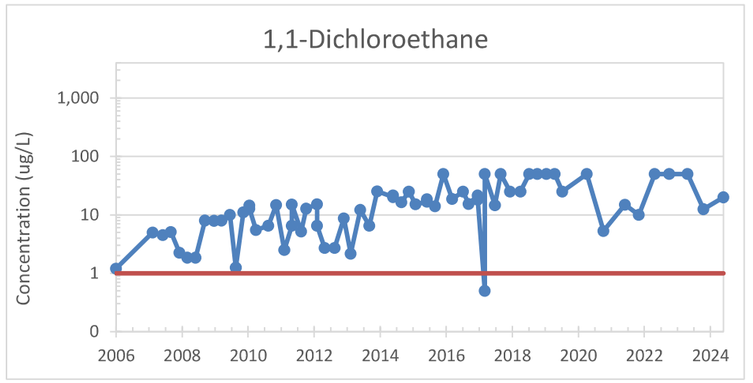
GWPS PLOTTED AS RED LINE

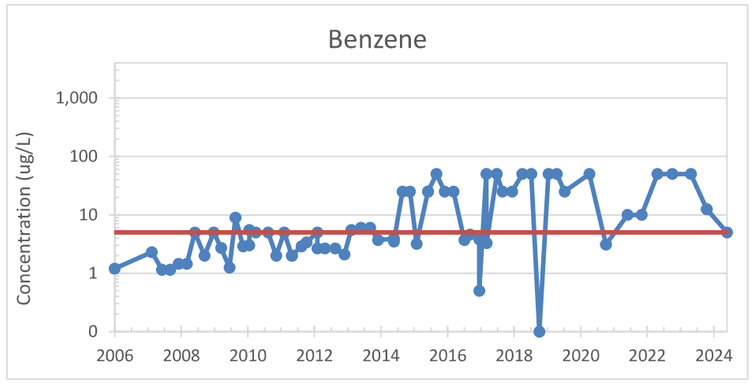
GeoSouth
Environmental Solutions

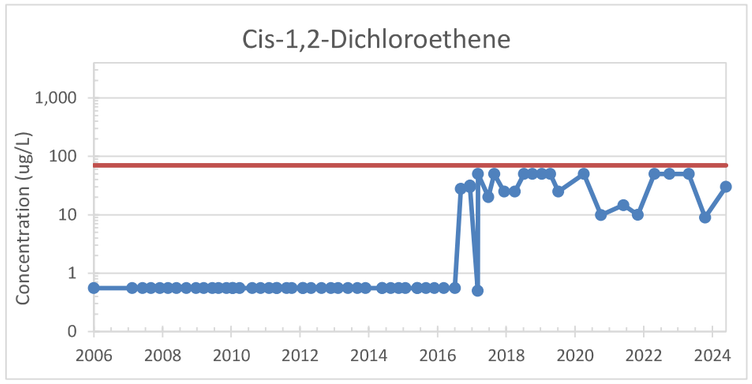
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

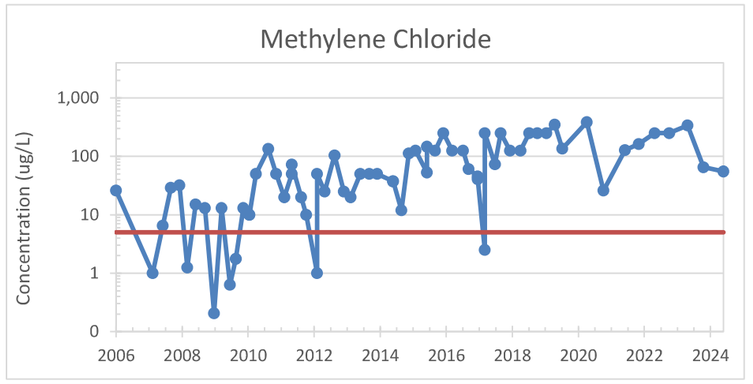
APPENDIX E-22 MW-13DD

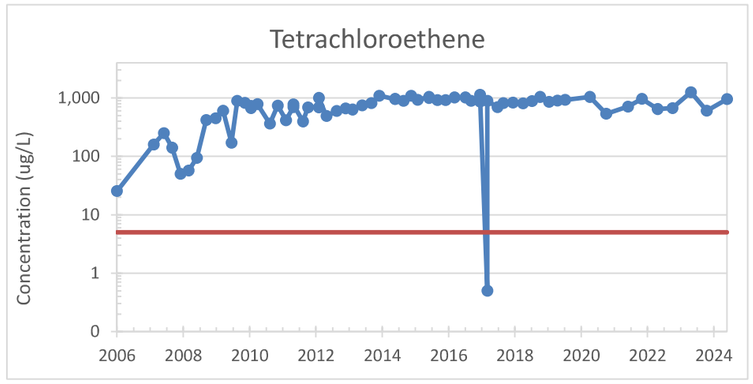


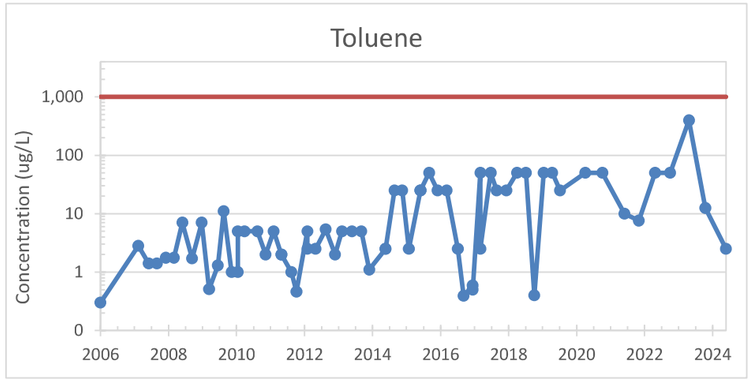


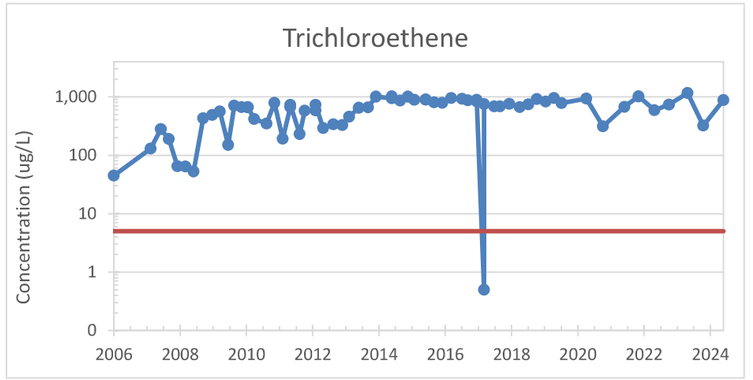


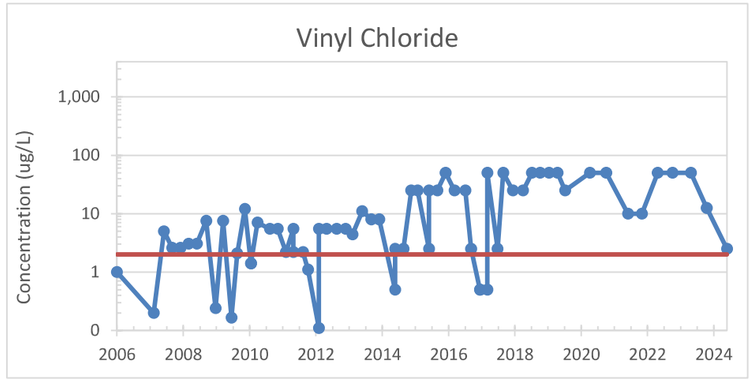








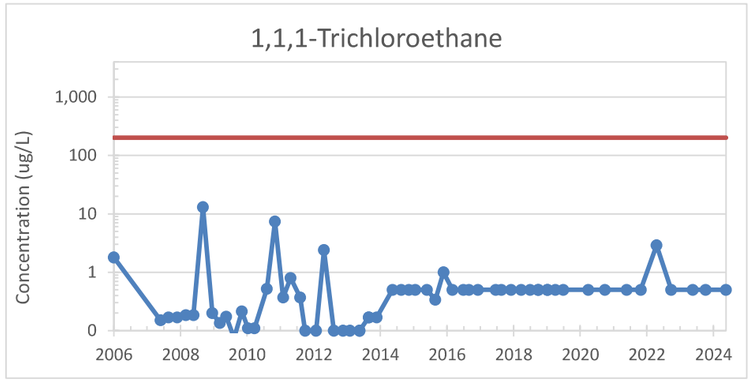


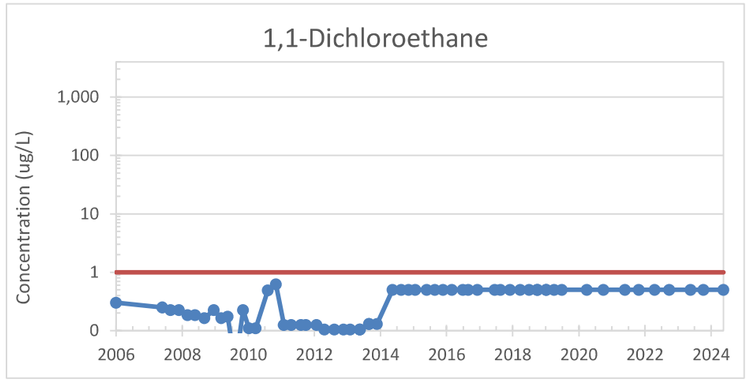


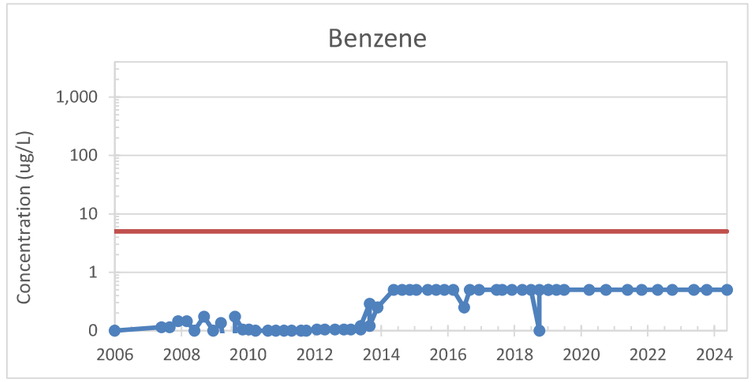
GWPS PLOTTED AS RED LINE

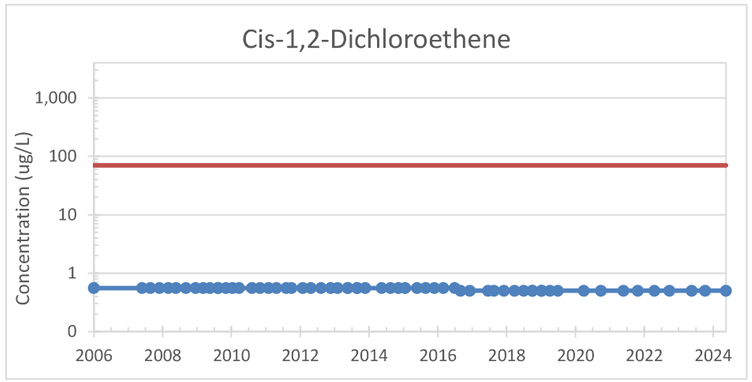
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

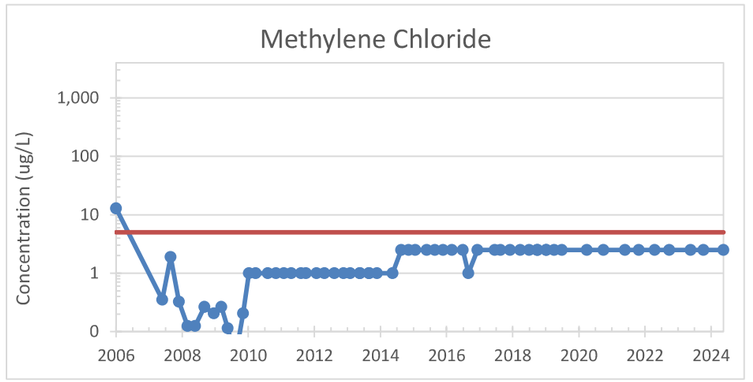
APPENDIX E-23 MW-13D3

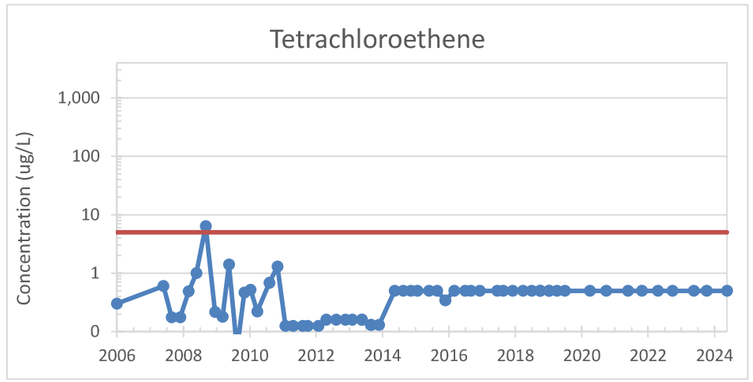


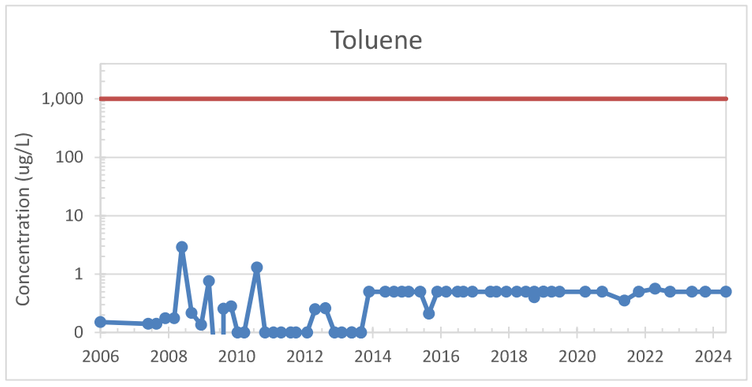


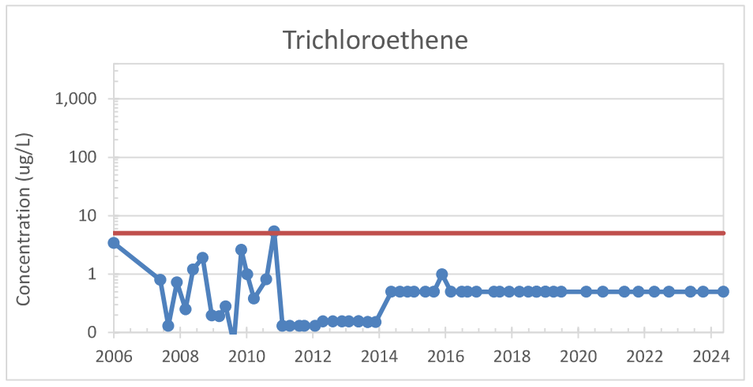


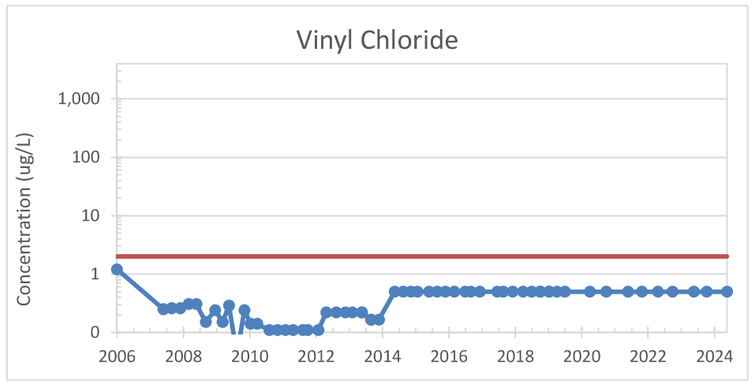








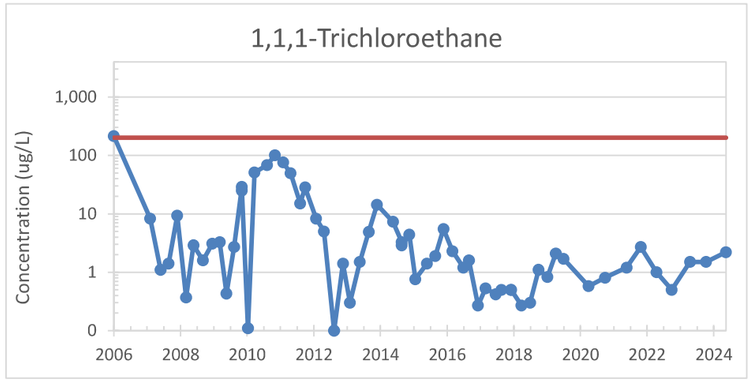


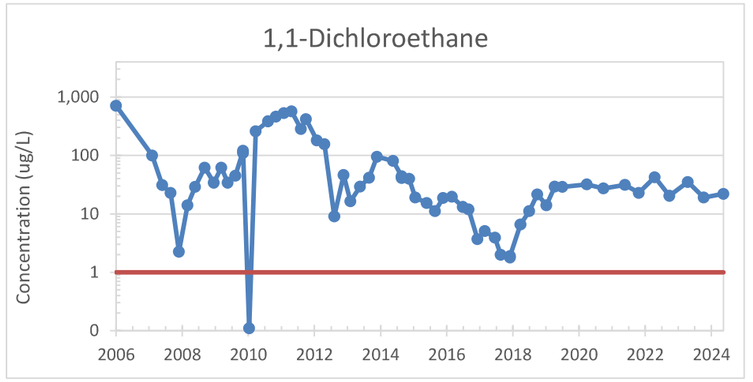


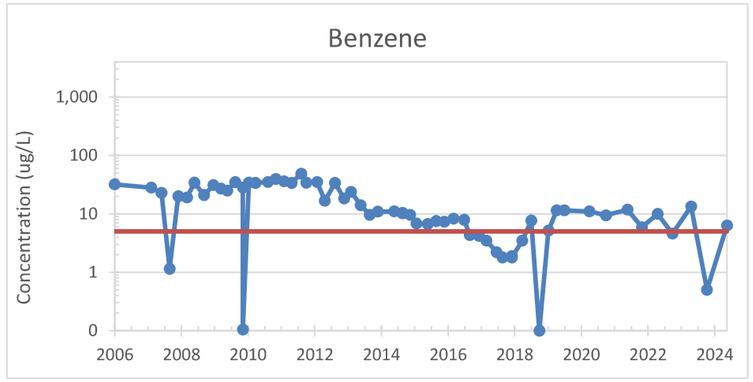
GWPS PLOTTED AS RED LINE

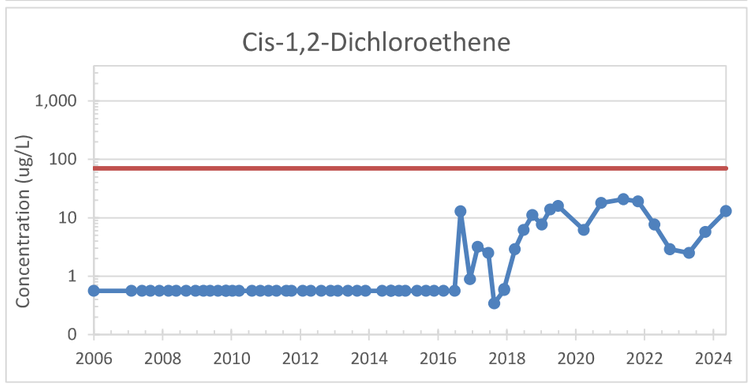
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

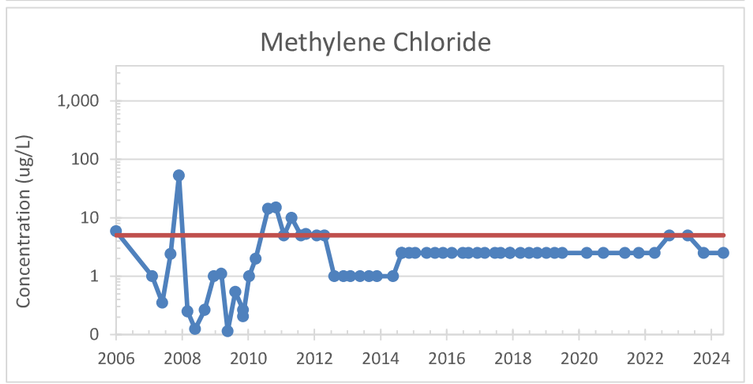
APPENDIX E-24 MW-14S

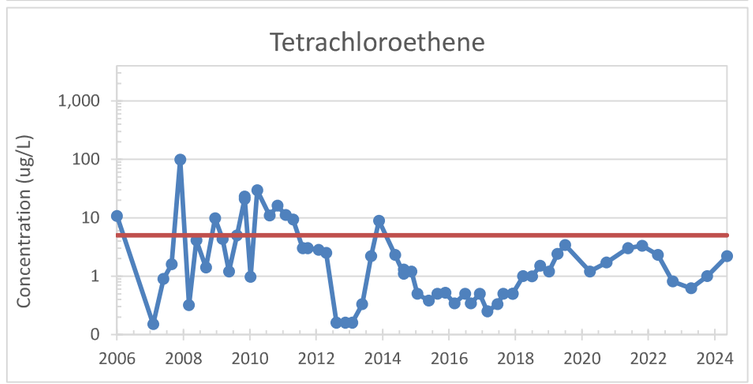


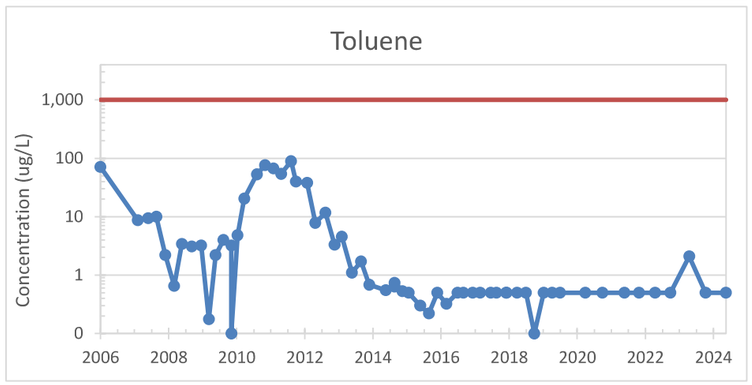


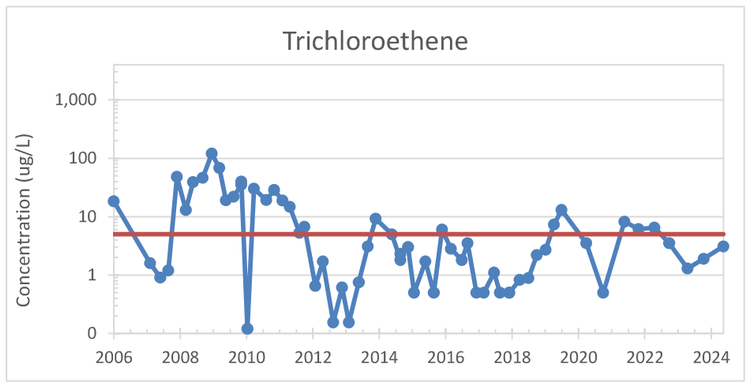


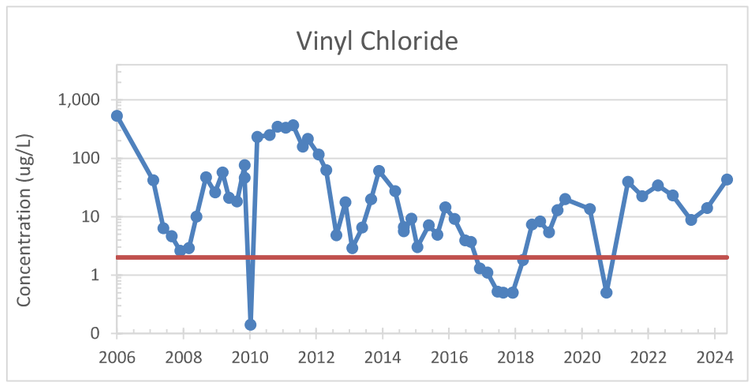








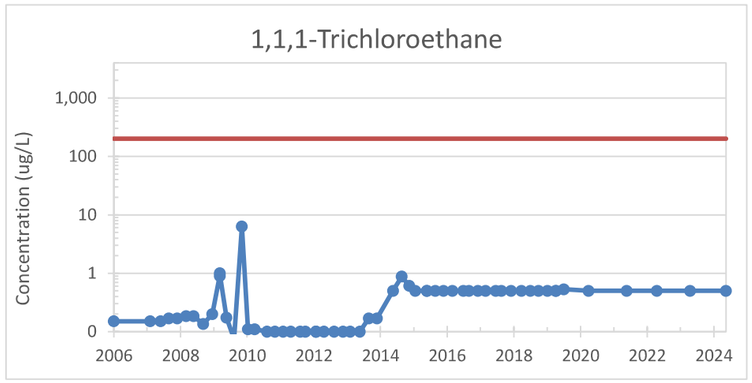


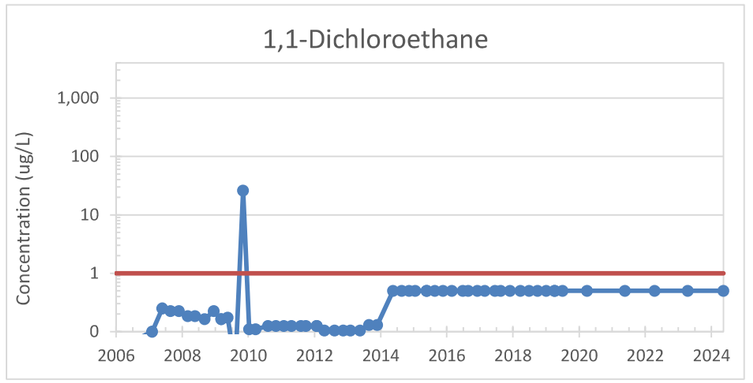


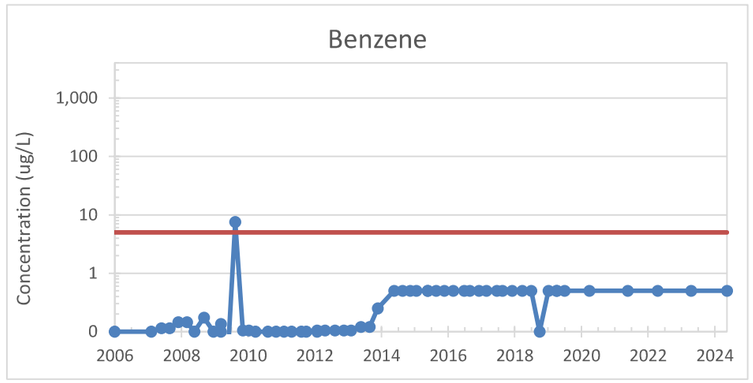
GWPS PLOTTED AS RED LINE

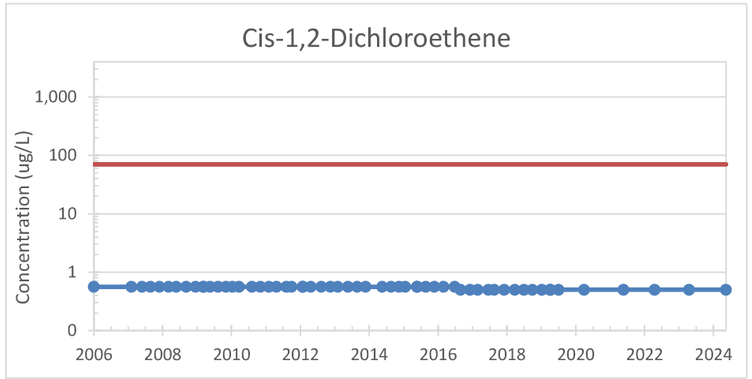
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

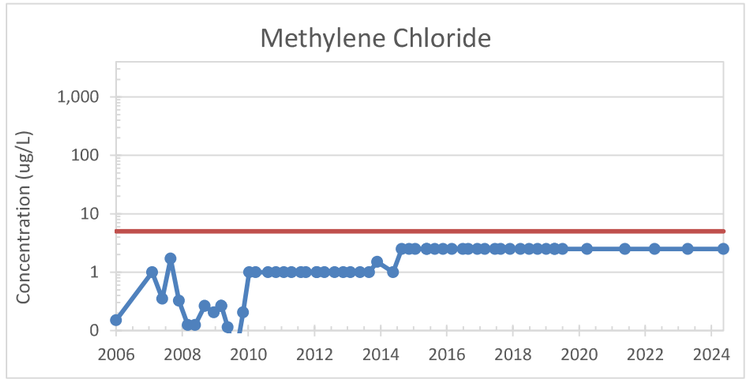
APPENDIX E-25 MW-16

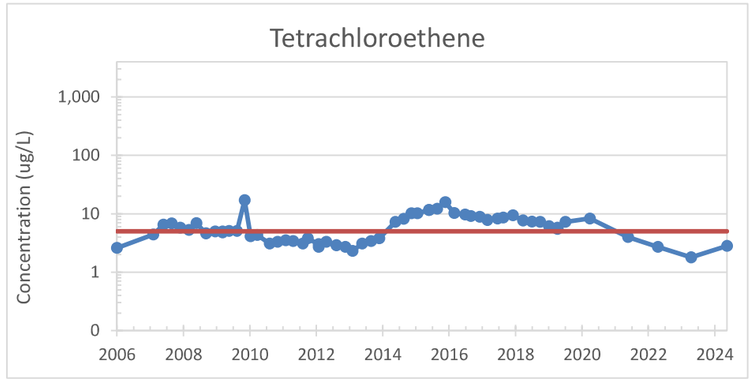


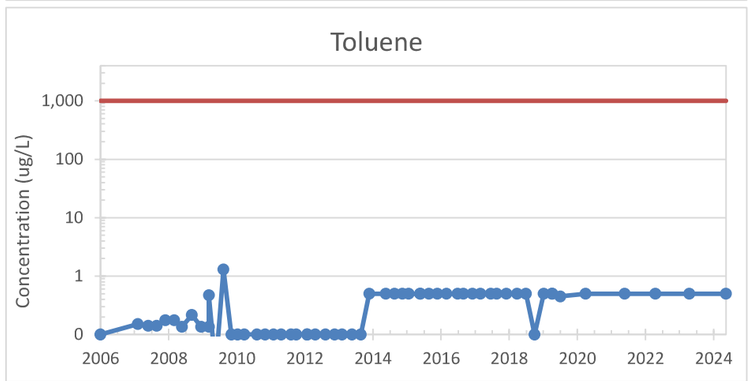


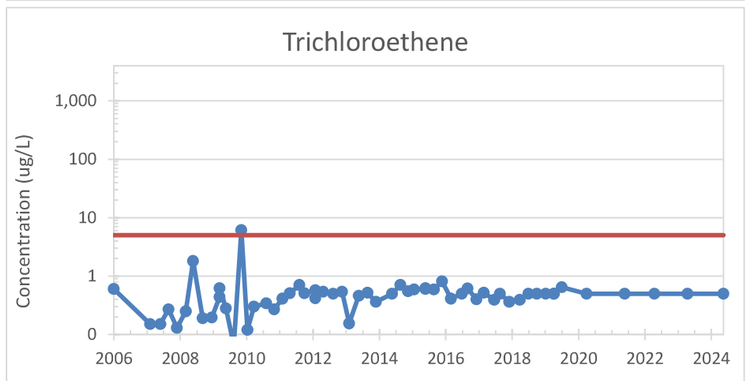


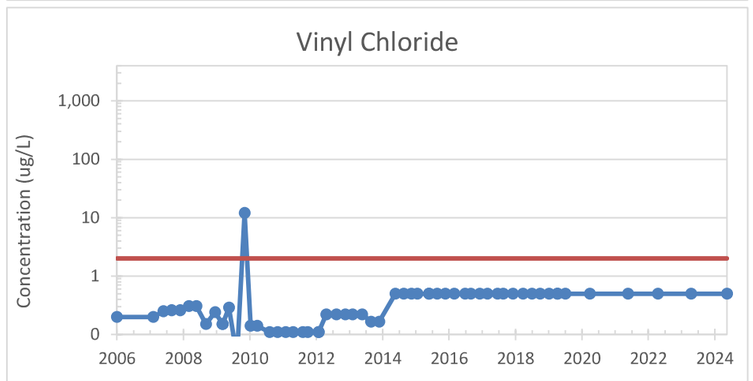










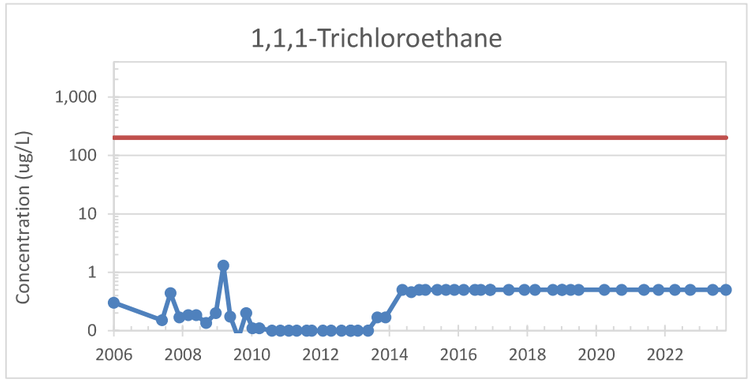


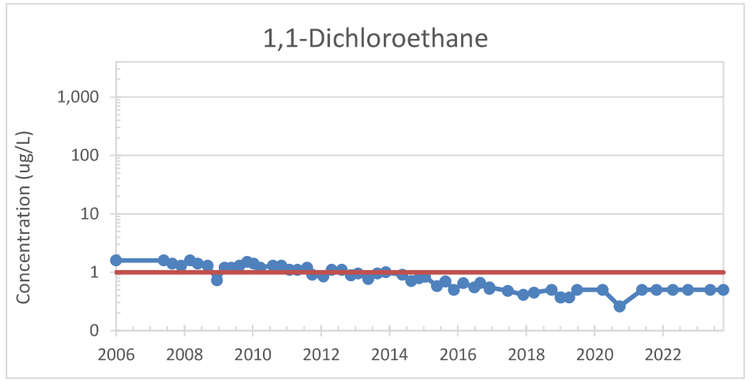
GWPS PLOTTED AS RED LINE

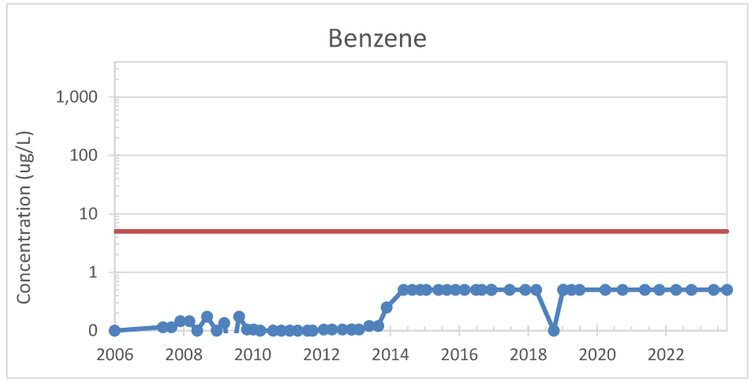
GeoSouth
Environmental Solutions

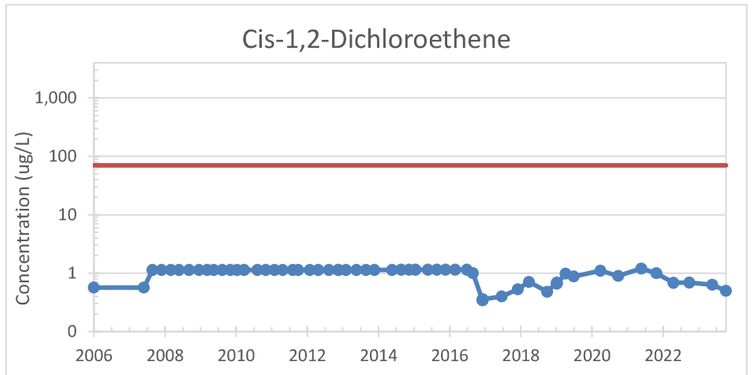
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

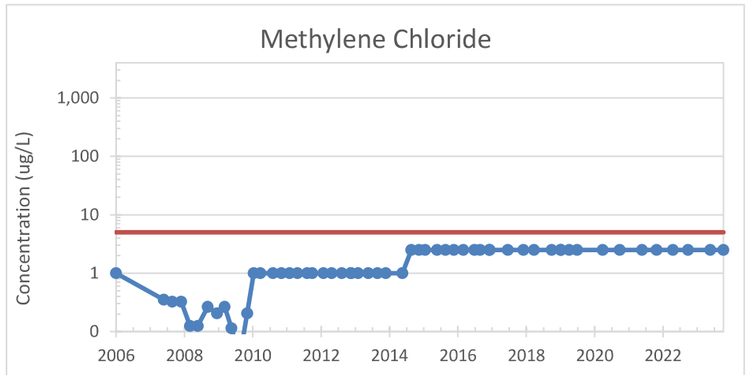
APPENDIX E-26 MW-20

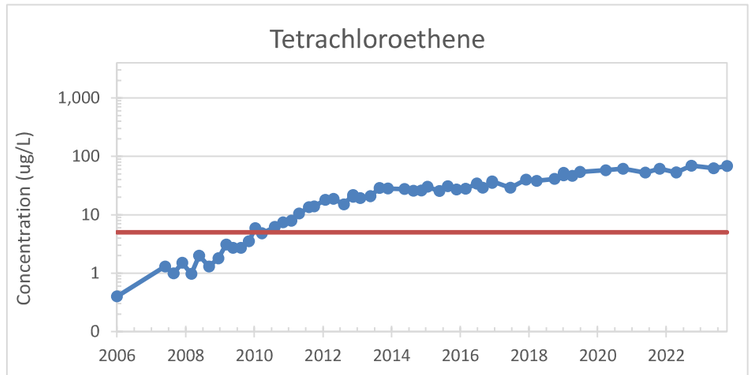


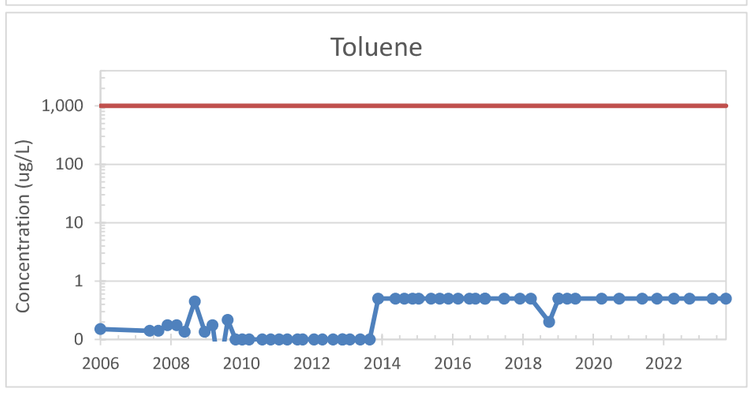


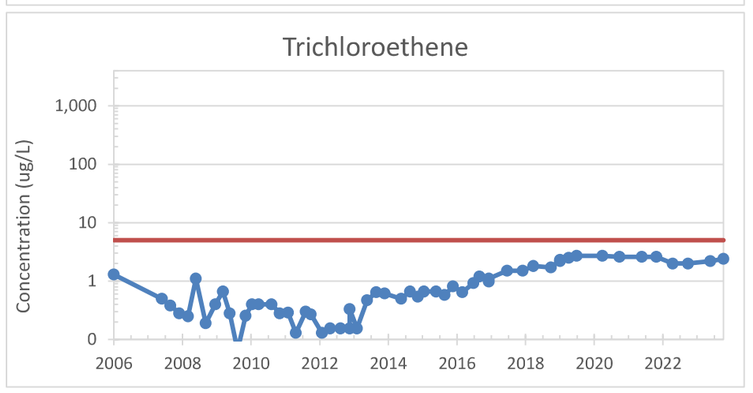


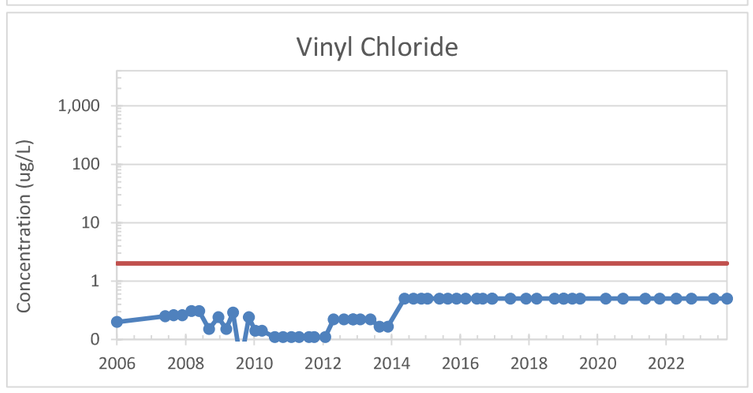








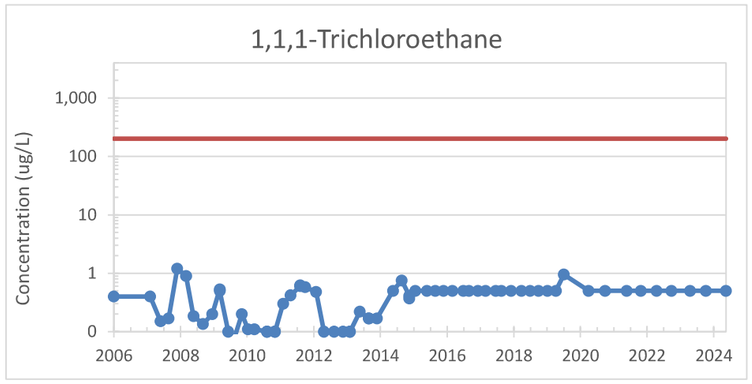


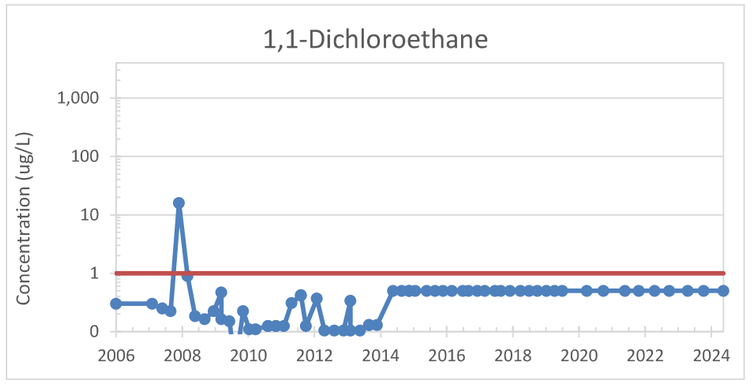


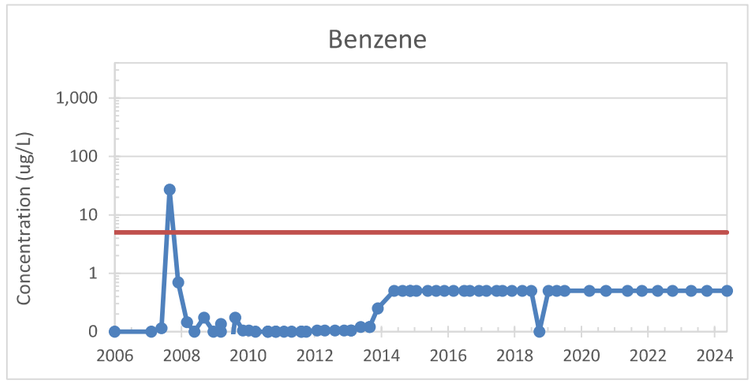
GWPS PLOTTED AS RED LINE

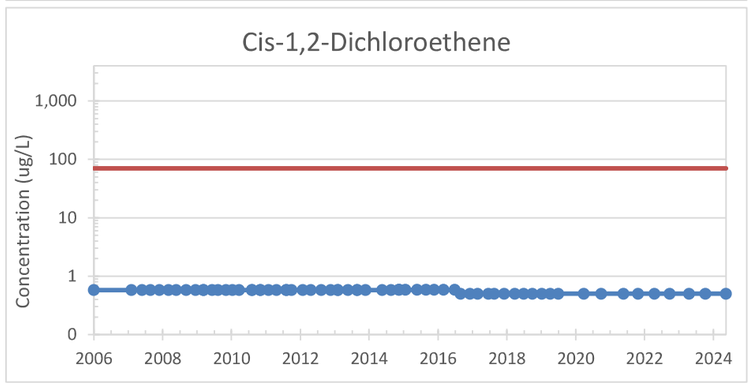
APPENDIX E
COC CONCENTRATIONS VS TIME GRAPHS WITH GROUNDWATER PROTECTION STANDARDS

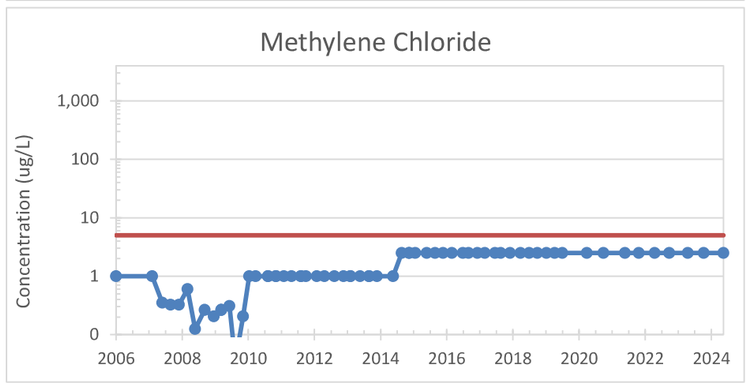
APPENDIX E-27 MW-14D

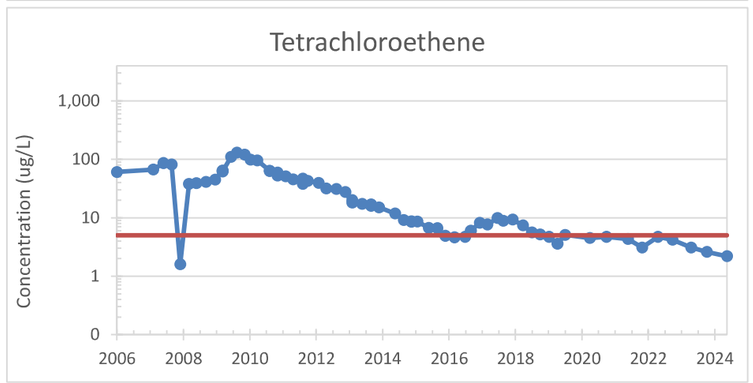


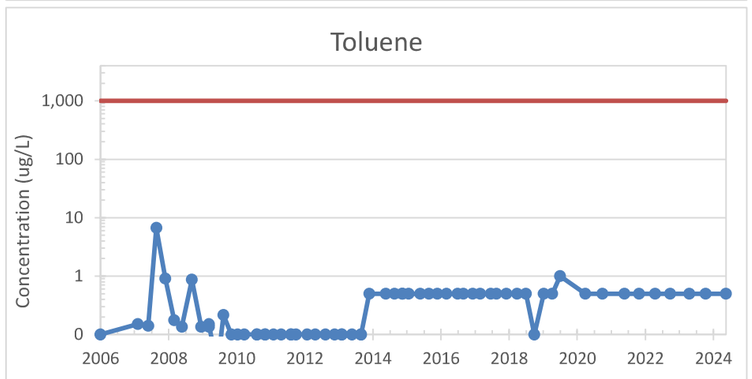


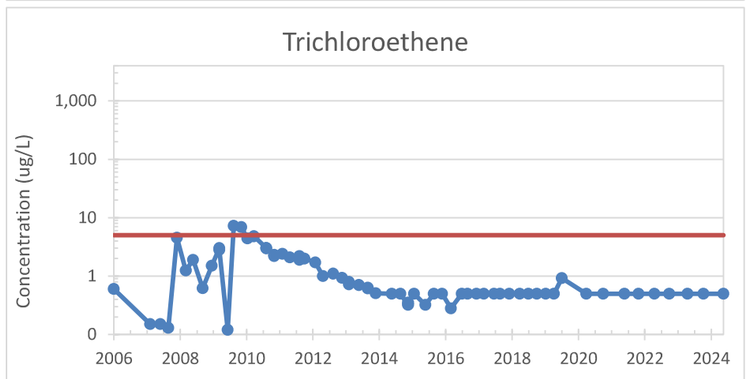


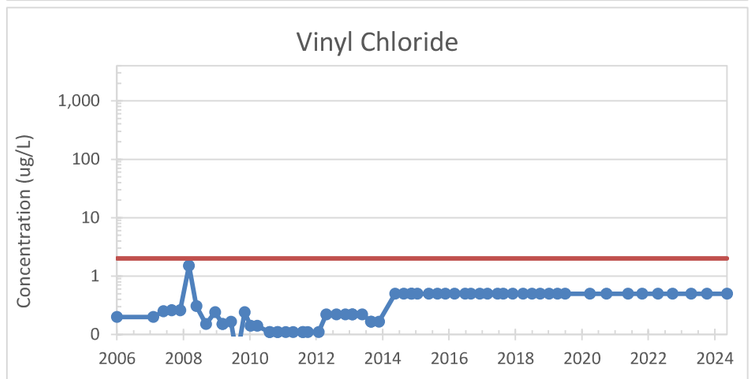












GWPS PLOTTED AS RED LINE

GeoSouth
Environmental Solutions

EXHIBIT E-2

BORING LOGS

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: ASI–1

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/14/06	DATE COMPLETED: 6/14/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 37.6	WATER DEPTH (FT. BTOC): 18.83
TOC ELEVATION (FT. MSL): 193.547	GROUND ELEVATION FT. MSL): 190.686
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% fine, 30% medium, 15% very fine, 5% coarse; sub-angular; graded; loose; dry; strong VOC odor	SM	562	1-2 ft.	
				451		9-14-18-23
	5	5-14', Silty medium sand: 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 35% fine, 10% very fine, 5% coarse; sub-angular; ghraded; dense; dry, strong VOC odor		359	6-7 ft.	
			SM			
	10	@10-12', Color change to reddish yellow (7.5YR 7/6)		259	11-12 ft. 11-12 ft. (PP)	5-7-12-15
	15	14-25' Clayey fine sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity, dense, moist, VOC odor		119	15.5-16 ft. (PP) 16-16.5 ft. (PP)	3-4-9-11
			SC			
	20	Clay interbeds from 20-20.5'; 21-21.5'		21.2		
		@20.5-21' Medium sand interbed; 90% sand, 10% silt, pale yellow (2.5Y 8/4); non-plastic; sand%: 50% medium; 20% coarse; 20% fine; 5% very coarse; 5% very fine; sub-rounded; well graded; loose; saturated				6-9-11-14
	25	25-36', Medium sand; 90% sand, 10% silt; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-angular; graded; loose; saturated				3-7-9-14
					27.5-28 ft. (PP) 28-28.5 ft. (PP)	
			SW			
	30	@32-34', Color change to white (10YR 8/1)				3-9-9-9
		@35-36', Color change to white (10YR 8/1)				3-4-5-3 4-4-5-11 8-9-12-23
	35	T.D. = 35 FT.				

1004-ASI-1.dwg

BORING LOG AND AIR SPARGE WELL CONSTRUCTION DIAGRAM

BOREHOLE ID: ASI-2	**CONTRACTOR:** BETTS DRILLING	**DRILLING RIG:** Geoprobe 3230 DT #2218
CLIENT: PERMA-FIX OF SOUTH GEORGIA	**DRILLER:** JAMES TYLER	**METHOD:** DPT / HSA / HA
PROJECT #: PERMA-023-0004	**GEOLOGIST:** R. PELLE	**SAMPLER:** 2" X 5' ACETATE LINER
LOCATION: VALDOSTA, GA	**DATE COMPLETED:** 12/01/2023	**TOTAL DEPTH (ft):** 40
EASTING (FEET): 2574711.455	**NORTHING (FEET):** 291135.781	**TOC/GSE (FT MSL):** 190.79 / 191.03

▽ DEPTH OF FIRST ENCOUNTERED WATER ▼ WATER LEVEL IN COMPLETED WELL (12/2/23)

DEPTH (ft bgs)	LITHOLOGIC DESCRIPTION	USCS	NOTES	MOISTURE CONTENT	PID HS (ppm)	AIR SPARGE WELL CONSTRUCTION	ELEV. (ft msl)
0	Concrete (0-8") over gravel FILL.	FILL	Boring was hand augered to 5 ft bgs.			Concrete	0
	Reddish brown silty SAND (SM), dry.				403.5		
					367.1		
					285.7		
5	grades with increasing clay, light tan mottling, dry.	SM	Highest PID soil sample collected 4-5 ft bgs.	Dry	1,343		-5
					623.1		
					510.5		
10					443.0		-10
					607.5		
					446.0		
					662.1		
15	Clayey fine SAND (SC), very hard, dry.				819.2		-15
	grades with more sand, moist to wet.			Moist			
	top of groundwater table.	SC			616.1	Type I portland with bentonite	
	grades with more sand, wet.				108.5		
20	grades grayish-tan, wet.				53.9	2" Sch. 40 PVC riser	-20
	grades with more clay, wet.				16.1		
	Grayish-tan fine SAND (SW), thin layers of sandy clay, wet.				7.2		
25	grades with less clay, wet.				3.5		-25
	grades orange, wet.	SW		Wet	1.5		
					2.0		
30					1.4		-30
					1.4		
	Light gray medium SAND (SP), wet.				1.5		
35					1.9	Bentonite	-35
		SP			1.4	20/30 silica sand	
40	Boring terminated at 40 ft bgs.				1.2	2" Sch. 40 PVC 0.010 slotted screen	-40

Trihydro CORPORATION

NOTES:
ft bgs - feet below ground surface
ft msl - feet above mean sea level
PID - photoionization detector
GPS-est. Survey Horizontal NAD 83 (State Plane, Georgia West)

HS - head space
ppm - part per million
GSE - Ground Surface Elevation
DPT - direct push technology
HSA - hollow stem auger
HA - hand auger
TOC - top of casing

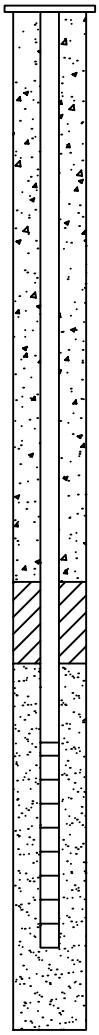
Not to be used separate from associated report

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: ASM-1

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.65	WATER DEPTH (FT. BTOC): 18.11
TOC ELEVATION (FT. MSL): 193.452	GROUND ELEVATION FT. MSL): 190.612
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 40% fine, 10% very fine; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor	SM	1023	-	
	5	5-16', Coarse sand; 85% sand, 10% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% coarse, 20% medium, 10% fine, 5% very coarse, 5% very fine; sub-angular; graded; loose; dry; strong VOC odor		1351		1-8-16-23
	10		SW	989		1-6-11-12
	15	@15-16', Hydrocarbon staining with strong VOC odor		189 82.2		1-2-4-3
		16-23.5', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellow (10YR 7/6); moderate plasticity; sand%: 70% fine, 20% medium, 10% very fine; sub-rounded; poorly graded; dense; saturated; VOC odor				
	20	@20.8-21.1', Coarse sand; 80% sand, 15% silt, 5% clay; pale yellow (2.5Y 8/4); non-plastic; sand%: 40% coarse, 30% medium, 10% fine, 10% very coarse, 10% very fine; sub-rounded; moderately-well graded; loose; saturated	SC	29.0 10.0		1-3-6-10
		23.5-25', Medium sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 5% very coarse, 5% very fine; sub-roundurated; moderately-well graded; loose; saturated	SW			2-2-2-7
	25	T.D. = 25 FT.				
	30					
	35					

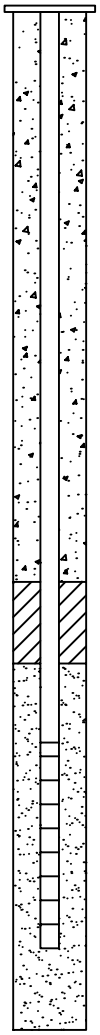
1004-ASM-1.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: ASM2

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.65	WATER DEPTH (FT. BTOC): 18.11
TOC ELEVATION (FT. MSL): 193.486	GROUND ELEVATION FT. MSL): 190.596
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 80% fine, 15% very fine, 5% medium; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor	SM	1838	-	
	5	5-14', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 20% coarse, 10% very fine, 10% fine; sub-angular; graded; dense; dry; strong VOC odor	SM	1973		5-10-15-18
	10			1702		1-5-9-10
	15	14-23', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellow (10YR 7/6); low plasticity; sand%: 5% fine, 30%medium, 20% very fine; sub-angular; moderately-poorly graded; dense; saturated; VOC odor		978		1-3-4-4
		@16.5-17', Medium sand interbed; 85% sand, 10% silt, 5% clay; yellow (10YR 8/8); non-plastic; sand%: 70% medium, 20% fine, 5% very fine, 5% coarse; sub-rounded; graded; loose; saturated; mild VOC odor	SC	249		
	20	@21.5-22', Hydrocarbon staining		41.7		2-4-6-9
		23-25', Medium sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 70% medium, 20% fine, 5% coarse, 5% very fine; sub-rounded; graded; loose; saturated	SP			3-5-7-9
	25	T.D. = 25 FT.				
	30					
	35					

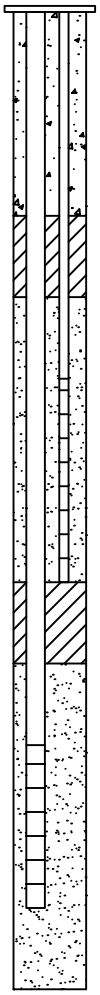
1004-ASM-2.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: ASM-3

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 26.89	WATER DEPTH (FT. BTOC): 18.22
TOC ELEVATION (FT. MSL): 193.874	GROUND ELEVATION FT. MSL): 190.586
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% fine, 30% medium, 10% very fine, 10% coarse; sub-angular; graded; loose; dry; mild VOC odor	SM	2.4	1-1.5 ft.	
	5	5-14', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 35% fine, 10% very fine, 5% coarse, ; sub-angular; graded; dense; dry; strong VOC odor	SM	380 1287 794	6-7 ft. 11-12 ft.	4-10-20-24 2-10-14-11
	10					
	15	14-17', Silty fine sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity; dense; moist; mild VOC odor @15.5-16', Medium silty sand; 80% sand, 15% silt, 5% clay; yellow (2.5Y 8/8); non-plastic	SM	163 311 115		5-4-4-5
		17-20', Clayey fine sand; 60% sand, 20% silt, 20% clay; yellow (10YR 8/8); medium plasticity; dense; saturated; strong VOC odors	SC	11.4 7.4 7.7		2-4-3-7
	20	20-21', Medium sand; 90% sand, 10% silt; pale yellow (2.5Y 8/4); non-plastic; sand%: 50% medium, 20% coarse, 20% fine, 5% very coarse, 5% very fine; sub-rounded; well graded; loose; saturated	SW	1.0		2-7-10-15
		22-24', Medium sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-angular; moderately-poorly graded; loose; saturated	SP			1-3-6-8
	25	T.D. = 24 FT.				
	30					
	35					

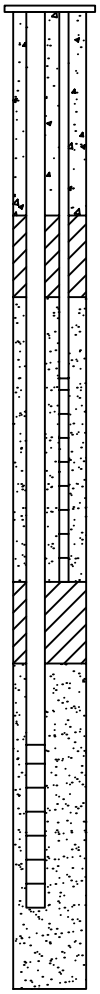
1004-ASM-3.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: ASM-4

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 26.21	WATER DEPTH (FT. BTOC): 18.41
TOC ELEVATION (FT. MSL): 193.794	GROUND ELEVATION FT. MSL): 190.774
LOGGED BY: NED TURNER	



DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-13', Silty medium sand; 70% sand, 25% silt, 5% clay; reddish yellow (5YR 6/8); non-plastic; sand%: 50% medium, 40% fine, 10% very fine; sub-angular; moderately-poorly graded; loose; dry		120	-	
5	@5-6', Hydrocarbon stained and dense	SM	1179		8-13-18-29
10			1372		7-8-11-8
15	13-16.5', Silty medium sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity; sand%: 50% medium, 30% fine, 15% very fine, 5% coarse, ; sub-rounded; graded; dense; moist	SM	808 366		5-8-7-9
	16.5-17', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 30% fine, 15% very fine, 5% coarse; sub-angular; graded; dense; saturated	SP			
20	17-23', Clayey fine sand; 70% sand, 20% clay, 10% silt; yellow (10YR 8/8); moderate plasticity; sand%: 80% fine, 20% very fine; sub-angular; poorly graded; dense; saturated; hydrocarbon stained @21-21.5', Coarse sand; 90% sand, 10% silt; yellowish red (5YR 5/8); non-plastic; sand%: 60% coarse, 20% medium, 10% fine, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated	SC	24.2		3-6-11-9
	23-25', Silty medium sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity; sand%: 50% medium, 30% fine, 15% very fine, 5% coarse; sub-angular; graded; dense; saturated	SM			4-1-4-12
25	T.D. = 25 FT.				
30					
35					

1004-ASM-4.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–100

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL		
DRILL RIG TYPE: DIEDRICH D-120		DRILL METHOD: HOLLOW STEM AUGER	
DATE STARTED: 6/13/06	DATE COMPLETED: 6/13/06	PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 29.51	WATER DEPTH (FT. BTOC): 20.82	TOC ELEVATION (FT. MSL): 195.19	GROUND ELEVATION FT. MSL): 190.48	LOGGED BY: NED TURNER

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5.5', Silty fine sand; 80% sand; 15% silt, 5% clay; reddish brown (5YR 4/4); non-plastic; sand%: 50% fine, 15% very fine, 5% medium; sub-angular; moderate-poorly graded; loose; dry	SM	1.5	1-1.5 ft.	
	5	5.5-10', Fine sand; 85% sand; 10% silt; 5% clay; red (2.5YR 5/8); non-plastic; sand%: 50% fine, 35% medium, 15% very fine; sub-angular; moderately-poorly graded; loose; dry; mild VOC odor	SP	290	5-6 ft.	5-8-13-19
	10	10-15.5', Clayey fine sand; 60% sand, 25% silt, 15% clay; reddish yellow (7.5YR 7/8); low plasticity; sand%: 60% fine, 30% very fine, 10% medium; sub-angular; moderately-poorly graded; loose; moist; VOC odor	SC	370	10-11 ft.	3-5-6-7
	15	15.5-17', Clayey fine sand; 60% sand, 25% clay, 15% silt; pale yellow (2.5Y 8/4); moderate plasticity; loose; saturated; hydrocarbon stained; interbedded sand bars, medium sub-rounded sand	SC	25		2-3-5-8
	20	18-26', Fine sand; 80% sand, 15% silt, 5% clay; yellow (10YR 8/8); low plasticity; sand%: 80% fine, 10% very fine, 10% medium; sub-rounded; moderately-poorly graded, loose; saturated; mild VOC odor	SP	7.2		3-5-8-13
	25	26-27', Medium sand; 90% sand, 10% silt; reddish yellow (7.5YR 7/8); non-plastic; sand%: 50% medium, 40% fine, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated	SP	120		5-6-7-13
	30	T.D. = 27 FT.				
	35					

1004-B-100.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–101

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.19	WATER DEPTH (FT. BTOC): 15.08
TOC ELEVATION (FT. MSL): 190.4	GROUND ELEVATION FT. MSL): 190.6
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-17', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 20% fine, 10% very fine, 10% coarse; sub-angular; moderately-poorly graded; loose; dry		30.1	1-2 ft.	
	5			185	6-7 FT.	3-4-10-15
		@9-17', Color change to brownish yellow (10YR 6/6)	SM			
	10			380	11-12 FT.	2-9-18-19
	15			755		1-5-4-5
		17-26.5', Clayey medium sand; 60% sand, 25% clay, 15% silt; yellow (7.5YR 6/8); moderately plastic; sand%: 60% medium, 30% fine, 5% coarse, 5% very fine; sub-rounded; graded; dense; saturated				
	20	@21.5-21.7', Coarse sand interbed; 85% sand, 10% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 50% coarse, 20% medium, 20% very coarse, 10% fine; sub-rounded; graded; loose; saturated	SC	9.1		2-3-5-7
	25					4-8-11-8
		26.5-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated	SW			
		T.D. = 27 FT.				
	30					
	35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–102

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/13/06	DATE COMPLETED: 6/13/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 29.56	WATER DEPTH (FT. BTOC): 19.11
TOC ELEVATION (FT. MSL): 196.87	GROUND ELEVATION FT. MSL): 190.37
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5', Silty fine sand; 80% sand, 15% silt, 5% clay; reddish brown (5YR 4/4); non-plastic; sand%: 50% fine, 15% very fine; 5% medium, sub-angular; moderately-poorly graded; loose; dry	SM	5.0	1-2 ft.	
	5	5-11', Fine sand; 80% sand, 10% silt, 10% clay; red (2.5YR 5/8); non-plastic; sand%: 50% fine, 35% medium, 15% very fine; sub-angular; moderately-poorly graded; loose; dry; stron VOC odor @6'	SP	260	5-6 ft.	1-4-11-21
	10			430		1-4-5-8
		11-15.5', Clayey very fine sand; 60% sand, 25% silt, 15% clay; yellow (10YR 7/6); low plasticity; sand%: 60% very fine, 20% fine, 20% medium; sub-angular; moderately-poorly graded; loose; moist; VOC odor	SC		11-12 ft.	
	15			80		4-3-6-8
		15.5-17', Clayey fine sand; 60% sand, 25% clay, 15% silt; pale yellow (2.5Y 8/4); moderate plasticity; loose; saturated; hydrocarbon stained	SC			
		17-21.5', Medium sand; 80% sand, 15% silt, 5% clay; yellow (10YR 8/8); low plasticity; sand%: 80% medium, 10% fine, 5% very fine, 5% coarse; sub-rounded; graded; loose; saturated; mild VOC odor	SP			
	20			10		1-3-3-4
		21.5-27', Fine sand; 80% sand, 20% silt; yellowish red (5YR 5/6); non-plastic; sand%: 80% fine, 10% medium, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated	SP			1-1-6-12
	25					5-7-8-12
		27', Fine sand; 90% sand, 10% silt; yellow (2.5Y 8/6); non-plastic; sand%: 60% fine, 30% medium, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated				
		T.D. = 27 FT.				
	30					
	35					

1004-B-102.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B-103

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
DIEDRICH D-120	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/19/06	6/19/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
25.21	15.31	190.85	190.89	NED TURNER

DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-1', Concrete				
	1-17', Silty medium sand; 70% sand, 25% silt, 5% clay; red (2.5YR 5/8); non-plastic; sand%: 60% medium, 25% fine, 10% very fine, 5% coarse; sub-angular; graded; loose; dry		14.1	1-2 ft.	
5			117	6-7 ft.	2-7-13-17
		SM			
10	@11-12', Color change to strong brown (7.5YR 5/6); and density to dense, hydrocarbon stained		92.4 436	11-12 ft.	4-7-11-10
	@12-17', Color change to reddish yellow (7.5YR 6/6); and density to loose				
15			451		1-1-6-7
	17-21', Clayey medium sand; 65% sand, 25% clay, 15% silt; reddish yellow (7.5YR 6/6); low plsticity; sand%: 50% medium, 30% fine, 10% coarse, 10% very fine; sub-rounded; graded; dense; saturated; hydrocarbon stained @17'	SC			
20	@20-20.5', Coarse sand interbed; 80% sand, 15% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 70% coarse, 20% medium, 5% very coarse, 5% fine, 5% very fine; sub-rounded; moderately-well graded; loose; saturated		4.7 0.3		3-4-5-11
	21-27', Coarse sand; 75% sand, 20% silt, 5% clay; non-plastic; sand%: 50% coarse, 40% medium, 5% fine, 5% very fine; sub-rounded; moderately-poorly graded; loose; saturated	SP			
25					1-3-7-9
	T.D. = 27 FT.				
30					
35					

1004-B-103.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–104

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/14/06	DATE COMPLETED: 6/14/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 26.41	WATER DEPTH (FT. BTOC): 20.5
TOC ELEVATION (FT. MSL): 195.84	GROUND ELEVATION FT. MSL): 190.67
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-6', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; moderately-poorly graded; loose; dry		5.2	1-2 ft.	
				251		
	5			319		1-9-13-19
		@6-15', Grain size increase to medium; sand%: 45% medium, 35% fine, 20% very fine; mild VOC odor	SM		5-6 ft.	
	10	@10-11', Strong VOC odor		346		2-12-15-16
				405		
					11-12 ft.	
	15	14-25', Clayey fine sand; 50% sand, 35% clay, 15% silt; brownish yellow (10YR 6/6); moderately plastic; sand%: 60% fine, 40% very fine; sub-angular; poorly graded; dense; moist; strond VOC odor		333		3-4-5-9
		@16-17', Silty medium sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); moderate plasticity; sand%: 60% medium, 30% fine, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated; strong VOC odor		314		1-2-5-7
				64		1-2-7-11
		@18-18.5', Silty medium sand as above		87		
		@18.5-19', Hydrocarbon stained and strong VOC odor		14		
	20		SC			
	25	25-27', Medium sand; 80% sand, 15% silt, 5% clay; reddish brown (7.5YR 6/8); non-plastic; sand%: 60% medium, 30% fine, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated	SP			5-11-11-14
		T.D. = 27 FT.				
	30					
	35					

1004-B-104.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–105

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/15/06	DATE COMPLETED: 6/15/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 26.37	WATER DEPTH (FT. BTOC): 20.15
TOC ELEVATION (FT. MSL): 195.51	GROUND ELEVATION FT. MSL): 190.67
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-16', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 30% fine, 5% very fine, 5% coarse; sub-angular; graded; loose; dry; strong VOC odor	SM	48.5	1-1.5 ft.	
	5			2705	6-7 ft.	4-4-11-18
	10			1330	11-12 ft.	5-10-11-15
	15	@14-16', Color change to yellow (10YR 8/6)		1440		1-3-3-4
		16-25.5', Clayey fine sand; 65% sand, 10% silt, 25% clay; brownish yellow (10YR 6/6); moderate plasticity; sand%: 50% fine, 35% medium, 15% very fine; sub-rounded; moderately-poorly graded; dense; saturated; VOC odor; hydrocarbon stained	SC	171		
	20	@21-21.3', Medium sand interbed; 90% sand, 10% silt; pale yellow (2.5Y 8/4); non-plastic; sand%: 60% medium, 15% coarse, 15% fine, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated @22-22.3', Medium sand interbed same as above		117		2-3-6-10
	25	25.5-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 40% medium, 30% coarse, 20% fine, 10% very fine; sub-angular; graded; loose; saturated	SW	1002 11.5		2-6-9-13
		T.D. = 27 FT.				
	30					
	35					

1004-B-105.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–106

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/19/06	DATE COMPLETED: 6/19/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 25.20	WATER DEPTH (FT. BTOC): 15.03
TOC ELEVATION (FT. MSL): 190.596	GROUND ELEVATION FT. MSL): 191.139
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-17', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/8); non-plastic; sand%: 50% medium, 30% fine, 15% very fine, 5% coarse; sub-angular; moderately-poorly graded; loose; dry		16.0	1-2 ft.	
	5			563		1-2-11-14
			SM		6-7 ft.	
	10			473		7-11-13-14
					11-12 ft.	
	15	@15-15.5', Clayey medium sand interbed see below		827 283		1-3-4-8
		17-21', Clayey medium sand; 65% sand, 25% clay, 15% silt; reddish yellow (7.5YR 6/6); low plasticity; sand%: 50% medium, 30% fine, 10% coarse, 10% very fine; sub-rounded; graded; dense; saturated				
	20	@20-20.5', Medium sand interbed; 75% sand, 15% silt, 10% clay; reddish yellow (7.5YR 6/6); non-plastic; sand%: 70% medium, 20% fine, 10% coarse; sub-rounded; poorly graded; loose; saturated	SC	23.8		1-5-9-11
		@20.5-21', Hydrocarbon stained; strong VOC odor		5.7		
		21-27', Silty coarse sand; 70% sand, 25% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% coarse, 40% medium, 5% fine, 5% very fine; sub-rounded; moderately-poorly graded; loose; saturated	SM			2-3-5-7
	25	T.D. = 27 FT.				
	30					
	35					

1004-B-106.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B-107

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/19/06	DATE COMPLETED: 6/19/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 24.70	WATER DEPTH (FT. BTOC): 15.96
TOC ELEVATION (FT. MSL): 191.202	GROUND ELEVATION FT. MSL): 191.488
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-16.5', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 10% very fine; sub-angular; graded; loose; moist from 1-3' dry for rest	SM	863	1-2 ft.	
	5			595	6-7 ft.	1-5-10-13
	10	@10-16.5', Color change to yellow (10YR 8/6)		479	11-12 ft.	1-9-8-10
	15			469 467		1-5-8-10
		16.5-22', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellow (10YR 8/6); low plasticity; sand%: 70% fine, 15% medium, 15% very fine; sub-rounded, poorly graded; dense; saturated	SC			
	20			152		1-2-4-5
		22-24', Very fine sand; 85% sand, 10% silt, 5% clay; pale yellow (2.5Y 8/3); non-plastic; sand%: 85% very fine, 15% fine; sub-rounded; poorly graded; loose; saturated	SP			
		24-27', Silty medium sand; 70% sand, 25% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-angular; graded; loose; saturated	SM	1.8		4-9-11-12
	25	T.D. = 27 FT.				
	30					
	35					

1004-B-107.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–108

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/20/06	DATE COMPLETED: 6/20/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.99	WATER DEPTH (FT. BTOC): 16.66
TOC ELEVATION (FT. MSL): 191.973	GROUND ELEVATION FT. MSL): 192.085
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-17', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 30% fine, 10% coarse, 10% very fine; sub-angular; graded; loose; dry		910	1-2 ft.	
	5			2085	6-7 ft.	3-7-13-15
			SM			
	10			1970	11-12 ft.	4-11-12-9
	15			2206		2-6-10-11
		17-25', Clayey fine sand; 60% sand, 25% clay, 15% silt; brownish yellow (10yr 6/6); moderate plasticity; sand%: 45% fine, 40% medium, 10% very fine, 5% coarse; sub-angular; moderately-poorly graded; dense; saturated				
		@20-21', Hydrocarbon stained		925 193		2-3-6-4
	20		SC			
	25	25-27', Silty coarse sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% coarse, 30% medium, 10% fine, 5% very coarse, 5% very fine; sub-angular; moderately-well graded; loose; saturated	SM	628		2-3-9-7
		T.D. = 27 FT.				
	30					
	35					

1004-B-108.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–109

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/19/06	6/19/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
25.09	14.17	189.557	190.012	NED TURNER

DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-1', Concrete				
	1-16', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/8); non-plastic; sand%: 50% medium, 30% fine, 20% very fine, 10% coarse; sub-angular; graded; loose; dry	SM	1466	1-2 ft.	
5			422	6-7 ft.	1-3-8-6
10			427	11-12 ft.	1-1-8-8
15			636 640		
	16-22', Clayey medium sand; 60% sand, 25% clay, 15% silt; reddish yellow (7.5YR 6/6); moderate plasticity; sand%: 50% medium, 30% fine, 10% very fine, 10% coarse; sub-rounded; graded; dense; saturated	SC			
20	@20.5-21', Coarse sand interbed; 90% sand, 10% silt; yellow (10YR 7/6); non-plastic; sand%: 60% coarse, 25% medium, 10% fine, 5% very fine; sub-rounded; moderately-well graded; loose; saturated		62.6 9.4		
	22-27', Silty coarse sand; 70% sand, 25% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 40% coarse, 35% medium, 25% fine, 10% very fine; sub-rounded; moderately-well graded; loose; saturated	SM			
25			4.9		
	T.D. = 27 FT.				
30					
35					

1004-B-109.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–110

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/20/06	DATE COMPLETED: 6/20/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 21.87	WATER DEPTH (FT. BTOC): 16.87
TOC ELEVATION (FT. MSL): 191.778	GROUND ELEVATION FT. MSL): 191.896
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-17', Silty medium sand; 70% sand, 20% silt, 10% clay; reddish brown (5YR 4/4); low plasticity; sand%: 40% medium, 30% fine, 10% very fine, 20% coarse; sub-angular; moderately-well graded; loose; dry		229	1-2 ft.	
	5			420	6-7 ft.	3-6-14-19
		@9-17', Color change to reddish yellow (5YR 6/6)	SM			
	10			302	11-12 ft.	5-12-18-12
	15			552		4-5-6-7
		17-26', Clayey medium sand; 60% sand, 25% clay, 15% silt; yellow (10YR 6/6); moderate plasticity; sand%: 60% medium, 25% fine, 10% coarse, 5% very fine; sub-rounded; graded; dense; saturated				
	20	@20-21', Hydrocarbon stained	SC	83.1		1-3-4-5
	25	@25-26', Hydrocarbon stained		112		1-3-5-7
		26-27', Silty coarse sand; 80% sand, 20% silt; reddish yellow (7.5YR 7/8); non-plastic; sand%: 50% coarse, 30% medium, 10% fine, 5% very coarse, 5% very fine; sub-angular; graded; loose; saturated	SM			
		T.D. = 27 FT.				
	30					
	35					

1004-B-110.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B-110a

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL		
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER		
DATE STARTED: 6/20/06	DATE COMPLETED: 6/20/06	PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 4.0	WATER DEPTH (FT. BTOC): NA	TOC ELEVATION (FT. MSL): NA	GROUND ELEVATION FT. MSL): 191.90	LOGGED BY: NED TURNER

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete		351	1-2 ft.	
		1-4', Silty medium sand; 70% sand, 20% silt, 10% clay; reddish brown (5YR 4/4); low-plasticity; sand%: 40% medium, 30% fine, 20% coarse, 10% very fine; sub-angular; moderately-well graded; loose; dry	SM			
		@4', Hit plumbing in boring, move rig to east and start again				
	5	T.D. = 4 FT.				
	10					
	15					
	20					
	25					
	30					
	35					

1004-B-110a.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–111

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/19/06	DATE COMPLETED: 6/19/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 22.69	WATER DEPTH (FT. BTOC): 16.14
TOC ELEVATION (FT. MSL): 191.392	GROUND ELEVATION FT. MSL): 191.505
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-2', Clayey fine sand; 60% sand, 30% clay, 10% silt; reddish brown (5YR 4/3); moderate plasticity; sand%: 70% fine, 20% very fine, 10% medium; sub-angular; moderately-poorly graded; dense; moist	SC	2283	1-2 ft.	
		2-15', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/8); non-plastic; sand%: 50% medium, 30% fine, 20% very fine; sub-angular; moderately-poorly graded; loose; dry				
	5			1230		1-2-7-11
					6-7 ft.	
			SM			
	10	@11-11.5', Clayey medium sand interbed		1482		2-7-9-11
					11-12 ft.	
	15	15-21.5', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellowish brown (10YR 5/4); moderate plasticity; sand%: 70% fine, 20% very fine, 10% medium; sub-angular; moderately-poorly graded; desne; saturated; hydrocarbon stained		750 884		4-6-9-7
			SC			
	20	@20-21', Silty coarse sand interbed; 75% sand, 20% silt,5% clay; yellow (10YR 7/6); non-plastic; sand%: 40% coarse, 35% medium, 25% fine, 5% very fine, 5% very coarse; sub-rounded; graded; loose; saturated		309 79		1-1-4-6
		21.5-27', Silty coarse sand; 75% sand, 20% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 40% coarse, 30% medium, 20% fine, 10% very coarse, 10% very fine; sub-rounded; moderately-well graded; loose; saturated				
			SM			
	25			12.1		2-5-6-5
		T.D. = 27 FT.				
	30					
	35					

1004-B-111.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B-112

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/20/06	6/20/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
25.18	16.12	191.887	192.139	NED TURNER

DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-1', Concrete				
	1-16', Silty medium sand; 70% sand, 20% silt, 10% clay; reddish brown (5YR 4/4); low plasticity; sand%: 40% medium, 20% coarse, 20% fine, 10% very coarse, 10% very fine; sub-angular; moderately-well graded; loose; dry	SM	67.3	1-2 ft.	
5			303	6-7 ft.	4-6-14-11
	@9-16', Color change to yellowish red (5YR 5/6)				
10			418	11-12 ft.	5-12-10-9
15			354 712		3-10-7-10
	16-25', Clayey fine sand; 60% sand, 25% clay, 15% silt; reddish yellow (7.5YR 6/6); moderate plasticity; sand%: 60% fine, 20% medium, 20% fine; sub-angular; moderately-poorly graded; desne; saturated	SC			
20	@20-21', Hydrocarbon stained		60.4		2-7-5-7
25	25-27', Silty coarse sand; 80% sand, 20% silt; reddish yellow (7.5YR 7/8); non-plastic; sand%: 50% coarse, 30% medium, 10% fine, 5% very coarse, 5% very fine; sub-angular; graded; loose; saturated	SM	3.8		4-6-6-8
	T.D. = 27 FT.				
30					
35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B-113

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/20/06	6/20/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
24.35	16.57	191.493	191.527	NED TURNER

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				2-7-10-9
		1-3', Silty very fine sand; 60% sand, 35% silt, 5% clay;brown (10YR 5/3); non-plastic; sand%: 80% very fine, 20% fine; sub-angular; poorly graded; loose; moist; hydrocarbon stained	SM	1067 409	1-2 ft.	
		3-14.5', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 10% very fine; sub-angular; graded; loose; dry; hydrocarbon stained @8-12 ft.		523		4-7-12-18
	5			1086		4-6-11-18
					6-7 ft.	
			SM		8-8.5 ft. (PP)	4-6-10-7
	10			586		2-3-9-14
				416		
					11-12 ft.	7-13-14-15
				384		
	15	14.5-19', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellowish brown (10YR 5/4); low plasticity; sand%: 70% fine, 20% very fine, 10% medium; sub-angular; moderately-poorly graded; dense; saturated; hydrocarbon stained		238 278		3-10-10-12 6-7-9-11
			SC		17.5-18 ft. (PP)	6-8-11-13
	20	19-27', Silty coarse sand; 80% sand, 15% silt, 5% clay; brownish yellow (10YR 6/6); non-plastic; sand%: 50% coarse, 30% medium, 10% very coarse, 5% fine, 5% very fine; sub-rounded; graded; loose; saturated		10.8 2.3		3-8-10-13
		@21.5', Color change to reddish yellow (7.5YR 6/8)		1.3		
			SM			
	25				25-25.5 ft. (PP)	3-8-8-10
					25.5-26 ft. (PP)	
		T.D. = 27 FT.				
	30					
	35					

1004-B-113.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–114

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/20/06	6/20/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
25.15	16.91	192.23	192.07	NED TURNER

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-6', Clayey medium sand; 60% sand, 25% clay, 15% silt; reddish brown (5YR 4/4); low plasticity; sand%: 50% medium, 40% fine, 10% very fine; sub-angular; moderately-poorly graded; dense;	SC	60.3	1-2 ft.	
	5			440 73	6-7 ft.	2-6-12-16
		6-17', Silty medium sand; 75% sand, 20% silt, 5% clay; reddish yellow (5YR 6/6); non-plastic; sand%: 60% medium, 10% fine, 20% coarse, 10% very fine; sub-angular; graded; loose; dry	SM			
	10			380	11-12 ft.	2-3-11-13
	15			47.4		4-10-12-13
		17-26', Clayey fine sand; 60% sand, 25% clay, 15% silt; brownish yellow (10YR 6/6); low plasticity; sand%: 40% fine, 30% medium, 20% coarse, 10% very fine; sub-angular; moderately-well graded; dense; saturated				
	20			137 43.0		
		@21.5-22' Silty coarse sand interbed; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/8); sand%: 60% coarse, 30% medium, 5% fine, 5% very coarse; sub-angular; graded; loose; saturated	SC			
	25			19.7		
		26-27', Coarse sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 7/8); non-plastic; sand%: 70% coarse, 20% medium, 10% fine; sub-angular; moderately-poorly graded; loose; saturated	SP			
		T.D. = 27 FT.				
	30					
	35					

1004-B-114.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MPX-1

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
DIEDRICH D-120	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/12/06	6/12/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
31.32	18.18	193.503	190.493	NED TURNER

DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-1.5', Silty very fine sand; 75% sand, 20% silt, 5% clay; strong brown (7.5YR 4/6); low plasticity; sand%: 90% very fine, 10% fine to medium; sub-angular; poorly graded; loose; dry	SM	15.2	1-2 ft.	4-6-9
	1.5-13', Fine sand; 80% sand, 15% silt, 5% clay; red (2.5YR 4/6); non-plastic; sand%: 70% fine, 20% very fine, 5% medium to coarse; sub-angular; moderately-poorly graded; loose; dry; mild VOC odor, strong from 7-8 ft.		135		
			51		21-11-15-19
5			805		14-16-30-30
				5-6 ft.	
		SP			8-7-6-7
			456		
	@8-13', Color change to reddish yellow (5YR 6/6); change in sand%: medium to fine snad, 80% sand, 15% silt, 5% clay; sand% 60% fine, 30% medium, 10% very fine; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor		590		
					4-10-14-22
10			620		11-9-9-9
					2-2-6-7
				10-11 ft.	
			750	11.5-13 ft. (PP)	
	13-14', Silty very fine sand; 60% sand, 30% silt, 10% clay; yellow (10YR 7/6); low plasticity; sand%: 60% very fine, 20% fine, 20% medium; sub-angular; moderately graded; loose; moist	SM	350		
15	14-18', Clayey fine sand; 60% sand, 20% silt, 20% clay; yellow (10YR 8/8); medium plasticity; loose; saturated; strong VOC odor, hydrocarbon discoloration		320		1-1-2-4
		SC	150		
			190		2-3-7-9
	18-18.3', Medium sand; 90% sand, 10% silt; yellow (2.5Y 8/8); no plasticity; sand%: 80% medium, 10% fine, 5% very fine; 5% coarse, sub-rounded; moderately graded; loose; saturated	SM SC			
20	18.3-19', Fine sand with clay interbedding; sand layer: 70% sand, 15% silt, 5% clay; clay interbeds: 50% clay, 40% silt, 10% sand; yellow (10YR 8/6); medium plasticity in clay; compact; saturated		120		2-2-2-3
					7-7-8-13
	19-25', Clayey fine sand; 60% sand, 30% silt, 10% clay; yellow (10YR 7/8); low plasticity; sand%: 90% very fine to fine, 10% medium; sub-rounded; poorly graded; loose; saturated; mild VOC odor	SC		22-23 ft. (PP)	
25			11.5		2-2-5-12
	25-30', Medium sand; 90% sand, 10% silt; yellow (10YR 7/8); non-plastic; sand%: 80% medium, 10% fine, 10% very fine; sub-rounded; poorly graded; loose; saturated				16-22-18-10
		SP			
30	T.D. = 30 FT.				
35					

1004-MPX-1.dwg

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-5S

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/22/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA (4-1/4")*

ELEVATION: *188.82 Feet MSL*

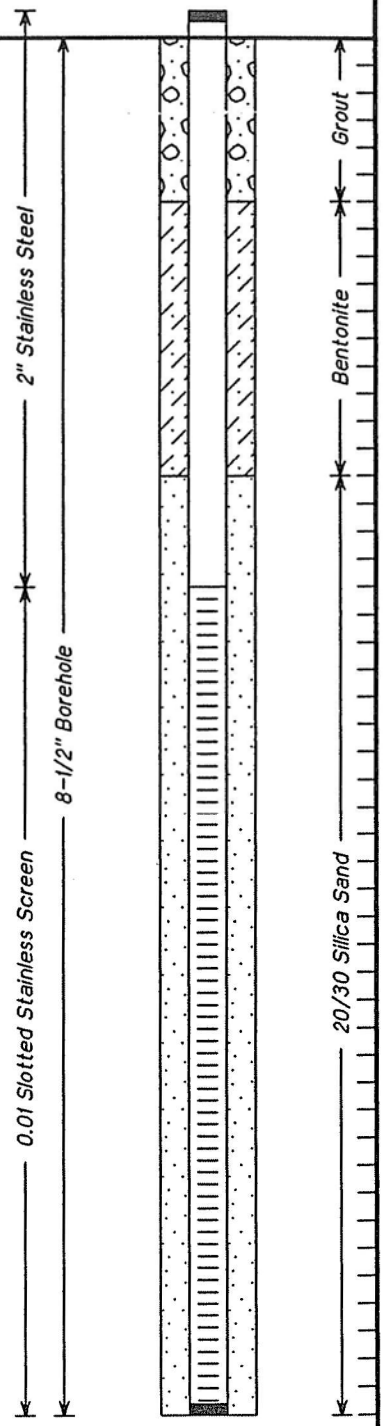
BORING DEPTH: *25.0 Feet*

WATER LEVEL: *13.85 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 275 gallons.
3. Well installed W/ 2.89' riser above ground surface W/ protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0						CR	CONCRETE - 3"
1-2-3						SP	SAND - MEDIUM GRAINED, STAINED GRAYISH BLACK TO BLACK, TRACE TO LITTLE CLAY & SILT, PORTIONS ARE SATURATED, STRONG ODOR W/ DEBRIS INCLUDING CLOTH, GRAVEL FRAGMENTS, TWIGS AND FRAGMENTS OF PLASTICS
3-4						SM	SILTY SAND - BROWNISH BLACK, MEDIUM TO FINE GRAINED, DAMP, STRONG ODOR
5						SM	SILTY SAND AS ABOVE
5-6-7			2 3 4 7	24/15		SC	SAND - DARK YELLOWISH ORANGE, SOME CLAY TO CLAYEY, MEDIUM GRAINED, DAMP, STRONG ODOR
7-8							SAND - DARK YELLOWISH ORANGE, SOME CLAY, MEDIUM GRAINED (Moisture Content = 13.3%, Passing 200 Sieve = 30.0%, Vertical Flow Rate = 0.04 ft/day, Porosity = 30.0%, Organic Content = 4.8%)
9-10							SAND AS ABOVE (Moisture Content = 13.0%, Passing 200 Sieve = 26.0%, Vertical Flow Rate = 1.05 ft/day, Porosity = 38.1%, Organic Content = 3.3%)
11-12-13			18 19 18 19	24/24			SAND - MODERATE REDDISH BROWN TO DARK YELLOWISH ORANGE, MEDIUM TO FINE GRAINED, LITTLE TO SOME CLAY, STRINGERS OF WHITE TO VERY LIGHT GRAY CLAYEY SAND (<1/4" THICK)
14-15-16-17-18-19-20							SAND AS ABOVE, INCREASING CLAY CONTENT WITH DEPTH (SAMPLES WET AT APPROX. 18'BLS) GRADES TO SANDY CLAY
20-21-22-23-24-25						CL	SANDY CLAY - DARK YELLOWISH ORANGE, VERY SOFT, WET
25							BORING TERMINATED @ 25' Below Land Surface (BLS)
26							

WELL DIAGRAM



HSA Environmental

JOB NUMBER: 6-92-3277A

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-5D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/26-03/28/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA / Mud Rotary*

ELEVATION: *188.90 Feet MSL*

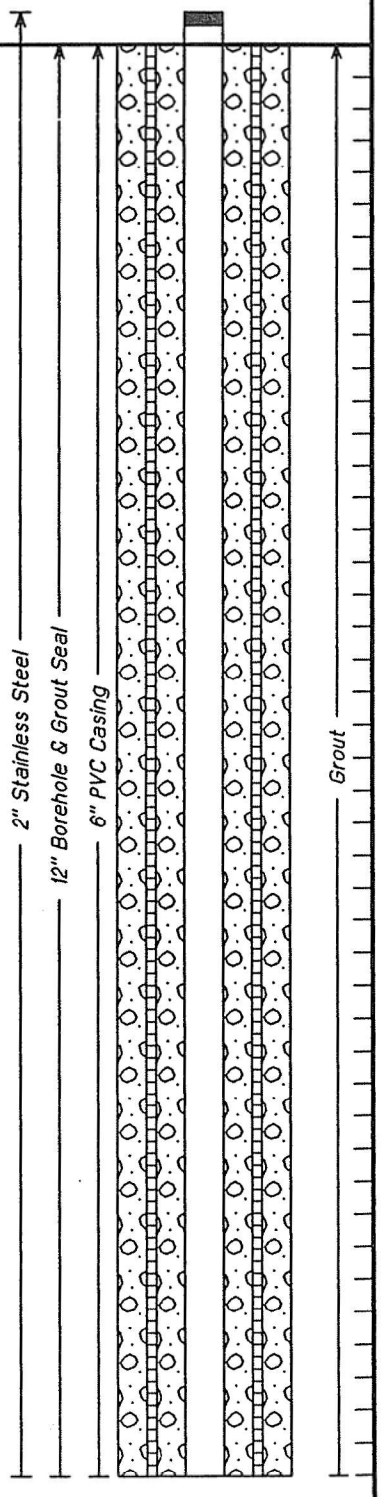
BORING DEPTH: *41.0 Feet*

WATER LEVEL: *13.99 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 140 gallons.
3. Well installed W/ 2.94 riser above ground surface W/ protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0						CR	CONCRETE - APPROXIMATELY 3" THICK
1-2	MW5D A		9, 10, 16, 22	24/14		SP	SAND - MODERATE REDDISH BROWN, MEDIUM GRAINED, STAINED GRAYISH BLACK TO BLACK, TRACE TO SOME CLAY INCREASING WITH DEPTH, ODOR, ROOT MATERIAL MINOR AMOUNT OF DEBRIS AND GRAVEL
5-6	MW5D B		2, 4, 4, 5	24/21		CL	CLAY - STAINED GRAYISH BLACK, MEDIUM STIFF, LITTLE SAND
							CLAY - DARK YELLOWISH ORANGE, MEDIUM STIFF, LITTLE SAND, SAND IS MEDIUM GRAINED, ODOR
10-11	MW5D C		13, 15, 22, 29	24/21		CL	CLAY - DARK YELLOWISH ORANGE TO MODERATE REDDISH BROWN, STIFF, LITTLE SAND, STRINGERS OF WHITE TO VERY LIGHT GRAY SANDY CLAY (<1/4" THICK)
12-13	MW5D D		12, 17, 15, 16	24/21		SC	SAND & SANDY CLAY INTERBEDDED, DARK YELLOWISH ORANGE TO MODERATE REDDISH BROWN, CLAY IS SOFT SAND IS MEDIUM GRAINED, CONTAINS STRINGERS OF WHITE TO LIGHT GRAY CHALKY SANDY CLAY AND STRINGERS OF LIGHT GRAY SAND W/ LITTLE CLAY.
14						SP SC	Bottom of spoon was wet - pulled lab sample from upper (dry) portion of spoon, OVA sample is wet.
17							Pulled samples off augers when retracting from borehole. Grab samples are SAND - DARK YELLOWISH ORANGE, MEDIUM GRAINED, LITTLE CLAY GRADING TO SOME CLAY @ 24'BLS

WELL DIAGRAM



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-5D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/26-03/28/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA / Mud Rotary*

ELEVATION: *188.90 Feet MSL*

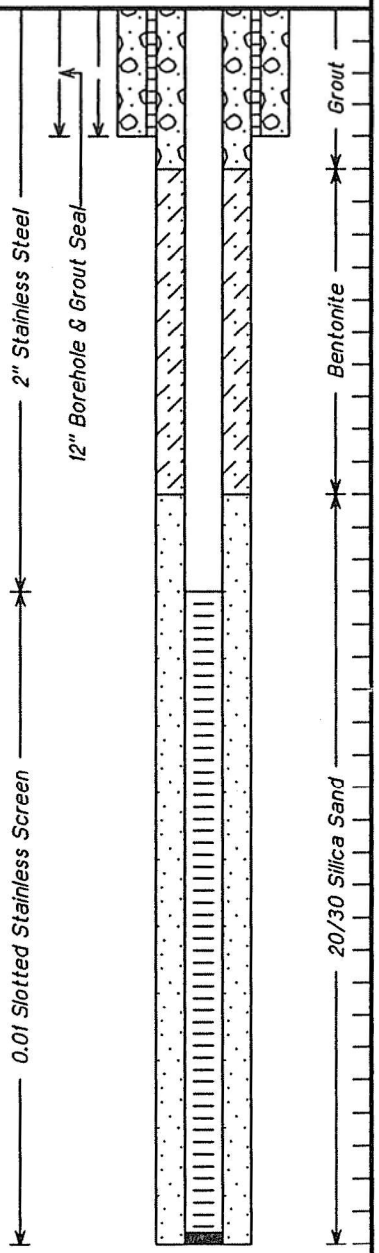
BORING DEPTH: *41.0 Feet*

WATER LEVEL: *13.99 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 140 gallons.
3. Well installed W/ 2.94 riser above ground surface W/ protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
23						SP SC	
24							Set PVC Surface Casing @ 24' BLS on 3/26/96 @ 1222 hours. Initiated drill out on 3/28/96 @ 0945 hours. Drilling mud rotary from surface casing to TD of borehole using 5-7/8" tricone rotary bit. Returns through mud tub are primarily quartz sand, fine to coarse grained, trace clay. Clay content increases with depth, clay is dark yellowish orange to very light gray. 6 inch borehole from Surface Casing to TD of Well.
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40						CL	CLAY-DARK YELLOWISH ORANGE TO VERY LIGHT GRAY (Pulled sample off augers when retracted)
41							BORING TERMINATED @ 41' Below Land Surface (BLS) Completed drill out and installed well on 3/28/96 @ 1156 hours.
42							
43							
44							

WELL DIAGRAM



PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-6S

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/21/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA (4-1/4")*

ELEVATION: *191.08 Feet MSL*

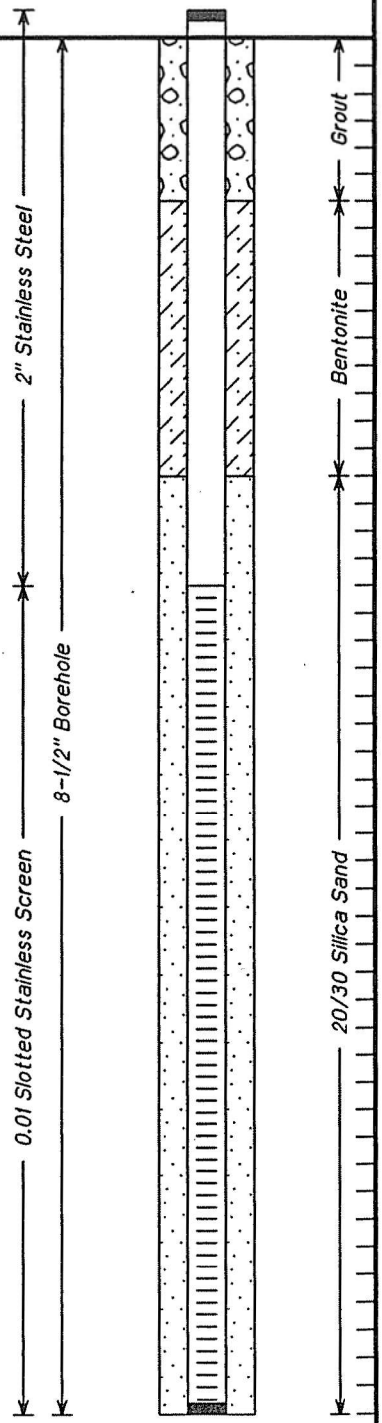
BORING DEPTH: *25.0 Feet*

WATER LEVEL: *15.97 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 220 gallons.
3. Well installed W/ 3.08' riser above ground surface W/ protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0						CR	CONCRETE – 8", REINFORCED, GEOTEXTILE LINER
1–4						SC	SAND – MODERATE REDDISH BROWN, FINE TO MEDIUM GRAINED, SOME CLAY, STAINED BLACK. STAINING INCREASING SIGNIFICANTLY AT 18" (LAYER IS BROWNISH BLACK SAND W/ SOME CLAY, STRONG ODOR)
3							SAND– FINE TO MEDIUM GRAINED, LITTLE TO SOME CLAY, STAINED BROWNISH BLACK
5–7	MW-6S A		3 3 4 5	24/16		CL	SANDY CLAY – MODERATE REDDISH BROWN TO DARK YELLOWISH ORANGE, STAINED BLACK, ODOR, VERY SOFT
7–10						SC	SAND – MODERATE YELLOWISH BROWN, LITTLE TO SOME CLAY (Moisture Content = 14.2%, Passing 200 Sieve = 31.0%, Vertical Flow Rate = 12.76 ft/day, Porosity = 28.3%, Organic Content = 4.4%)
9							SAND AS ABOVE (Moisture Content = 11.8%, Passing 200 Sieve = 28.0%, Vertical Flow Rate = 0.09 ft/day, Porosity = 27.8%, Organic Content = 4.1%)
11–13	MW-6S B		6 10 13 17	24/22		CL	CLAYEY SAND TO SANDY CLAY – DARK YELLOWISH ORANGE TO MODERATE YELLOWISH BROWN, SAND IS MEDIUM GRAINED, CLAY IS VERY SOFT
13							SANDY CLAY – MODERATE YELLOWISH BROWN, VERY SOFT
17							WET
20							SANDY CLAY – PALE YELLOWISH ORANGE TO DARK YELLOWISH ORANGE, VERY SOFT
25							BORING TERMINATED @ 25' Below Land Surface (BLS)

WELL DIAGRAM



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-6D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/21/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA (4-1/2")*

ELEVATION: *191.08 Feet MSL*

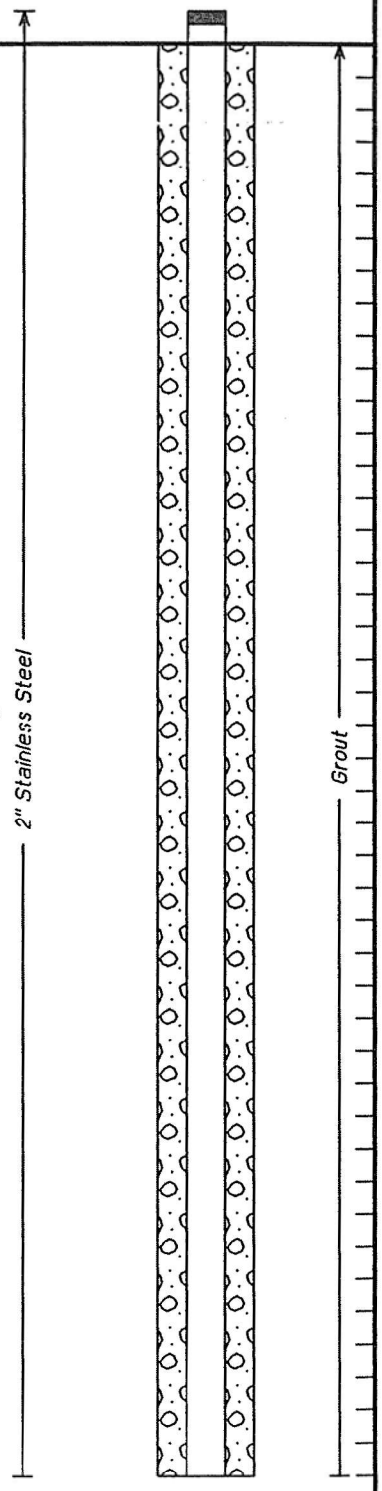
BORING DEPTH: *41.0 Feet*

WATER LEVEL: *15.13 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 220 gallons.
3. Well installed W/ 2.99 riser above ground surface W/ protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0						CR	CONCRETE – 8" REINFORCED, GEOTEXTILE LINER
1–2	MW6D A		15 9 6 7	24/10		SP SC	SAND – MODERATE REDDISH BROWN, LITTLE TO SOME CLAY, HEAVILY STAINED TO BLACK, ODOR
3–4							
5–6	MW6D B		6 5 4 3	24/14		SP SC	SAND – LIGHT GRAY TO DARK YELLOWISH ORANGE, TRACE TO SOME CLAY INCREASING IN CONTENT WITH DEPTH, HEAVILY STAINED, ODOR
7–9							Auger cuttings show a decrease in staining through this depth interval. Cuttings are SAND TO CLAYEY SAND – DARK YELLOWISH ORANGE
10–11	MW6D C		7 9 14 16	24/21		CL	SANDY CLAY – DARK YELLOWISH ORANGE TO MEDIUM GRAY, MEDIUM STIFF, SLIGHT STAINING & ODOR
12–13							
14–15	MW6D D		3 8 8 12	24/24		SP SC	SAND – DARK YELLOWISH ORANGE, MEDIUM GRAINED, LITTLE TO SOME CLAY. Bottom of spoon was wet – pulled lab sample from upper (dry) portion of spoon, OVA sample is wet.
16–20							Pulled samples off augers when retracting from borehole. Grab samples are SAND – VERY PALE ORANGE TO VERY LIGHT GRAY, MEDIUM TO COARSE GRAINED, GRADES TO A SAND W/ SOME CLAY TO A CLAYEY SAND @ ABOUT 38' BLS
21–22							

WELL DIAGRAM



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-6D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/21/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA (4-1/2")*

ELEVATION: *191.08 Feet MSL*

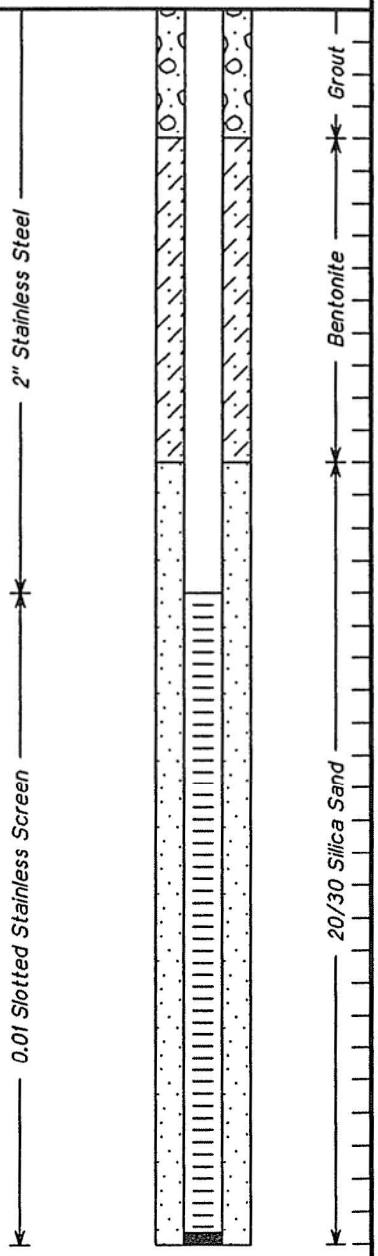
BORING DEPTH: *41.0 Feet*

WATER LEVEL: *15.13 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 220 gallons.
3. Well installed W/ 2.00 riser above ground surface W/ protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
39						SC	SHELBY TUBE SAMPLE: CLAYEY SAND - VERY LIGHT GRAY TO WHITE (Moisture Content = 25.4%, Passing 200 Sieve = 22.0% Vertical Flow Rate = 0.03 ft/day, Porosity = 36.2%, Organic Content = 2.2%)
40						SP	
41							SAND - VERY PALE ORANGE, FINE GRAINED
							BORING TERMINATED @ 41' Below Land Surface (BLS) Completed well installation on 3/21/96 @ 1830 hours 8 1/2 inch borehole.

WELL DIAGRAM



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-7S

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/27/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA (4-1/4")*

ELEVATION: *187.45 Feet MSL*

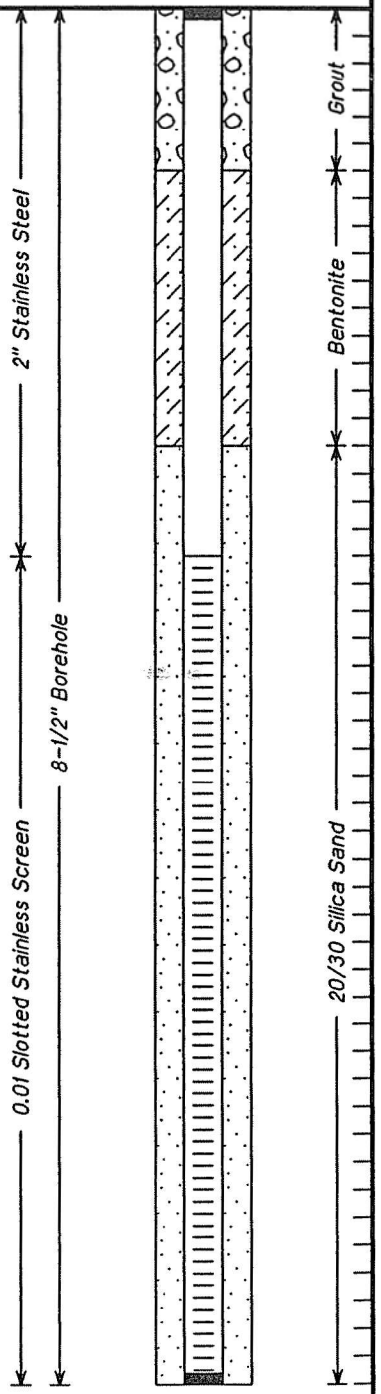
BORING DEPTH: *25.0 Feet*

WATER LEVEL: *12.58 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 300 gallons.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0						CR	CONCRETE - 8", REINFORCED, GEOTEXTILE LINER
1–4						SC	CLAYEY SAND - MODERATE YELLOWISH BROWN TO MODERATE REDDISH BROWN, MEDIUM GRAINED
5–6	MW-7S A		11 15 16 15	24/24			SAND - DARK YELLOWISH ORANGE TO MODERATE REDDISH BROWN, MEDIUM GRAINED, LITTLE TO SOME CLAY (SAMPLE IS WET DUE TO WATER FROM RIG LEAKING INTO AUGERS)
7–8							SAND - DARK YELLOWISH ORANGE, LITTLE CLAY (Moisture Content = 11.4%, Passing 200 Sieve = 24.0%, Vertical Flow Rate = 2.66 ft/day, Porosity = 29.8%, Organic Content = 2.6%)
9–10							SAND - DARK YELLOWISH ORANGE, MEDIUM TO COARSE GRAINED, LITTLE CLAY (Moisture Content = 12.4%, Passing 200 Sieve = 22.0%, Vertical Flow Rate = 0.48 ft/day, Porosity = 34.0%, Organic Content = 2.9%)
11						CL	SANDY CLAY - LIGHT GRAY, MEDIUM STIFF
12	MW-7S B		12 14 17 21	24/18		SP	SAND - DARK YELLOWISH ORANGE, FINE TO MEDIUM GRAINED, TRACE CLAY
13–15							
15–16						SC	SAND - MODERATE YELLOWISH BROWN, FINE TO MEDIUM GRAINED, SOME CLAY
17–20							
20–21						CL	SANDY CLAY - DARK YELLOWISH ORANGE, VERY SOFT, SAND IS MEDIUM GRAINED
22–25							
25							BORING TERMINATED @ 25' Below Land Surface (BLS)
26							

WELL DIAGRAM



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-7D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/25-03/27/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA / Mud Rotary*

ELEVATION: *188.06 Feet MSL*

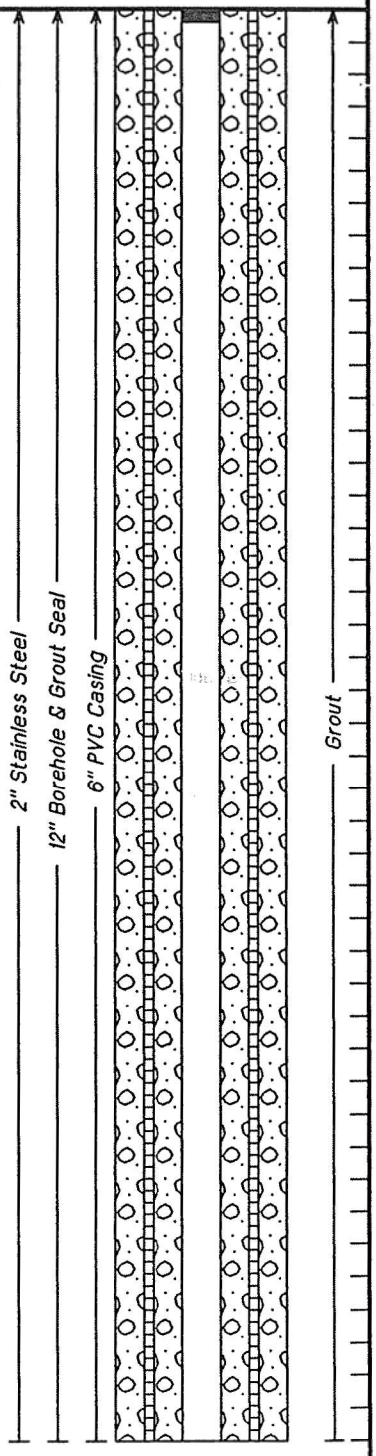
BORING DEPTH: *41.0 Feet*

WATER LEVEL: *12.85 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 100 gallons.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0						CR	CONCRETE - 8" REINFORCED, GEOTEXTILE LINER
1-2	MW7D A		5 4 3 2	24/21		SC	SANDY CLAY AND CLAYEY SAND INTERBEDDED - DARK YELLOWISH ORANGE TO MODERATE YELLOWISH BROWN, CLAY IS SOFT, SAND IS FINE GRAINED
3-4						CL	Auger cuttings show a CLAY - MODERATE YELLOWISH BROWN TO MODERATE REDDISH BROWN, SOME SAND TO SANDY, SOFT
5-6	MW7D B		3 8 10 12	24/24		SC	SAND - MODERATE REDDISH BROWN TO DARK YELLOWISH ORANGE, SOME CLAY, FINE TO MEDIUM GRAINED, BLACK STAINING, ODOR
7-10							
10-11	MW7D C		6 6 12 15	24/24		SP	SAND - MODERATE REDDISH BROWN, TRACE TO LITTLE CLAY, FINE TO MEDIUM GRAINED, BLACK STAINING, STRINGERS OF WHITE, CHALKY CLAY, (<1/4" THICK), ODOR
12-13	MW7D D		14 13 12 13	24/24		SP SC	SAND - DARK YELLOWISH ORANGE TO MODERATE REDDISH BROWN, TRACE CLAY, FINE TO MEDIUM GRAINED, STRINGERS OF OLIVE GRAY, MEDIUM STIFF CLAY (+/- 1/2" THICK), SLIGHT ODOR
14-22							Auger cuttings indicate lithology is CLAY - DARK YELLOWISH ORANGE TO MODERATE REDDISH BROWN, SOME SAND TO SANDY, VERY SOFT

WELL DIAGRAM



PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-7D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/25-03/27/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA / Mud Rotary*

ELEVATION: *188.06 Feet MSL*

BORING DEPTH: *41.0 Feet*

WATER LEVEL: *12.85 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 100 gallons.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
23							Auger sample: SANDY CLAY AND CLAYEY SAND INTERBEDDED - DARK YELLOWISH ORANGE, CLAY IS SOFT, SAND IS FINE TO MEDIUM GRAINED
24							Set PVC Surface Casing @ 24' BLS on 3/26/96 @ 0817 hours. Initiated drill out on 3/27/96 @ 1344 hours. Drilling mud rotary from surface casing to TD of borehole using 5-7/8" tricone rotary bit. Returns through mud tub are primarily quartz sand, fine to medium grained, trace to little clay. Minimal drilling fluid discoloration. 6 inch borehole from Surface Casing to TD of Well.
25							
26							
27							
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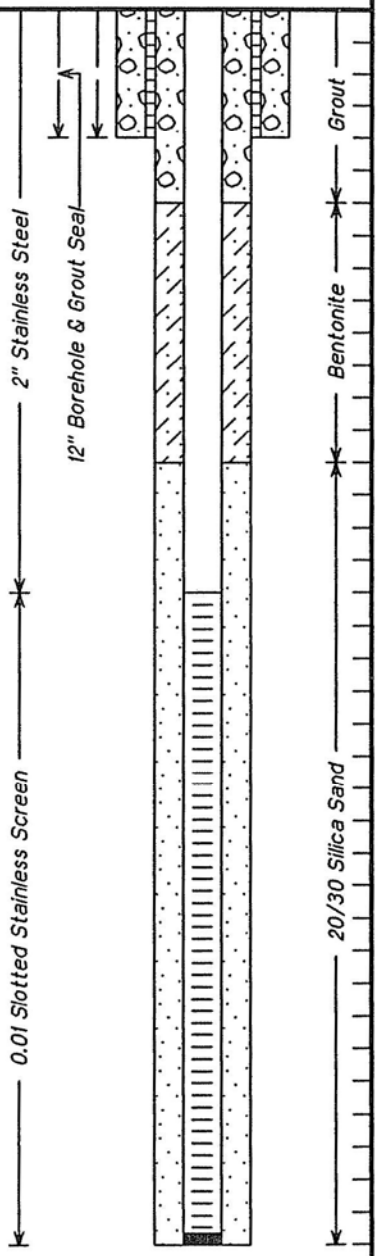
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40						CL	Auger sample: SANDY CLAY - DARK YELLOWISH ORANGE TO VERY LIGHT GRAY, SOFT
41							BORING TERMINATED @ 41' Below Land Surface (BLS) Completed drill out and installed well on 3/27/96 @ 1715 hours.
42							
43							
44							

WELL DIAGRAM



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-8S

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/22/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA (4-1/4")*

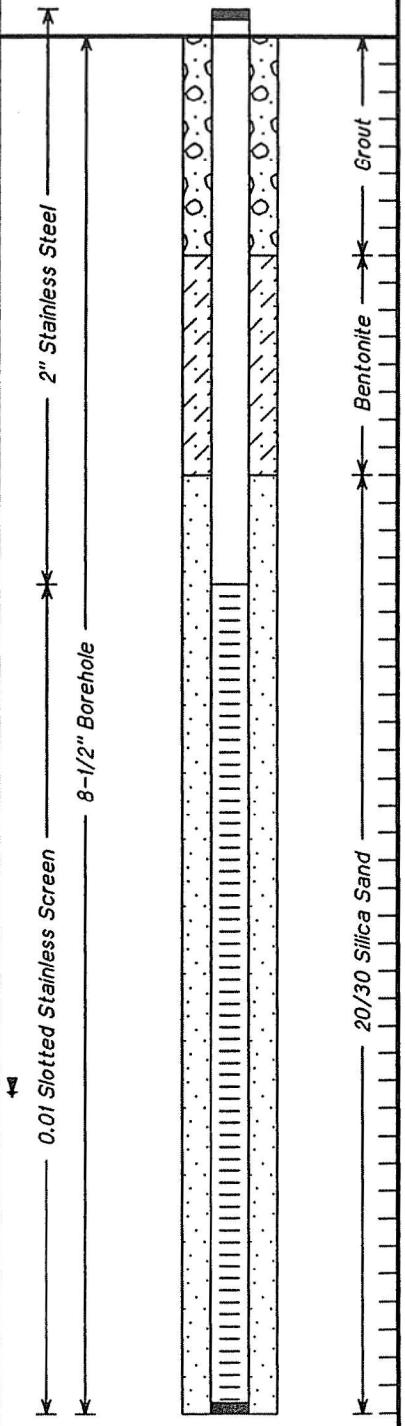
ELEVATION: *194.61 Feet MSL*

BORING DEPTH: *25.0 Feet*

WATER LEVEL: *19.19 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Well installed W/ 3.24' riser above ground surface W/ protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0						CR	CONCRETE - 8", REINFORCED, GEOTEXTILE LINER
1–3						SM	NOTE: Samples collected with split spoon and Shelby Tube were pushed to sample depth due to mast on rig being down. SAND - BROWNISH BLACK, VERY FINE TO FINE GRAINED, LITTLE SILT. POSSIBLE FILL MATERIAL TO ELEVATE THIS PORTION OF THE FACILITY
3–5						SC	SAND - MODERATE REDDISH BROWN, MEDIUM GRAINED, SOME CLAY
5–7	MW-8S A		PUSH	24/14			SAND - MODERATE REDDISH BROWN, MEDIUM GRAINED, SOME CLAY TO CLAYEY, STRONG ODOR
7–9							SAND - MODERATE REDDISH BROWN TO DARK YELLOWISH BROWN, MEDIUM TO FINE GRAINED, SOME CLAY (Moisture Content = 14.1%, Passing 200 Sieve = 21.0%, Vertical Flow Rate = 2.58 ft/day, Porosity = 40.2%, Organic Content = 2.8%)
9–11						SP SM	SAND - MODERATE REDDISH BROWN TO DARK YELLOWISH BROWN, FINE GRAINED W/ SILT (Moisture Content = 8.8%, Passing 200 Sieve = 10.0%, Vertical Flow Rate = 0.08 ft/day, Organic Content = 3.5%)
11–13	MW-8S B					SC	SAND - DARK YELLOWISH ORANGE TO DARK YELLOWISH BROWN, MEDIUM TO COARSE GRAINED, LITTLE TO SOME CLAY, OLIVE GRAY STAINING, STRONG ODOR
13–15							SAND - MODERATE TO DARK YELLOWISH BROWN, MEDIUM GRAINED, SOME CLAY, STRONG ODOR
15–17							WET
17–18						CL	CLAY - DARK YELLOWISH ORANGE, SOME SAND TO SANDY, SOFT, INCREASING CLAY CONTENT WITH DEPTH
18–25							
25							BORING TERMINATED @ 25' Below Land Surface (BLS)



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-8D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/26-03/27/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA / Mud Rotary*

ELEVATION: *194.57 Feet MSL*

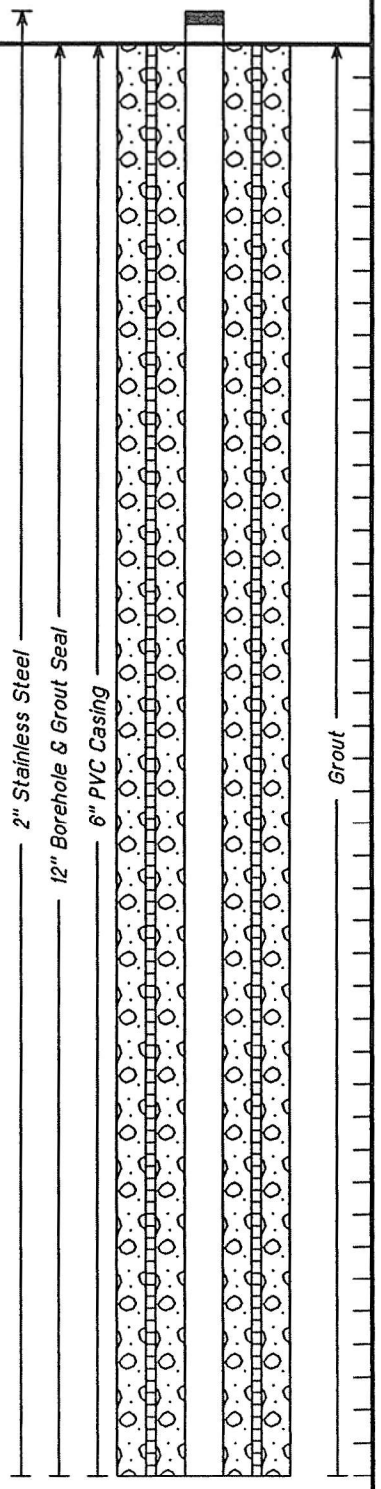
BORING DEPTH: *41.0 Feet*

WATER LEVEL: *16.8 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 175 gallons.
3. Well installed W/ 3.21' riser above ground surface & protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0						CR	CONCRETE - 8" REINFORCED, GEOTEXTILE LINER
1						SM	NOTE: All samples are grab samples from auger cuttings SAND - BROWNISH BLACK, VERY FINE TO FINE GRAINED, LITTLE SILT (POSSIBLE FILL MATERIAL TO ELEVATE THIS PORTION OF FACILITY)
3						SC	SAND- MODERATE REDDISH BROWN, MEDIUM GRAINED SOME CLAY TO CLAYEY, CLAY CONTENT DECREASES WITH DEPTH, GRADES TO A
10						SP	SAND - DARK YELLOWISH ORANGE TO DARK YELLOWISH BROWN, MEDIUM GRAINED, LITTLE CLAY, ODOR
15							SAND - DARK YELLOWISH ORANGE TO DARK YELLOWISH BROWN, MEDIUM GRAINED, LITTLE CLAY, GRADES TO A
17						SC	SANDY CLAY - MODERATE YELLOWISH BROWN, SOFT GRADES TO A CLAYEY SAND AND SAND W/ SOME CLAY
20							SANDY CLAY & CLAYEY SAND - DARK YELLOWISH ORANGE, CLAY IS VERY SOFT, SAND IS MEDIUM GRAINED, ODOR

WELL DIAGRAM



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-8D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/26-03/27/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA / Mud Rotary*

ELEVATION: *194.57 Feet MSL*

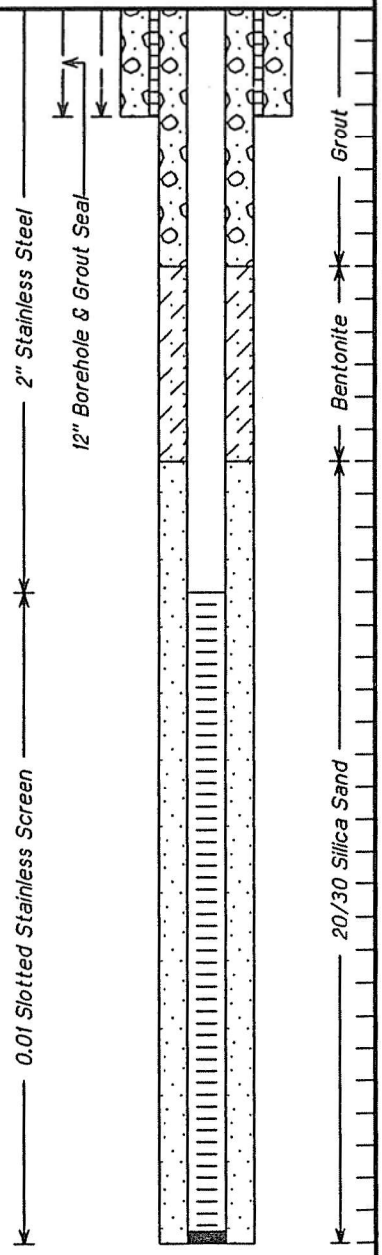
BORING DEPTH: *41.0 Feet*

WATER LEVEL: *16.8 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 175 gallons.
3. Well installed W/ 3.21' riser above ground surface & protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
23						SC	
24						CL	CLAY - DARK YELLOWISH ORANGE, SOME SAND, SOFT
25							Set PVC Surface Casing @ 23.67' BLS on 3/26/96 @ 1750 hours. Initiated drill out on 3/27/96 @ 1915 hours. Drilling mud rotary from surface casing to TD of borehole using 5-7/8" tricone rotary bit. Returns through mud tub are primarily fines (clay) suspended in drilling fluid. Sands are quartz, fine to medium grained. Assumed lithology is clay, dark yellowish orange, some sand. 6 inch borehole from Surface Casing to TD of Well.
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40						CL	SANDY CLAY - DARK YELLOWISH ORANGE TO VERY LIGHT GRAY, VERY SOFT, SAND IS FINE TO COARSE GRAINED.
41							BORING TERMINATED @ 41' Below Land Surface (BLS) Completed drill out and installed well on 3/27/96 @ 2125 hours. Well was drilled with maston rig down due to space constraints. No SPT samples possible.
42							
43							
44							

WELL DIAGRAM



PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-9S

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/22/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA (4-1/4")*

ELEVATION: *190.17 Feet MSL*

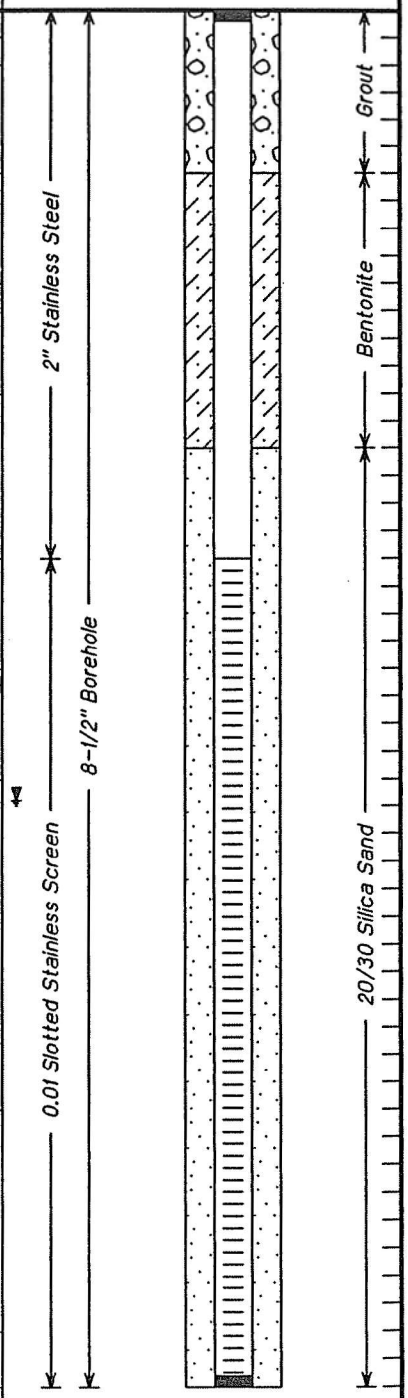
BORING DEPTH: *25.0 Feet*

WATER LEVEL: *14.4 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 275 gallons.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0						AS	ASPHALT - 6"
1						SP SC	SAND - MODERATE REDDISH BROWN, LITTLE CLAY
2	MW-9S A		18 30 27 28	24/20			SAND - MODERATE REDDISH BROWN TO DARK YELLOWISH ORANGE, MEDIUM GRAINED, LITTLE CLAY
3							
4							
5						SP SC	SAND - MODERATE REDDISH BROWN TO DARK YELLOWISH ORANGE, MEDIUM GRAINED, LITTLE CLAY STRINGERS (<1/4") OF WHITE "LIMEY" SUBSTANCE
6	MW-9S B		10 16 23 21	24/20			
7							
8							
9							
10						SP	SAND - MODERATE REDDISH BROWN, MEDIUM TO COURSE GRAINED, TRACE TO LITTLE CLAY, DECREASING CLAY CONTENT W/ DEPTH
11	MW-9S C		5 12 11 12	24/15			
12						SC	SAND - DARK YELLOWISH ORANGE TO DARK YELLOWISH BROWN, MEDIUM GRAINED, LITTLE TO SOME CLAY
13	MW-9S D		14 20 17 22	24/10			
14							SAND - DARK YELLOWISH ORANGE, MEDIUM GRAINED, LITTLE TO SOME CLAY, GRADES INTO A SANDY CLAY AT APPROX. 20'BLS
15							
16							
17							
18							
19							
20						CL	SANDY CLAY
21							No returns on auger while drilling
22							
23							
24						SC	SAND - DARK YELLOWISH ORANGE, MEDIUM GRAINED, LITTLE TO SOME CLAY
25							BORING TERMINATED @ 25' Below Land Surface (BLS)
26							

WELL DIAGRAM



HSA Environmental

JOB NUMBER: 6-92-3277A

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-9D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/25-03/27/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA / Mud Rotary*

ELEVATION: *190.39 Feet MSL*

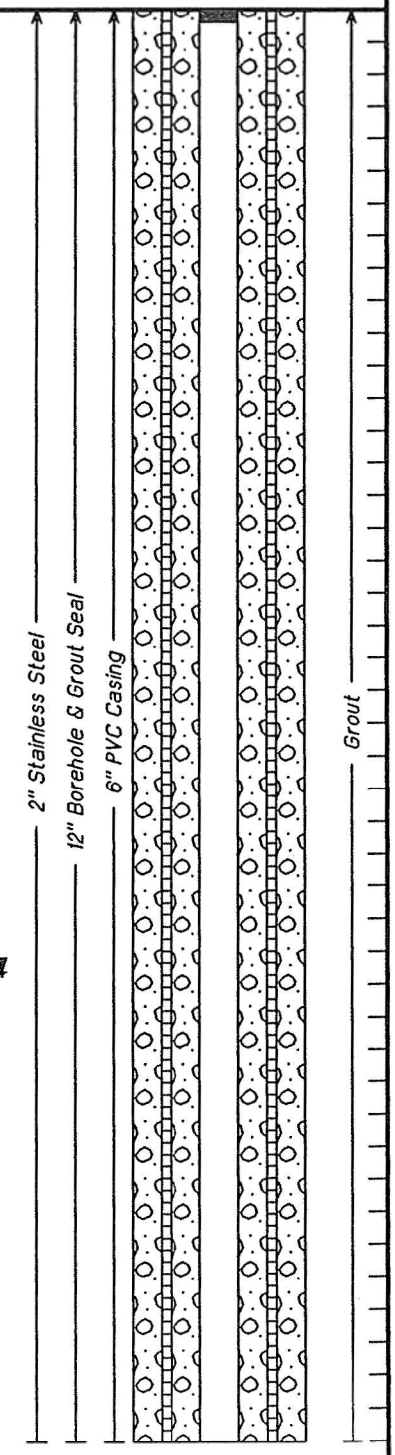
BORING DEPTH: *43.0 Feet*

WATER LEVEL: *14.80 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 165 gallons.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0						AS	ASPHALT - APPROXIMATELY 3" THICK
1						SP	NOTE: All samples are grab samples from auger cuttings SAND - MODERATE REDDISH BROWN TO DARK YELLOWISH ORANGE, FINE TO MEDIUM GRAINED, LITTLE CLAY
4							SAND - MODERATE REDDISH BROWN, MEDIUM TO COARSE GRAINED, LITTLE CLAY, SMALL (<1/4") STRINGERS OF CHALKY WHITE CLAY
7							SAND - MODERATE BROWN (5YR 3/4), MEDIUM GRAINED, LITTLE CLAY
8							SAND - MODERATE REDDISH BROWN TO DARK YELLOWISH ORANGE, MEDIUM GRAINED, LITTLE CLAY
10							SAND - MODERATE BROWN (5YR 3/4) TO MODERATE REDDISH BROWN, LITTLE CLAY, SLOW DRILLING
11						SC	SAND - DARK YELLOWISH ORANGE, MEDIUM GRAINED, LITTLE CLAY, INCREASING CLAY CONTENT W/ DEPTH GRADING TO A CLAYEY SAND, STRONG ACETONE ODOR
13						CL	CLAY - DARK YELLOWISH ORANGE, SOME SAND TO SANDY, VERY SOFT
15							CLAY - DARK YELLOWISH ORANGE, SOME SAND, VERY SOFT, DECREASING SAND CONTENT W/ DEPTH, INCREASING HARDNESS W/ DEPTH
20						SP	Pulled samples off augers when retracting from borehole. Grab samples are SAND - DARK YELLOWISH ORANGE, MEDIUM GRAINED, LITTLE CLAY

WELL DIAGRAM



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-9D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/25-03/27/96*

ELEVATION: *190.39 Feet MSL*

DRILLER: *GPI*

BORING DEPTH: *43.0 Feet*

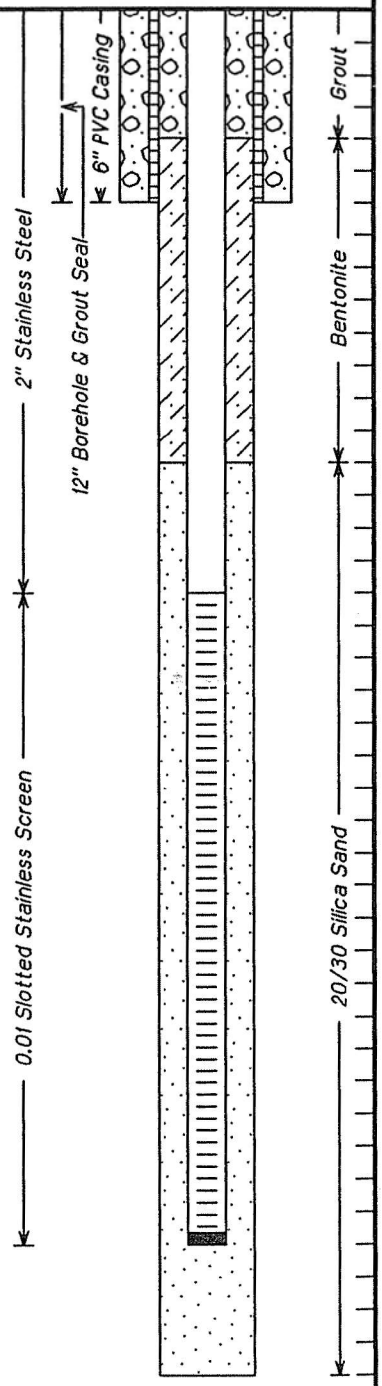
DRILLING METHOD: *HSA / Mud Rotary*

WATER LEVEL: *14.80 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 165 gallons.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
23–24						SP	
25						CL	Set PVC Surface Casing @ 25' BLS on 3/25/96 @ 1124 hours. Initiated drill out on 3/27/96 @ 0817 hours. Drilling mud rotary from surface casing to TD of borehole using 5-7/8" tricone roller bit. 6 inch borehole from Surface Casing to TD of Well.
26–29							
30							Returns through mud tub are primarily clay (fines) with some quartz sand, fine to medium grained
31–41							
42							Shelby Tube Sample: CLAY - DARK YELLOWISH ORANGE, MEDIUM STIFF, SOME SAND (Moisture Content = 42.8%, Passing 200 Sieve = 64.0%, Vertical Flow Rate = 0.0004 ft/day, Porosity = 51.9%, Organic Content = 4.4%)
43							BORING TERMINATED @ 43' Below Land Surface (BLS) Completed drill out and installed well on 3/27/96 @ 1113 hours.
44							

WELL DIAGRAM



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING MW-10S

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/23/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA (4-1/4")*

ELEVATION: *190.17 Feet MSL*

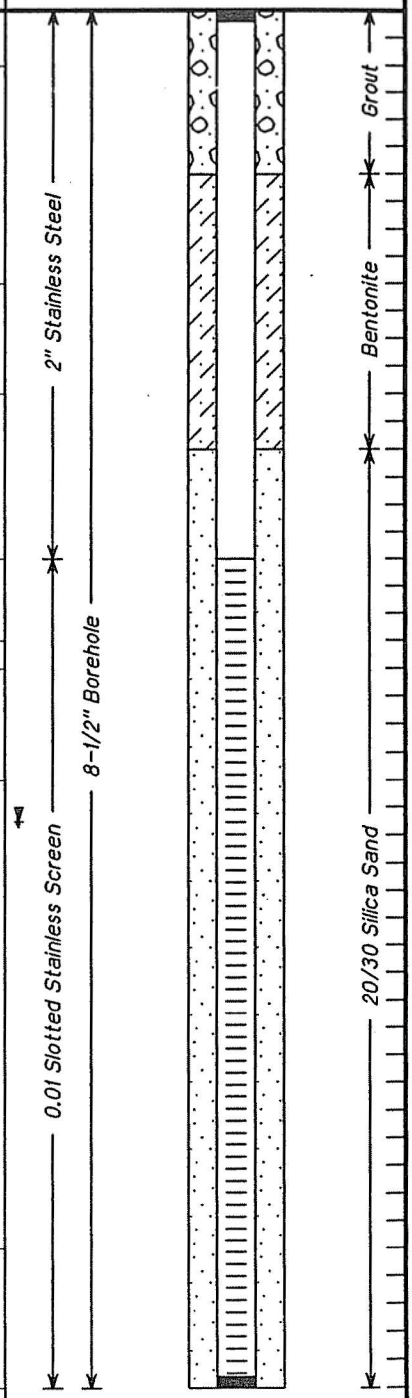
BORING DEPTH: *25.0 Feet*

WATER LEVEL: *14.76 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 275 gallons.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0						SM	GRASS - SILTY SAND - ROOTS
1–2	MW-10S A		6 8 5 5	24/24		SP	SAND - PALE TO DARK YELLOWISH BROWN (10YR 4/2) VERY FINE TO FINE GRAINED, TRACE SILT
3–4							SAND - PALE YELLOWISH BROWN, VERY FINE TO FINE GRAINED
5–6–7	MW-10S B		6 7 10 12	24/24		SC	SANDY CLAY & CLAYEY SAND - DARK YELLOWISH BROWN (10YR 4/2) TO OLIVE GRAY, SANDS ARE FINE TO MEDIUM GRAINED
8–9–10							
10–11	MW-10S C		2 3 13 10	24/24		SP SC	SAND - OLIVE GRAY, MEDIUM TO FINE GRAINED, LITTLE CLAY AT TOP OF SPOON GRADING LESS W/ DEPTH TO TRACE, STAINING AT APPROX. 6'
12						SP	SAND - MEDIUM LIGHT GRAY TO MEDIUM GRAY, TRACE CLAY
12–13–14	MW-10S D		10 15 12 13	24/24		SC	SANDY CLAY & CLAYEY SANDS - DARK YELLOWISH BROWN TO OLIVE GRAY, SANDS ARE FINE TO MEDIUM GRAINED
15–16–17–18–19–20–21–22							
23–24						CL	SANDY CLAY - DARK YELLOWISH ORANGE TO MODERATE YELLOWISH BROWN, SOFT
25–26							BORING TERMINATED @ 25' Below Land Surface (BLS)

WELL DIAGRAM



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-10D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/23-03/24/96*

ELEVATION: *109.21 Feet MSL*

DRILLER: *GPI*

BORING DEPTH: *43.0 Feet*

DRILLING METHOD: *HSA / Mud Rotary*

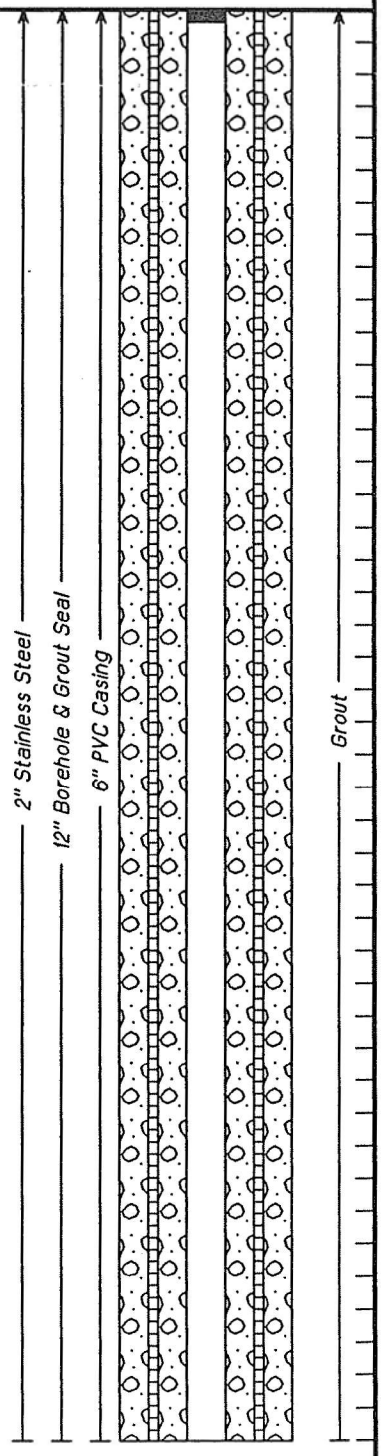
WATER LEVEL: *14.84 Feet BTOC*

NOTES:
Well developed using centrifugal pump fitted with stainless steel hose.

Purge volume approximately 80 gallons.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
1						PT	GRASSY COVER, SILTY SAND, ROOT MATERIAL
2	MW10D A		6 10 10 7	24/7		SP	SAND - DARK YELLOWISH BROWN, FINE TO MEDIUM GRAINED
3							
4							
5						SP	SAND - DARK YELLOWISH BROWN, (10YR 4/2), MEDIUM GRAINED, TRACE CLAY, STAINED BLACKISH GRAY IN SPOTS, STRONG ODOR
6	MW10D B		5 7 14 16	24/24			
7							
8							
9							
10						CL	SANDY CLAY, SOFT - OLIVE GRAY TO MEDIUM DARK GRAY, APPEARS STAINED, SAND IS MEDIUM GRAINED
11	MW10D C		10 12 10 16	24/24			
12							CLAY, SOME SAND TO SANDY, MEDIUM STIFF - MODERATE YELLOWISH BROWN, STAINED TO DARK GRAY, STRONG ODOR
13	MW10D D		12 16 17 17	24/24			
14							
15							
16							
17							
18							
19							
20							
21							
22							

WELL DIAGRAM



PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-10D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/23-03/24/96*

ELEVATION: *109.21 Feet MSL*

DRILLER: *GPI*

BORING DEPTH: *43.0 Feet*

DRILLING METHOD: *HSA / Mud Rotary*

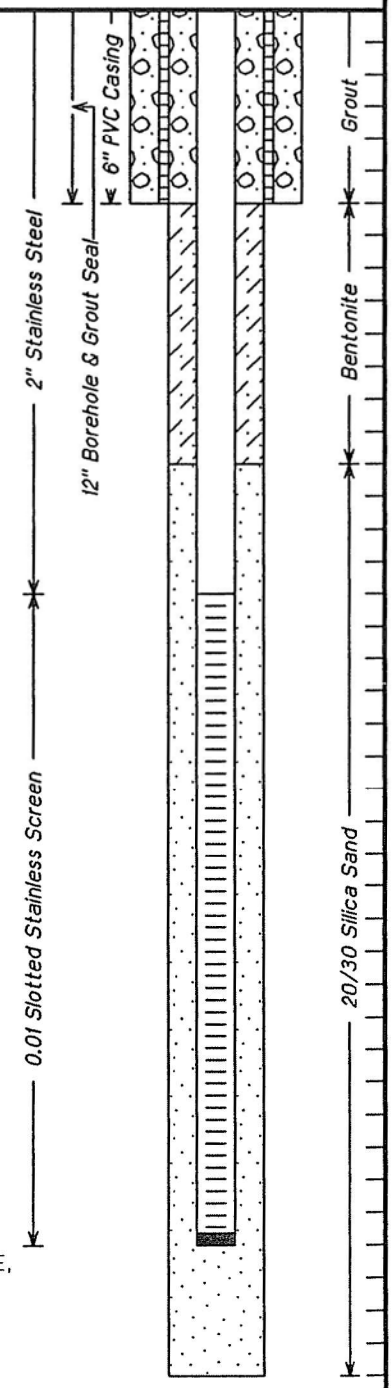
WATER LEVEL: *14.84 Feet BTOC*

NOTES:
Well developed using centrifugal pump fitted with stainless steel hose.

Purge volume approximately 80 gallons.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
23–44							Set PVC Surface Casing on 3/23/96 @ 2206 hours. Initiated drill out on 3/24/96 @ 1357 hours. Drilling mud rotary from surface casing to TD of borehole using 5-7/8" triconeroller bit. Cuttings returned through mud tub are primarily fine grained (clay size), return water is discolored to a dark yellowish orange. Sand sized particles are quartz, fine to medium grained. Assume lithology to be clay with some sand. 6 inch borehole from Surface Casing to TD of Well.
41–42						CL	SHELBY TUBE SAMPLE: CLAY - DARK YELLOWISH ORANGE, LITTLE TO SOME SAND, SAND IS FINE GRAINED (Moisture Content = 43.2%, Passing 200 Sieve = 66.0%, Vertical Flow Rate = 0.03 ft/day, Porosity = 50.5%, Organic Content = 7.8%)
43							BORING TERMINATED @ 43' Below Land Surface (BLS) Completed drill out and installed well on 3/24/96 @ 1620 hours.

WELL DIAGRAM



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-11S

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/21/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA (4-1/2")*

ELEVATION: *195.14 Feet MSL*

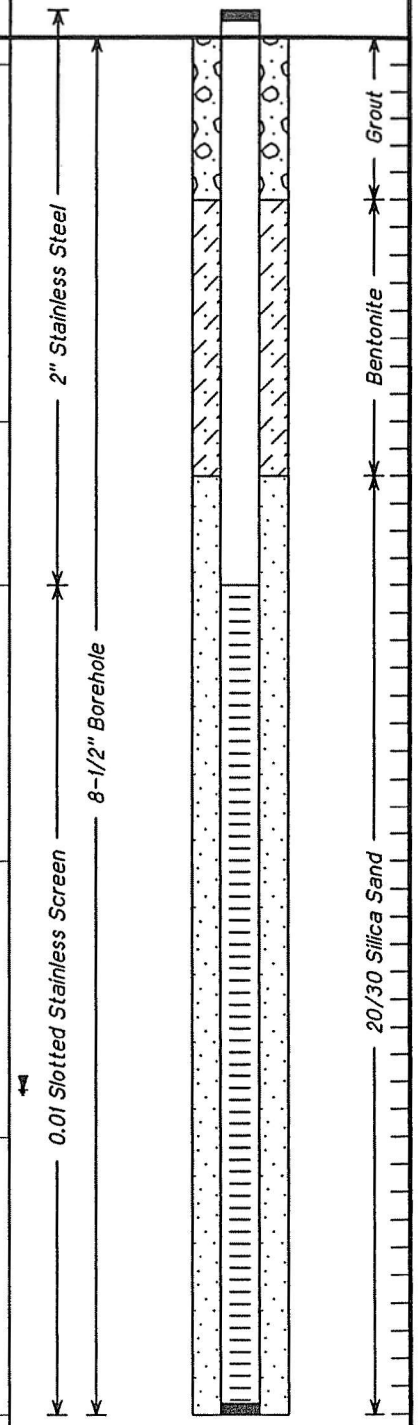
BORING DEPTH: *25.0 Feet*

WATER LEVEL: *19.14 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 125 gallons.
3. Well installed W/ 2.87' riser above ground surface W/ protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
1							NOTE: All samples are grab samples
						SC	CRUSHED LIMESTONE AND GRAVEL
2							SAND - MODERATE REDDISH BROWN TO DARK YELLOWISH ORANGE, FINE TO MEDIUM GRAINED, SOME CLAY TO CLAYEY
3							SAND - MODERATE REDDISH BROWN, FINE TO MEDIUM GRAINED, SOME CLAY
4							
5							
6							
7							
8						CL	SANDY CLAY - MODERATE REDDISH BROWN TO DARK YELLOWISH ORANGE, SANDS ARE MEDIUM GRAINED, CLAYS ARE MEDIUM STIFF
9							
10						SC	SANDY CLAY & CLAYEY SANDS - MODERATE REDDISH BROWN (SANDY CLAY) TO DARK YELLOWISH ORANGE (CLAYEY SANDS)
11						CL	
12							
13							
14							
15						SC	SAND - DARK YELLOWISH ORANGE, FINE TO MEDIUM GRAINED, SOME CLAY
16							
17							
18							
19							
20						CL	SANDY CLAY - DARK YELLOWISH ORANGE, WET, VERY SOFT
21							
22							
23							
24							
25							BORING TERMINATED @ 25' Below Land Surface (BLS)
26							

WELL DIAGRAM



HSA Environmental

JOB NUMBER: 6-92-3277A

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-11D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/20/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA (4-1/4")*

ELEVATION: *195.14 Feet MSL*

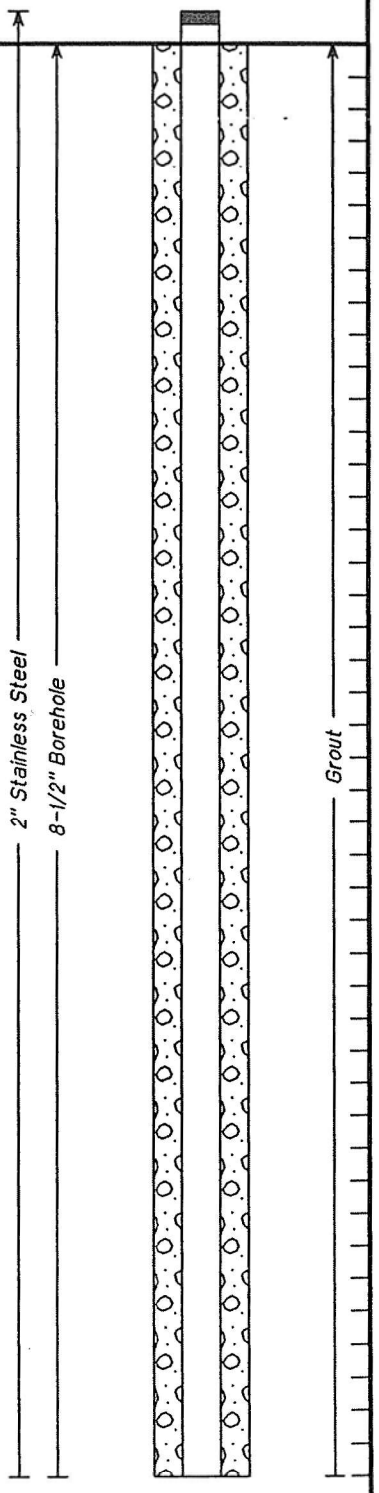
BORING DEPTH: *43.0 Feet*

WATER LEVEL: *19.11 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 195 gallons.
3. Well installed W/ 2.85' riser above ground surface W/ protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0							NOTE: All samples are grab samples from auger cuttings
1						SC	LIMESTONE & GRAVEL FILL MATERIAL
							SAND - MODERATE REDDISH BROWN, VERY FINE TO FINE GRAINED, SOME CLAY
3							SAND - MODERATE REDDISH BROWN TO DARK YELLOWISH ORANGE, FINE GRAINED, SOME CLAY
6							SAND - MODERATE REDDISH BROWN, MEDIUM GRAINED, SOME CLAY
12							SAND - MODERATE YELLOWISH BROWN TO MODERATE REDDISH BROWN, MEDIUM GRAINED, INCREASING CLAY CONTENT WITH DEPTH
15							SAND - MODERATE YELLOWISH BROWN, MEDIUM GRAINED, SOME CLAY
19						CL	SANDY CLAY - DARK YELLOWISH ORANGE, SOFT, SAND IS MEDIUM GRAINED

WELL DIAGRAM



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-11D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/20/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA (4-1/4")*

ELEVATION: *195.14 Feet MSL*

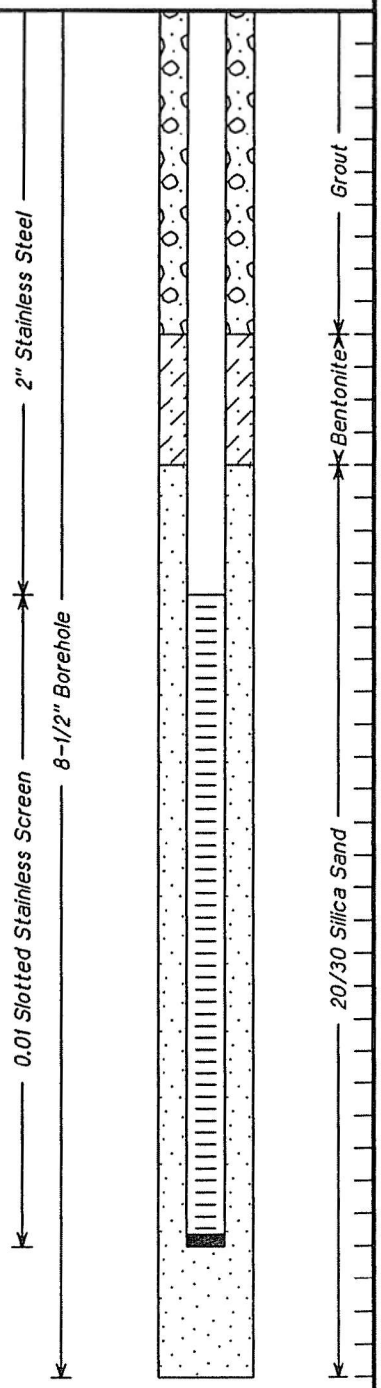
BORING DEPTH: *43.0 Feet*

WATER LEVEL: *19.11 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 195 gallons.
3. Well installed W/ 2.85' riser above ground surface W/ protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
23–44						CL	SANDY CLAY – DARK YELLOWISH ORANGE, SOFT, WET
							SANDY CLAY – DARK YELLOWISH ORANGE, VERY SOFT
39						SP	Attempted 2 Shelby Tube samples (39' to 41' & 41' to 43' BLS) 1st Tube held less than 4" of sample – SANDY CLAY as above. 2nd Tube had no recovery. Tube was "coated" with SAND – FINE TO MEDIUM GRAINED.
41							Set well on 03/20/96 @ 1758 hours.
43							BORING TERMINATED @ 43' Below Land Surface (BLS)

WELL DIAGRAM



PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-12S

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/23/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA (4-1/4")*

ELEVATION: *189.04 Feet MSL*

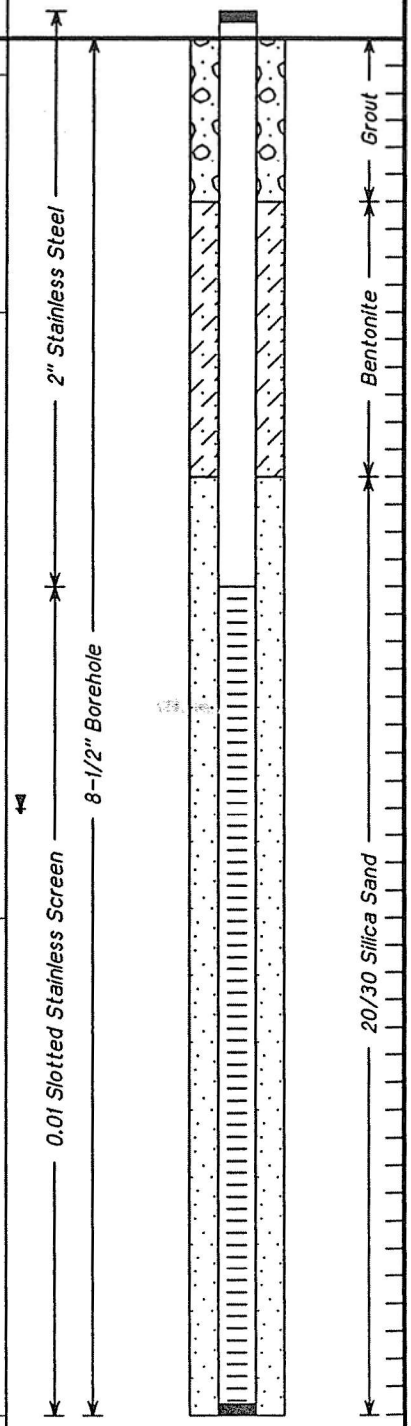
BORING DEPTH: *25.0 Feet*

WATER LEVEL: *14.01 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 310 gallons.
3. Well installed W/ 2.69' riser above ground surface W/ protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0						CR	NOTE: All samples are grab samples
0						CR	CONCRETE - 8", REINFORCED, GEOTEXTILE LINER
1						SC	SAND - MODERATE BROWN, FINE TO MEDIUM GRAINED, SOME CLAY TO CLAYEY
5						CL	SANDY CLAY - BROWNISH BLACK, VERY SOFT, SAND IS FINE GRAINED, WET
6						CL	SANDY CLAY - MODERATE BROWN (5YR 4/4) VERY SOFT, SAND IS FINE GRAINED, DAMP
10						CL	SANDY CLAY - DARK YELLOWISH BROWN, VERY SOFT, SAND IS FINE GRAINED, DAMP
12						CL	SANDY CLAY - DARK YELLOWISH ORANGE, SOFT, SAND IS FINE GRAINED, DAMP
16						SC	SAND - DARK YELLOWISH ORANGE, FINE TO MEDIUM GRAINED, SOME CLAY TO CLAYEY WET AT APPROX. 17'BLS
20						SC	SAND - DARK YELLOWISH ORANGE, FINE TO MEDIUM GRAINED, SOME CLAY TO CLAYEY
25							BORING TERMINATED @ 25' Below Land Surface (BLS)

WELL DIAGRAM



HSA Environmental

JOB NUMBER: 6-92-3277A

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-12D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/23-03/24/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA / Mud Rotary*

ELEVATION: *189.04 Feet MSL*

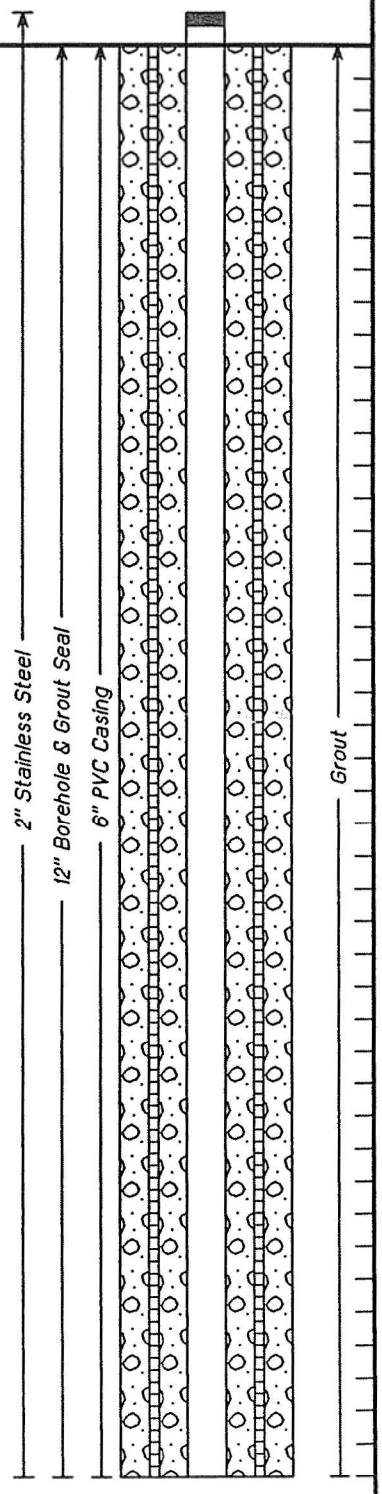
BORING DEPTH: *41.0 Feet*

WATER LEVEL: *14.50 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 80 gallons.
3. Well installed W/ 2.69 riser above ground surface W/ protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
0						CR	CONCRETE - 8", REINFORCED, GEOTEXTILE LINER
1-2	MW-12D A		7 6 5 4	24/21		SP	SAND - DARK YELLOWISH ORANGE, VERY FINE TO FINE GRAINED
5-6	MW-12D B		5 2 2 3	24/21		SP	SAND - DARK YELLOWISH ORANGE, VERY FINE TO FINE GRAINED
						CL	SANDY CLAY - DARK YELLOWISH BROWN TO MODERATE REDDISH BROWN, SOFT, ODOR
10-11	MW-12D C		4 4 8 11	24/18		SC	SAND - MODERATE REDDISH BROWN, FINE TO MEDIUM GRAINED, SOME CLAY TO CLAYEY, STAINED DARK GRAY AT BOTTOM OF SPOON, ODOR
12-13	MW-12D D		12 11 17 19	24/16			SAND - DARK YELLOWISH ORANGE TO MODERATE REDDISH BROWN, FINE TO MEDIUM GRAINED, LITTLE CLAY, STRINGERS OF WHITE "LIMEY" SUBSTANCE
14						CL	(Grab samples collected through this interval)
17							SAND WITH SOME CLAY & SANDY CLAY - DARK YELLOWISH ORANGE, CLAYS ARE VERY SOFT, SAND IS FINE TO MEDIUM GRAINED
20-21						SC	SAND - DARK YELLOWISH ORANGE, FINE TO MEDIUM GRAINED, SOME CLAY TO CLAYEY, DECREASING CLAY CONTENT WITH DEPTH TO 25'BLS WHERE CLAY BECOMES A TRACE AMOUNT
22						SP SC	

WELL DIAGRAM



HSA Environmental

PROJECT:
CHEMICAL CONSERVATION
VALDOSTA, GEORGIA

LOG OF BORING
MW-12D

SUPERVISED BY: *ENOS / McKINNEY*

DATE DRILLED: *03/23-03/24/96*

DRILLER: *GPI*

DRILLING METHOD: *HSA / Mud Rotary*

ELEVATION: *189.04 Feet MSL*

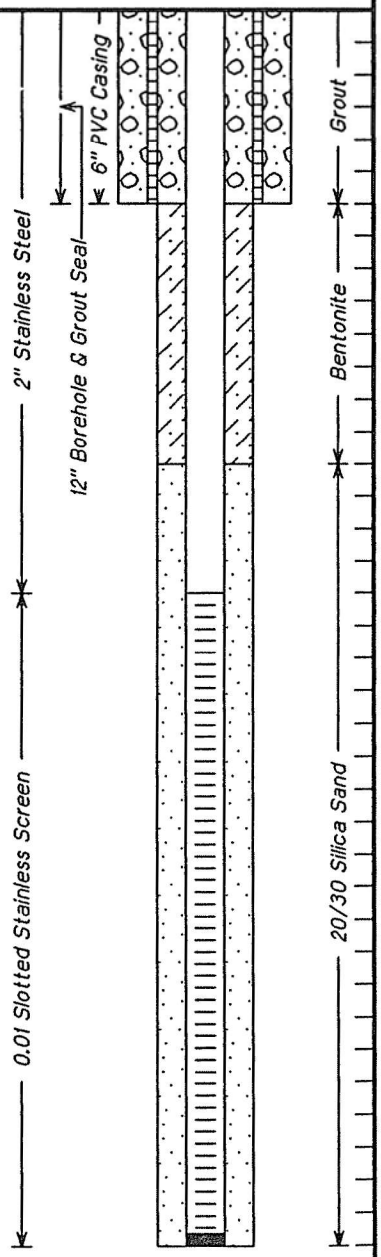
BORING DEPTH: *41.0 Feet*

WATER LEVEL: *14.50 Feet BTOC*

NOTES:
1. Well developed using centrifugal pump fitted with stainless steel hose.
2. Purge volume approximately 80 gallons.
3. Well installed W/ 2.69 riser above ground surface W/ protective cover.

DEPTH feet	SAMPLE NUMBER	SAMPLE DEPTH	BLOW COUNTS	DRIVEN / RECOVERED	GRAPHIC LOG	USCS	GEOLOGIC DESCRIPTION
23–24						SP SC	
25							Set PVC Surface Casing @ 25' BLS on 3/23/96 @ 1755 hours. Initiated drill out on 3/24/96 @ 1023 hours. Drilling mud rotary from surface casing to TD of borehole using 5-7/8" tricone roller bit. Returns through mud tub are primarily sand, fine to medium grained, minimal amount of fines. 6 inch borehole from Surface Casing to TD of Well.
26–39							
40						CL	SANDY CLAY – DARK YELLOWISH ORANGE, VERY SOFT (Pulled sample off bit at 41' BLS)
41							BORING TERMINATED @ 41' Below Land Surface (BLS) Completed drill out and installed well on 3/24/96 @ 1224 hours.
42–44							

WELL DIAGRAM



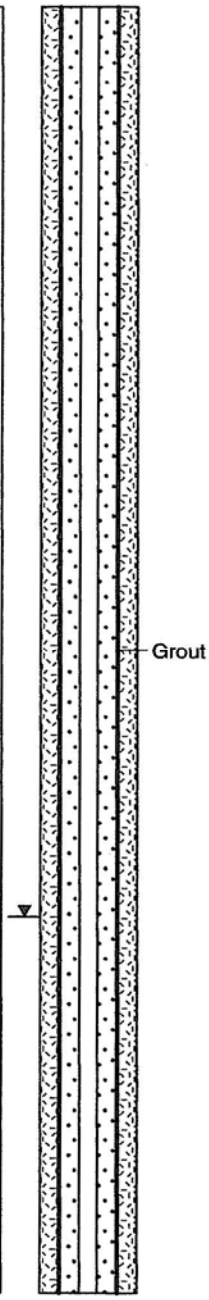
Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

LOG OF BORING MW-13DD

Chemical Conservation of Georgia, Inc.
1612 James P. Rogers Circle
Valdosta, Georgia

Date Installed	: 12-23-00	Ground Elevation	: 187.86'
Logged By	: DLC	GW Level	: 21.22'
Drilling Company	: Betts	Date Measured	: 01-04-01
Drilling Method	: HSA/Mud Rotary		
TOC Elevation	: 187.65'		

Depth in Feet	Samples	Blow Counts per 6"	Rec.%	DESCRIPTION	USCS
0				Concrete	
5	1	14-17-19-21	40	Clay, some sand firm homogeneous, moist to dry (compact fill) red	CL
	2	7-15-16-21	60	Clay, much sand, medium to fine, firm, red-yellow spots, homogeneous	CL
10	3	8-13-23-26	90	Clay Minor Sand, firm, red, yellow+orange stringers, moist	SC
	4	8-16-18-24	100	Sand+Clay, sand med, moist with dry matrix, tan-gray, red, moltted	SC
	5	13-18-19-15	100	Clay,med sand, red, some coarse, firm, tan-brown, some white, red spots	CL
15	6	6-7-9-8	100	Sand, much clay, and silt banded, moltted, tan-brown red, saturated, kaolin stringers, clay layers	SC
	7	8-8-10-10	90	Sand , some clay, med to coarse, saturated, strong odor, banded, fine kaolin stringers	SC
20	8	8-12-13-18	100	Sand, med to fine, some coarse layers, light brown to tan some dark areas, banding, saturated, strong odor.	SC
	9	3-5-13-21	90	Sand, loose, saturated, strong odor, Quartz sand med-fine , brown-tan dark areas, some banding etc.	SC
	10	6-12-18-25	100	Sand, minor clay layers, loose, saturated, tan-brown with dark layers+white stringers, some coarse sand, mostly med to fine sands	CL
25	11	10-10-12-20	90	Sand, fairly homogeneous, loose, saturated fairly, clear, tan-white-brown, minor clay layers, med-sand	SP
	12		100	Sand, med-fine, loose, saturated, yellowish-orange, kaolin stringers	SC
	13	8-12-10-15	100	Sand, clear, white, saturated, fine to med, loose, silt.	SP
30					



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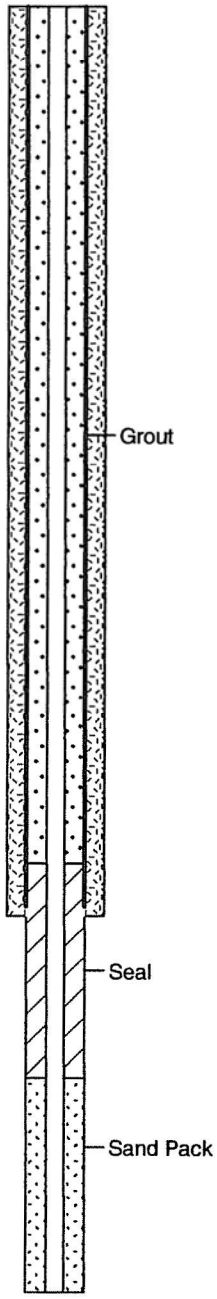
Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

LOG OF BORING MW-13DD

Chemical Conservation of Georgia, Inc.
1612 James P. Rogers Circle
Valdosta, Georgia

Date Installed	: 12-23-00	Ground Elevation	: 187.86'
Logged By	: DLC	GW Level	: 21.22'
Drilling Company	: Betts	Date Measured	: 01-04-01
Drilling Method	: HSA/Mud Rotary		
TOC Elevation	: 187.65'		

Depth in Feet	Samples	Blow Counts per 6"	Rec.%	DESCRIPTION	USCS	GRAPHIC
30	13				SP	
	14	4-6-12-24	100	Sand, with clay stringers white-tan, white stringers, loose, saturated, fairly homogeneous	SC	
	15	12-15-15-15	100	Sand, loose, saturated, clean, white, fine	SP	
35	16	12-6-6-6	90	Sand, loose saturated, medium to fine, white pure sand	SC	
	17	6-6-6-6	100	Sand, loose, soft, saturated, med-fine, minor clay, white, fairly homogeneous sand	SP	
40	18	3-3-6-6	90	Sand, medium, loose, saturated, white, sub-rounded, minor limestone fragments	SC	
	19	6-5-5-6	90	Sand, fine, loose, saturated white, minor clay, limestone fragments	SP	
	20	6-5-5-6	90	Sand, loose, saturated, tan-brown (minor bedding) some limestone fragments, thin bedded	SP	
45	21	7-7-9-13	20	Clay, firm, moist, moltted, firm, tan-gray, red stringers	CL	
	22	5-6-5-5	30	Clay, firm, moist, moltted, gray w/red stringers	CL	
50	23	10-11-9-11	50	Clay, soft to firm, tan-brown, red bands, some fine sand	CL	
	24	6-7-7-6	60	Clay, firm, tan-white, with moltted-red, soft, moist, minor sand	CL	
				HSA Boring Terminated at 51.0' Continue with mud Rotary		
55						
60						



Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

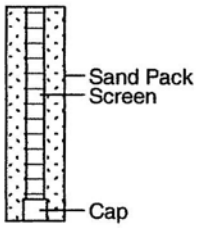
LOG OF BORING MW-13DD

Chemical Conservation of Georgia, Inc.
1612 James P. Rogers Circle
Valdosta, Georgia

Date Installed	: 12-23-00	Ground Elevation	: 187.86'
Logged By	: DLC	GW Level	: 21.22'
Drilling Company	: Betts	Date Measured	: 01-04-01
Drilling Method	: HSA/Mud Rotary		
TOC Elevation	: 187.65'		

Depth In Feet	Samples	Blow Counts per 6"	Rec.%	DESCRIPTION	USCS	GRAPHIC
60						
65						
				Mud-Rotary Boring Terminated at 68.0' BGS		
70				Boring Depth: 68' Boring Diameter: 6" Mud Auger Boring Diameter: 8" HSA Well Depth: 65' Well Diameter: 2" Well Material: PVC Screen Slot: 0.010 Inner Casing: 0-65' Screen: 60'-65' Bottom Cap:65' Sand: 55'-65' Bentonite: 50'-55' Grout: 0-50' Surface Casing 0-51'		
75						
80						
85						
90						

Well1: MW-13DD
Elev.: 187.65'



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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

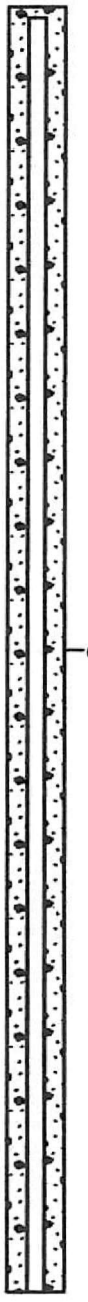
LOG OF BORING MW-13D3

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 7/29/02	Ground Elevation	: 187.76
Logged By	: SSM	GW Level	: 101.00
Drilling Company	: Qore	Date Measured	:
Drilling Method	: mud rotary		
TOC Elevation	: 187.50		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0							
5							
10				not sampled - see lithologic log for MW-13DD for this interval			
15	1				NS		
20							
25							
30							

Well: MW-13D3
Elev.: 187.76



Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

LOG OF BORING MW-13D3

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 7/29/02	Ground Elevation	: 187.76
Logged By	: SSM	GW Level	: 101.00
Drilling Company	: Qore	Date Measured	:
Drilling Method	: mud rotary		
TOC Elevation	: 187.50		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
30							
35	1				NS		
40	2	2-2-2-3	100	Clay, pure, mottled orange-gray-green	CL		
	3	1-2-2-2	100	Clay, as above	CL		
45	4	1-1-2-2	75	Clay, as above	CL		
	5	0-0-1-1	90	Clay, as above	CL		
	6	0-0-1-2	90	Clay, as above, with silt and fn. sand, coarsening with depth	CL		
50	7	0-0-1-1	100	Clay, as above, silty, sandy and micaceous	CL		
	8	0-0-1-1	75	Clay, as above	CL		
55	9	0-0-1-1	75	Clay, as above, increasingly silty downward	CL		
	10	0-0-1-1	75	Clay as above, top 1'; silt & fn sand, gray, mottled, clean	CL		
	11	0-0-2-2	50	Silt and fn. sand, coarsening downward to md. sand, well-sorted, subangular	ML		
60							

Well: MW-13D3
Elev.: 187.76

Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

LOG OF BORING MW-13D3

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 7/29/02	Ground Elevation	: 187.76
Logged By	: SSM	GW Level	: 101.00
Drilling Company	: Qore	Date Measured	:
Drilling Method	: mud rotary		
TOC Elevation	: 187.50		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
60	12	1-1-2-3	75	Sand, as above, md., well-sorted, subangular	SD		
	13	0-1-1-2	75	Sand, as above	SD		
65	14	0-1-1-2	75	Sand, as above	SD		
	15	1-1-2-2	75	Sand, as above	SD		
	16	1-1-3-2	20	Sand, as above	SD		
70	17	0-0-1-1	75	Sand, as above, coarsening downward, up to 2 mm at bottom of interval	SD		
	18	2-2-2-3	90	Sand, cs. to very coarse, poorly-sorted; bottom 6" blue/gray clay with ls fragments up to 4mm	SD		
75	19	10-17-19-21	100	Clay, blue/grey, hard with ls fragments, as above	CL		
	20	4-5-9-11	100	Clay, as above	CL		
	21	8-8-7-8	100	Clay, as above, with some minor iron staining	CL		
80	22	5-13-16-19	100	Clay, as above, ls increasing with depth; gray, dry and hard	CL		
	23	5-19-45-58	75	Calcarenite, gray, dry, hard, fine-grained	LS		
85	24	12-12-20-10	75	Calcarenite, as above	LS		
	25	NS	NS	not sampled	NS		
90					LS		

Well: MW-13D3
Elev.: 187.76

Grout

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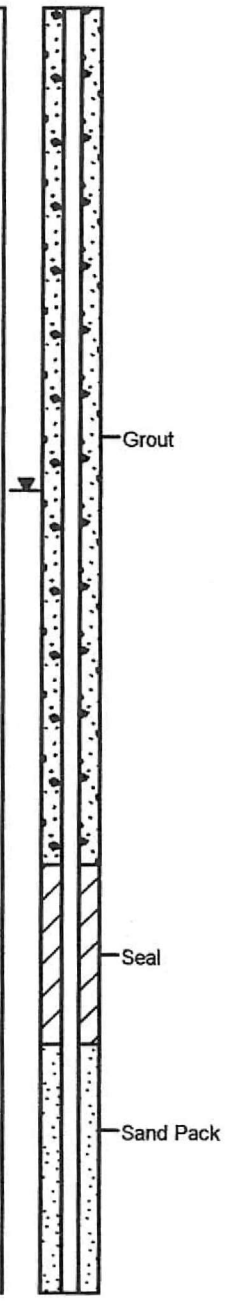
Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

LOG OF BORING MW-13D3

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 7/29/02	Ground Elevation	: 187.76
Logged By	: SSM	GW Level	: 101.00
Drilling Company	: Qore	Date Measured	:
Drilling Method	: mud rotary		
TOC Elevation	: 187.50		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
90	26	50	50	Calcarenite, as above	LS		
95	27	NS	NS	not sampled	NS		
100	28	21-40-50	40	Calcarenite, sandy limestone, md. - cs. grained	LS		
105	29	NS	NS	not sampled	NS		
110	30	40-50	5	Calcarenite, as above	LS		
115	31				NS		
120							



Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

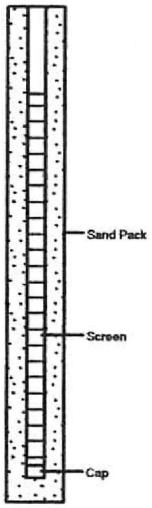
LOG OF BORING MW-13D3

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 7/29/02	Ground Elevation	: 187.76
Logged By	: SSM	GW Level	: 101.00
Drilling Company	: Qore	Date Measured	:
Drilling Method	: mud rotary		
TOC Elevation	: 187.50		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
120		NS	NS	not sampled	NS		
125	31				LS		
130	32	60-40	5	Calcarenite, as above, not as hard			
	33	NS	NS	not sampled	NS		
135	34	20-15	5	Calcarenite, softer than above	LS		
140							
145							
150							

Well: MW-13D3
Elev.: 187.76



Boring Terminated at 140.0' BGS

Boring Depth: 140' Boring Diameter: 6.25"
Well Depth: 139' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-123.5' Screen: 123.5'-138.5'
Bottom Cap: 139.0' Sand: 114.2'-139.0'
Bentonite: 110'-114.2' Grout: 0-110'

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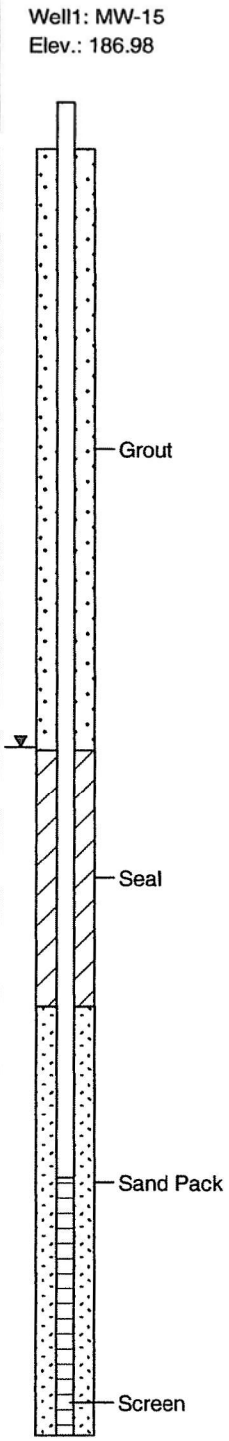
Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

LOG OF BORING MW-15

Chemical Conservation of Georgia, Inc.
1612 James P. Rogers Circle
Valdosta, Georgia

Date Installed	: 12/19/00	Ground Elevation	: 184.18
Logged By	: DLC	GW Level	: 14.22
Drilling Company	: Betts	Date Measured	: 01-04-01
Drilling Method	: HSA		
TOC Elevation	: 186.98		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0				Clay, Red-Brown Soft, Moist, Some Debris (fill)	CL		
				Sand, silt and clay, Loose, Soft, Black, Moist	SC		
5	1	3-3-5	60	Clay, Much Silt and Sand, Soft, Moist, Light Brown, Clay Chunks, (fill)	CL		
10	2	10-12-21	90	Clay, Hard, Red-changing to Tan-White, Clay Matrix w/Much Sand, Dry to Moist, Minor Water in soft Areas, Some Red Banding	CL		
15	3	6-8-9	60	Sand, Saturated, Med to Coarse, Silt + Clay Layers, Yellowish-Orange to Tan	SC		
20	4	4-5-8	80	Sand, Clay Layers (very sandy)	SC		
				Some pure Sand, Saturated, Loose, Banded, Minor Kaolin Layers, White-Tan, Light Red	SW		
25	5	4-4-8	100	Sand, Tan-White, Loose, Saturated, Minor White Kaolin layers, Some Coarse Layers, Mostly Red Sand, Some Minor Clay in some areas, (lots of water) (flowing sands)	SC		
30							



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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
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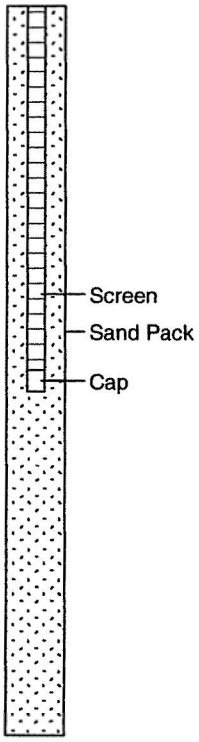
LOG OF BORING MW-15

Chemical Conservation of Georgia, Inc.
1612 James P. Rogers Circle
Valdosta, Georgia

Date Installed	: 12/19/00	Ground Elevation	: 184.18
Logged By	: DLC	GW Level	: 14.22
Drilling Company	: Betts	Date Measured	: 01-04-01
Drilling Method	: HSA		
TOC Elevation	: 186.98		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
30	6	1-1-4	50	Sand, Loose, Saturated, Med. to Coarse, Tan	SC		
				Clay Layer at 31.0', Firm, Moist, Tan-White, Clay	CL		
35	7	2-3-2	100	Fine Sand, Some Silt, White-Tan, Saturated, Very Soft, Minor Red Banding	SM		
40	8	2-4-4	90	Clay, Firm, Moist to Dry, Gray to Yellowish Orange, Red Banding	CL		
45	9	2-3-4	90	Clay, Soft to Med. Firm, Moist, Red Spots + Banding, Minor Sand	CL		
50				Boring Terminated at 47.0' BGS			
55							
60							



Boring Depth: 47' Boring Diameter: 6.25"
Well Depth: 39' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-24' Screen: 24'-39'
Bottom Cap: 39' Sand: 20'-45'
Bentonite: 14'-20' Grout: 0-14'

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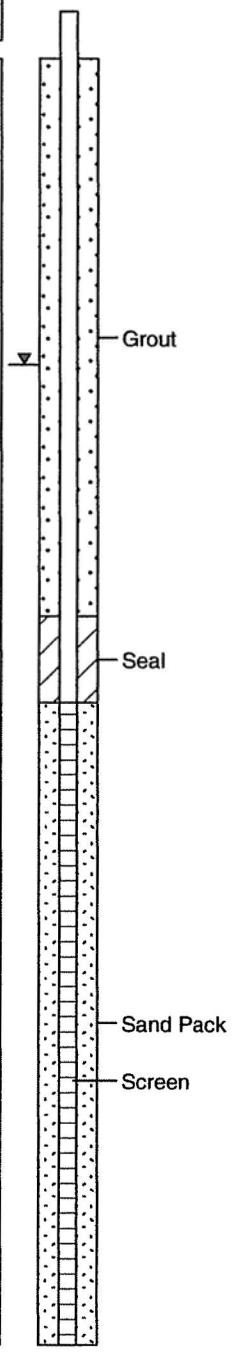
Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

LOG OF BORING MW-16

Chemical Conservation of Georgia, Inc.
1612 James P. Rogers Circle
Valdosta, Georgia

Date Installed	: 12/22/00	Ground Elevation	: 178.77
Logged By	: DLC	GW Level	: 9.83
Drilling Company	: Betts	Date Measured	: 01-04-01
Drilling Method	: HSA		
TOC Elevation	: 181.45		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0				Gravel			
				Fill			
5	1	2-8-9	30	Clay, with sand, firm, dark gray, some yellow and black spots, moist, (fill)	CL		
10	2	26-30-30	50	Sand, white-tan, pure, loose, wet, more clay, med sand, mostly sub-rounded Quartz and minor accessory minerals	SC		
15	3	13-13-22	40	Sand, tan, saturated, some clay, medium to fine, mostly Quartz	SC		
20	4	11-10-11	50	Sand, loose, med, saturated, tan-white minor clay.	SC		
				Clay, layers at 21.0', red-tan, banded, firm, dry to moist	CL		
25	5	6-7-7	60	Clay, firm, moist to wet, some sand, white-gray-tan, red spots, sandy layers	CL		
30							



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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

ENVIRONMENTAL SERVICES

LOG OF BORING MW-16

Chemical Conservation of Georgia, Inc.
1612 James P. Rogers Circle
Valdosta, Georgia

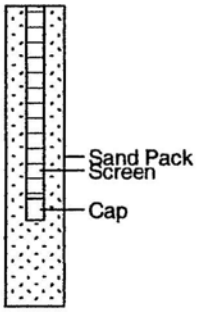
Date Installed	: 12/22/00	Ground Elevation	: 178.77
Logged By	: DLC	GW Level	: 9.83
Drilling Company	: Betts	Date Measured	: 01-04-01
Drilling Method	: HSA		
TOC Elevation	: 181.45		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
30	6	5-4-4	80	Sand and Silt, very soft, very fine sand, white-tan, saturated, banded, much fine kaolin bedding	SC		
35	7	5-6-5	90	Clay, firm, moist to dry,tan-gray, red bands	CL		

Boring terminated at 37.0' BGS

Boring Depth: 37' Boring Diameter: 6.25"
Well Depth: 35' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-15' Screen: 20'-35'
Bottom Cap: 35' Sand: 15'-35'
Bentonite: 13'-15' Grout: 0-13'

Well1: MW-16
Elev.: 181.45



40
45
50
55
60

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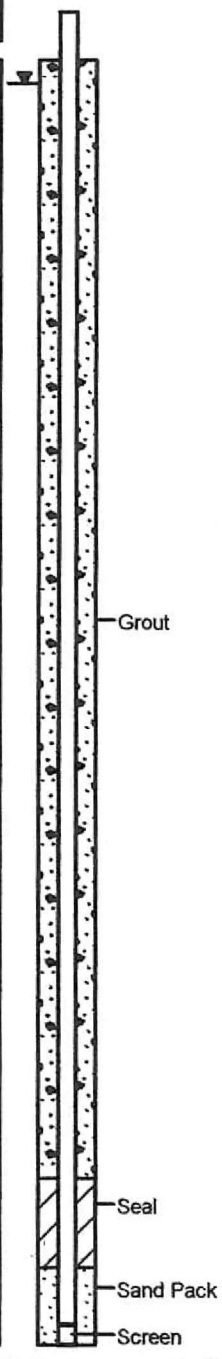
Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

LOG OF BORING MW-17

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 7/25/02	Ground Elevation	: 169.53
Logged By	: SSM	GW Level	: 166.79
Drilling Company	: Qore	Date Measured	: 8/26/02
Drilling Method	: HSA		
TOC Elevation	: 171.70		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0	1	0-0-1-1	10	Sand, md. -cs., poorly-sorted, with organic matter	SD		
	2	0-0-1-1	2	Sand, md. -cs., moderately well sorted	SD		
5	3	3-6-6-7	50	Sand, as above	SD		
	4	5-5-10-10	90	Sand, as above	SD		
	5	3-5-6-6	90	Sand, as above	SD		
10	6	5-4-5-6	90	Sand, as above	SD		
	7	3-4-6-7	75	Sand, as above; with minor ls fragments	SD		
15	8	0-0-6-2	60	Sand, as above; bottom 5" silty, sandy clay, cream with ls frags.	SD		
	9	NS	NS	not sampled	NS		
	10	0-0-1-1	10	Sand, as above	SD		
20	11	0-1-0-1	5	Clay, silty with ls frags.; cream	CL		
	12	NS	NS	not sampled	NS		
25	13	0-0-1-1	5	Sand, fn. - md., silty with clay, cream	SD		
	14	NS	NS	not sampled	NS		
30					CL		



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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

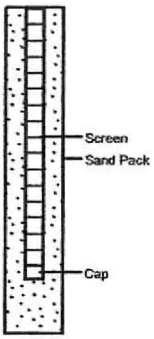
LOG OF BORING MW-17

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 7/25/02	Ground Elevation	: 169.53
Logged By	: SSM	GW Level	: 166.79
Drilling Company	: Core	Date Measured	: 8/26/02
Drilling Method	: HSA		
TOC Elevation	: 171.70		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
30	15	1-1-2-2	25	Clay, v. sandy and silty, mottled tan/rust	CL		
	16	NS	NS	not sampled	NS		
35	17	0-0-1-1	20	Sand, silty with clay, mottled tan	SD		
	18	NS	NS	not sampled	NS		
40	19	1-1-1-1	25	Sand, silty with clay as above	SD		
45							
50							
55							
60							

Well: MW-17
Elev.: 169.53



Boring Terminated at 42.0' BGS

Boring Depth: 42' Boring Diameter: 6.25"
Well Depth: 40' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-29.5' Screen: 29.5'-39.5'
Bottom Cap: 40' Sand: 28.2'-40'
Bentonite: 26.1'-28.2' Grout: 0-26.1'

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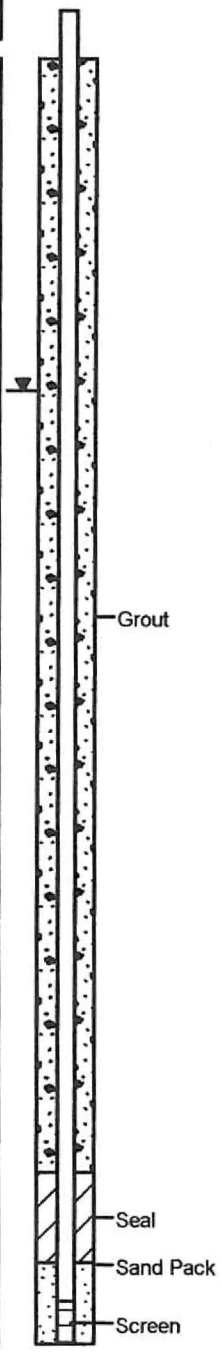
Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

LOG OF BORING MW-18

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 7/25/02	Ground Elevation	: 178.81
Logged By	: SSM	GW Level	: 168.40
Drilling Company	: Qore	Date Measured	: 8/26/02
Drilling Method	: HSA		
TOC Elevation	: 181.47		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0	1	1-3-3-2	60	Sand, md. - cs., poorly-sorted, with organic matter; top 6" soil	SD		
	2	1-1-1-1	25	Sand, md. - cs., as above	SD		
5	3	3-2-4-4	75	Sand, as above, upper 6"; with clay, mottled tan/rust, lower 1.5 ft.	SD		
	4	6-9-10-13	90	Sand, cs., v. porly sorted, with clay as above; dry	SD		
	5	4-9-8-8	90	Sand, as above	SD		
10	6	3-7-6-6	90	Sand, as above, upper 1'; Sand, md. - cs., well-sorted, tan	SD		
	7	3-6-7-7	75	Sand, as above; wet	SD		
15	8	3-4-6-7	100	Sand, as above; with ls frags.	SD		
	9	2-5-7-11	100	Sand, as above	SD		
	10	2-4-7-9	100	Sand, as above, with thin calcareous layers	SD		
20	11	4-5-8-9	100	Sand, as above	SD		
	12	2-3-5-3	100	Sand, as above, top 20"; clay, silty, cream, lower 4"	SD		
25	13	1-1-1-1	100	Sand, md., clayey, with thin (1-2mm) calc. layers	SD		
	14	1-2-2-3	100	Top 1' as above; sand, md., very well-sorted, tan, bottom 1'	SD		
	15	0-1-2-2	100	Sand, as above	SD		
30							



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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

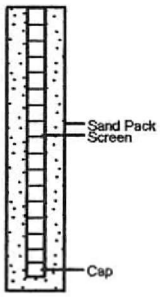
LOG OF BORING MW-18

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 7/25/02	Ground Elevation	: 178.81
Logged By	: SSM	GW Level	: 168.40
Drilling Company	: Qore	Date Measured	: 8/26/02
Drilling Method	: HSA		
TOC Elevation	: 181.47		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
30	16	0-0-1-2	100	Sand, as above; 1" clay layer 8" from top	SD		
	17	1-3-3-3	100	Sand, as above, upper 18"; clay, silty, cream, lower 6"	SD		
35	18	0-0-1-1	100	Clay, as above, top 6"; sand, clayey, md., well-sorted, bottom 18"	CL		
	19	1-2-2-2	100	Sand, clayey, as above, thinly banded	SD		
	20	1-2-3-3	100	Sand and clay as above; clay decreasing with depth	SD		
40							
45							
50							
55							
60							

Well: MW-18
Elev.: 178.81



Boring Terminated at 40.0' BGS

Boring Depth: 40' Boring Diameter: 6.25"
Well Depth: 39.5' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-29.0' Screen: 29.0'-39.0'
Bottom Cap: 39.5' Sand: 28.1'-39.0'
Bentonite: 26.0'-28.1' Grout: 0-26.0'

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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

LOG OF BORING MW-19

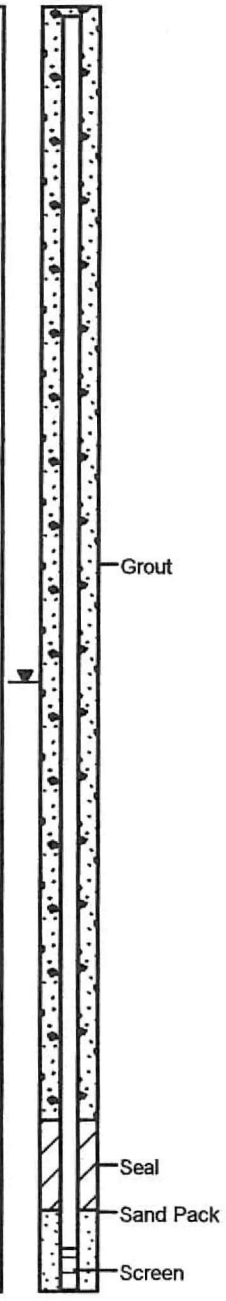
(Page 1 of 2)

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 7/26/02	Ground Elevation	: 189.06
Logged By	: SSM	GW Level	: 173.52
Drilling Company	: Qore	Date Measured	: 8/26/02
Drilling Method	: HSA		
TOC Elevation	: 188.84		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0	1	5-4-3-6	90	Sand, md., poorly-sorted, with SOIL & organic matter	SD		
	2	2-2-2-1	100	Sand, md. - cs., poorly-sorted, dry	SD		
5	3	7-3-5-7	100	Sand, as above, with minor clay content	SD		
	4	4-6-9-13	100	Sand, as above	SD		
	5	7-10-13-19	100	Sand, as above	SD		
10	6	5-10-15-18	100	Sand, as above, upper 1"; with minor ls fragments	SD		
	7	6-12-12-12	100	Sand, as above; bottom 4" cleaner, md. - cs., well-sorted	SD		
15	8	3-8-10-11	100	Sand, as above; md. - cs., well-sorted; 1" clay layer with ls fragments	SD		
	9	4-5-7-8	90	Sand, as above; wet	SD		
	10	0-1-3-4	90	Sand, as above, with thin calcareous layers	SD		
20	11	1-1-2-5	100	Sand, as above	SD		
	12	0-0-2-4	90	Sand, as above	SD		
25	13	2-4-6-8	75	Sand, as above	SD		
	14	4-7-11-10	75	Sand, as above	SD		
30	15	1-4-10-10	50	Sand, as above	SD		

Well: MW-19
Elev.: 189.06



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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

LOG OF BORING MW-19

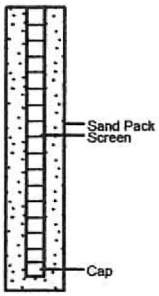
(Page 2 of 2)

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 7/26/02	Ground Elevation	: 189.06
Logged By	: SSM	GW Level	: 173.52
Drilling Company	: Core	Date Measured	: 8/26/02
Drilling Method	: HSA		
TOC Elevation	: 188.84		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
30	16	0-1-3-3	50	Sand, as above	SD		
	17	0-1-1-2	50	Sand, as above, upper 20"; clay, silty, cream, lower 4"	SD		
35	18	0-0-1-1	60	Clay, as above, very sandy, md., - cs., well-sorted; with ls fragments	CL		
	19	0-0-2-2	75	Clay, as above	CL		
40	20	0-1-2-2	75	Clay, as above	CL		
45							
50							
55							
60							

Well: MW-19
Elev.: 189.06



Boring Terminated at 40.0' BGS

Boring Depth: 40' Boring Diameter: 6.25"
Well Depth: 39.5' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-29.0' Screen: 29.0'-39.0'
Bottom Cap: 39.5' Sand: 28.1'-39.0'
Bentonite: 26.0'-28.1' Grout: 0-26.0'

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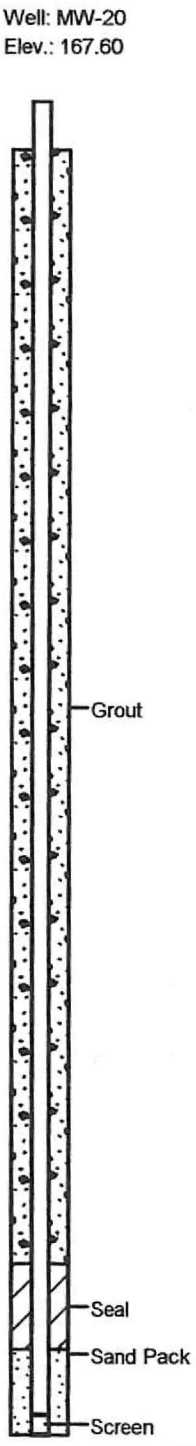
Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

LOG OF BORING MW-20

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 8/20/02	Ground Elevation	: 167.60
Logged By	: SSM	GW Level	: 166.83
Drilling Company	: Probe Domain	Date Measured	: 8/26/02
Drilling Method	: direct push		
TOC Elevation	: 170.13		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0							
	1		75	Sand, md. - cs, well-sorted			
5							
	2		90	Sand, as above			
10							
	3		100	Sand, as above, with ls fragments	SP		
15							
	4		100	Sand, as above			
20							
	5		90	Sand, as above			
25							
	6		90	Sand, as above			
30							



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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

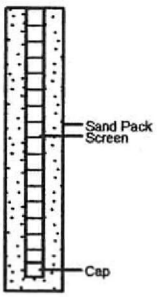
LOG OF BORING MW-20

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 8/20/02	Ground Elevation	: 167.60
Logged By	: SSM	GW Level	: 166.83
Drilling Company	: Probe Domain	Date Measured	: 8/26/02
Drilling Method	: direct push		
TOC Elevation	: 170.13		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
30							
	7		75	Sand, as above, with thin clay layers and ls fragments	SP		
35							
	8		75	Sand, as above, cleaner, md. - cs., well-sorted			
40							
45							
50							
55							
60							

Well: MW-20
Elev.: 167.60



Boring Terminated at 40.0' BGS

Boring Depth: 40' Boring Diameter: 4.0"
Well Depth: 39.5' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-29.5' Screen: 29.5'-39.5'
Bottom Cap: 40.0' Sand: 28.0'-39.5'
Bentonite: 26.0'-28.0' Grout: 0-26.0'

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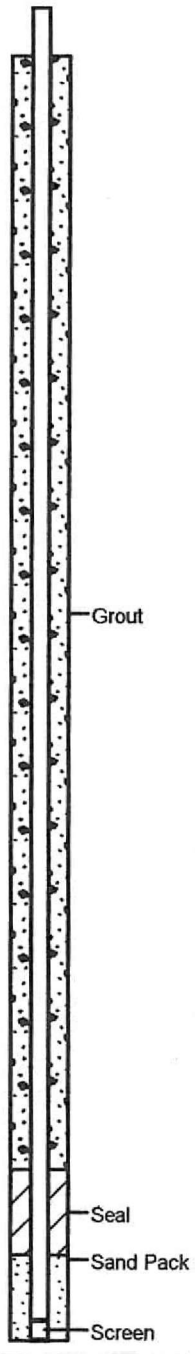
Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

LOG OF BORING MW-21

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 8/20/02	Ground Elevation	: 167.30
Logged By	: SSM	GW Level	: 167.01
Drilling Company	: Probe Domain	Date Measured	: 8/26/02
Drilling Method	: direct push		
TOC Elevation	: 169.43		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0							
	1		90	Sand, md. - cs, well-sorted	SD		
5							
	2		90	Sand, as above	SD		
10							
	3		100	Sand, as above	SD		
15							
	4		100	Sand, as above, with thin ls layers	SD		
20							
	5		50	Sand, as above	SD		
25							
	6		50	Sand, as above	SD		
30							



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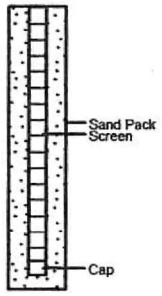
Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

LOG OF BORING MW-21

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 8/20/02	Ground Elevation	: 167.30
Logged By	: SSM	GW Level	: 167.01
Drilling Company	: Probe Domain	Date Measured	: 8/26/02
Drilling Method	: direct push		
TOC Elevation	: 169.43		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
30							
	7		75	Sand, as above, ls fragments	SD		
35							
	8		75	Sand, as above	SD		
40							
45							
50							
55							
60							



Boring Terminated at 40.0' BGS

Boring Depth: 40' Boring Diameter: 4.0"
Well Depth: 39.5' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-29.5' Screen: 29.5'-39.5'
Bottom Cap: 40.0' Sand: 28.0'-39.5'
Bentonite: 26.0'-28.0' Grout: 0-26.0'

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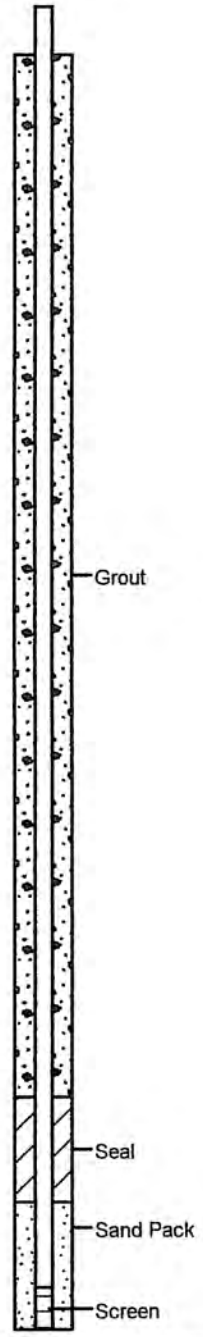
Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

LOG OF BORING MW-22

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 4/16/03	Ground Elevation	: 167.79
Logged By	: SSM	GW Level	: 168.16
Drilling Company	: Probe Domain	Date Measured	: 4/16/03
Drilling Method	: direct push		
TOC Elevation	: 171.02		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0	1		100	Sand, md., gray, well-sorted, saturated	SD		
5	2		100	Sand, as above, md.-cs.	SD		
10	3		100	Sand, as above; mottled gray/orange clay @ 10.5-11.5'; fn., well-sorted sd., cream, below 11.5'	SD		
15	4		100	Sand, as above	SD		
20	5		90	Sand, as above	SD		
25	6		90	Sand, as above	SD		
30							



Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

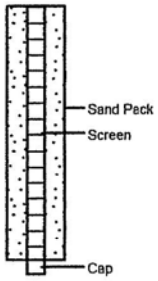
LOG OF BORING MW-22

Perma-Fix Environmental Services, Inc.
f/k/a Chemical Conservation of Georgia
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 4/16/03	Ground Elevation	: 167.79
Logged By	: SSM	GW Level	: 168.16
Drilling Company	: Probe Domain	Date Measured	: 4/16/03
Drilling Method	: direct push		
TOC Elevation	: 171.02		

Depth in Feet	Samples	Blows per 6-Inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
30	7		75	Sand, as above	SD		
35	8		75	Sand, as above, coarsening slightly downward.	SD		
40							
45							
50							
55							
60							

Well: MW-22
Elev.: 171.02



Boring Terminated at 40.0' BGS

Boring Depth: 40' Boring Diameter: 4.0"
Well Depth: 39.5' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-29.5' Screen: 29.5'-39.5'
Bottom Cap: 40.0' Sand: 28.0'-39.5'
Bentonite: 26.0'-28.0' Grout: 0-26.0'

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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

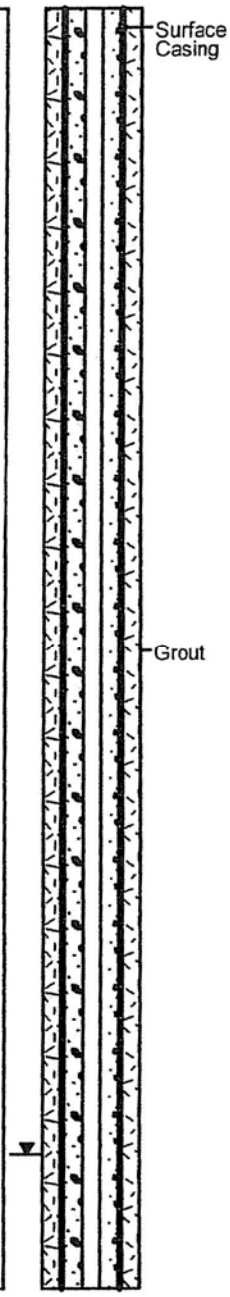
ENVIRONMENTAL SERVICES

LOG OF BORING MW-23

Perma-Fix of South Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 9/2/04	Ground Elevation	: 175.57
Logged By	: SSM	GW Level	: 148.72
Drilling Company	: Qore	Date Measured	: 10/19/04
Drilling Method	: Mud Rotary		
TOC Elevation	: 175.21		

Depth in Feet	Samples	Blow Counts per 6"	Rec.%	DESCRIPTION	USCS	GRAPHIC
0				Refer to MW-14D log for 0-40 lithology		
5						
10						
15						
20						
25						
30						



Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

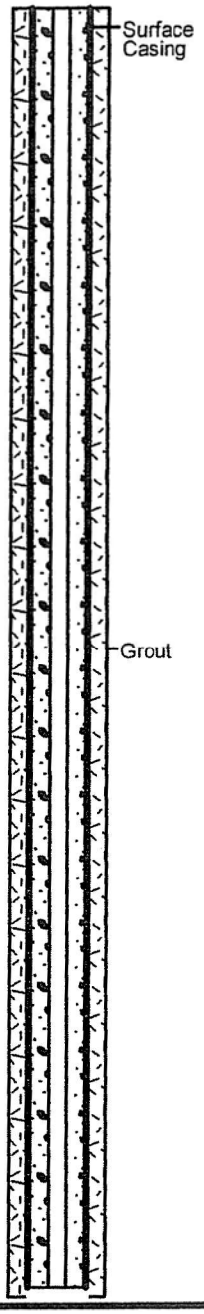
LOG OF BORING MW-23

Perma-Fix of South Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 9/2/04	Ground Elevation	: 175.57
Logged By	: SSM	GW Level	: 148.72
Drilling Company	: Qore	Date Measured	: 10/19/04
Drilling Method	: Mud Rotary		
TOC Elevation	: 175.21		

Depth in Feet	Samples	Blow Counts per 6"	Rec.%	DESCRIPTION	USCS	GRAPHIC
30						
35						
40	1	14-17-19-21	40	Sand, fn. - md., well sorted, gray, saturated		
	2	7-15-16-21	60	Sand, as above		
45	3	8-13-23-26	90	Sand, as above		
	4	8-16-18-24	100	sand, as above	SD	
	5	13-18-19-15	100	Sand, as above	SD	
50	6	6-7-9-8	100	Sand, as above, with thin clay layers	SD	
	7	8-8-10-10	90	Sand, as above	SD	
55	8	8-12-13-18	100	Sand, as above	SD	
	9	3-5-13-21	90	Sand, clayey, increasing clay content with depth	SC	
60	10	6-12-18-25	100	Clay, mottled gray, relatively pure, slightly sandy	CL	

Well: MW-23
Elev.: 175.21



Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

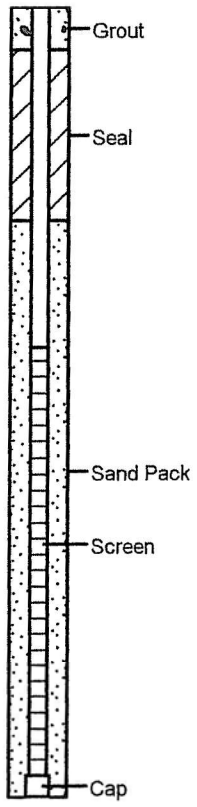
LOG OF BORING MW-23

Perma-Fix of South Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 9/2/04	Ground Elevation	: 175.57
Logged By	: SSM	GW Level	: 148.72
Drilling Company	: Qore	Date Measured	: 10/19/04
Drilling Method	: Mud Rotary		
TOC Elevation	: 175.21		

Depth in Feet	Samples	Blow Counts per 6"	Rec.%	DESCRIPTION	USCS	GRAPHIC
60	11	10-10-12-20	90	Clay, as above	CL	
	12	11-10-10-15	100	Clay, very sandy, fn. - md. sand, tan, with limestone fragments	SC	
65	13	8-12-10-15	100	Sand, fn., well sorted, with ls fragments	SD	
	14	4-6-12-24	100	Sand, as above	SD	
	15	0-6-13-14	50	Sand, as above	SD	
70	16	1-6-12-20	90	Sand, with ls and clay	MRL	
	17	6-16-25-30	100	Marl (ls, clay and sand), fine grained, dense, hard, gray/white	MRL	
75	18	11-29-49-59	90	Marl, as above	MRL	
	19	13-17-44-54	90	Marl, as above	MRL	
80						
85						
90						

Well: MW-23
Elev.: 175.21



Mud-Rotary Boring Terminated at 79.0' BGS

Boring Depth: 79'
Boring Diameter: 8"
Well Depth: 78'
Well Diameter: 2"
Well Material: PVC
Screen Slot: 0.010
Inner Casing: 0-68'
Screen: 68'-78'
Bottom Cap: 78.5'
Sand: 65'-78.5'
Bentonite: 61'-65'
Grout: 0-65'
Surface Casing 0-60'

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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

ENVIRONMENTAL SERVICES

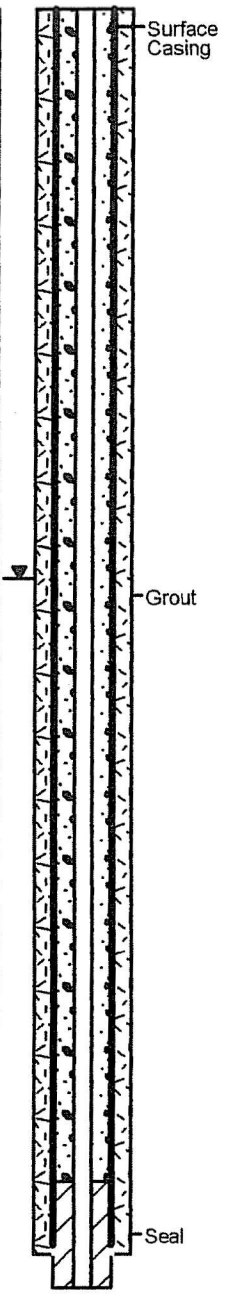
LOG OF BORING MW-24D

Perma-Fix of South Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 9/8/04	Ground Elevation	: 189.67
Logged By	: SSM	GW Level	: 176.33
Drilling Company	: Qore	Date Measured	: 10/19/04
Drilling Method	: Mud Rotary		
TOC Elevation	: 189.42		

Depth in Feet	Samples	Blow Counts per 6"	Rec.%	DESCRIPTION	USCS	GRAPHIC
0	1	4-7-9-10	40	Sand, fn. - md., moderately sorted, reddish-brown, little clay	SD	
	2	7-5-6-10	60	Sand, as above	SD	
5	3	8-13-13-16	90	Sand, as above	SD	
	4	8-16-18-18	100	Sand, as above, mottled yellow-orange	SD	
	5	3-8-9-15	100	Sand, as above	SD	
10	6	6-7-9-8	100	Sand, as above	SD	
	7	8-8-10-10	90	Sand, as above, moist	SD	
15	8	8-12-13-18	100	Sand, as above, saturated, with clay layers	SD	
	9	3-5-13-21	90	Sand , md. to crs., saturated, banded, fine kaolin stringers	SC	
	10	6-12-8-12	100	Sand, as above	SC	
20	11	5-6-12-12	90	Sand, as above	SC	
	12	6-7-8-10	100	Sand, as above, well sorted	SC	
25	13	8-12-10-15	100	Sand, fn. - md., increasing clay content with depth	SC	
	14	4-6-12-14	100	Clay, sandy, fn. - md., tan	CL	
	15	2-5-5-10	100	Clay, as above	CL	
30						

Well: MW-24D
Elev.: 189.42



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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

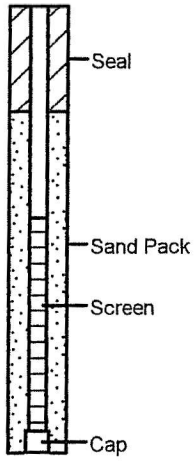
LOG OF BORING MW-24D

Perma-Fix of South Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 9/8/04	Ground Elevation	: 189.67
Logged By	: SSM	GW Level	: 176.33
Drilling Company	: Qore	Date Measured	: 10/19/04
Drilling Method	: Mud Rotary		
TOC Elevation	: 189.42		

Depth in Feet	Samples	Blow Counts per 6"	Rec.%	DESCRIPTION	USCS	GRAPHIC
30	16	2-6-6-6	90	Clay, as above	CL	
	17	6-6-6-6	100	Clay, very sandy, sd. increasing with depth	SC	
35	18	3-3-6-6	90	Sand, fn. - md., well sorted, white	SD	
	19	6-5-5-6	90	Sand, as above, minor clay	SD	
	20	6-5-5-6	90	Sand, as above, increasing clay, limestone fragments	SD	
40						

Well: MW-24D
Elev.: 189.42



Boring Terminated at 41.0' BGS

Boring Depth: 41'
Boring Diameter: 8"
Well Depth: 40'
Well Material: PVC
Inner Casing: 0-40'
Bottom Cap: 40.5'
Bentonite: 27.5'-32.5'
Surface Casing 0-29'

Well Diameter: 2"
Screen Slot: 0.010
Screen: 35'-40'
Sand: 32.5'-40.5'
Grout: 0-27.5'

45
50
55
60

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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

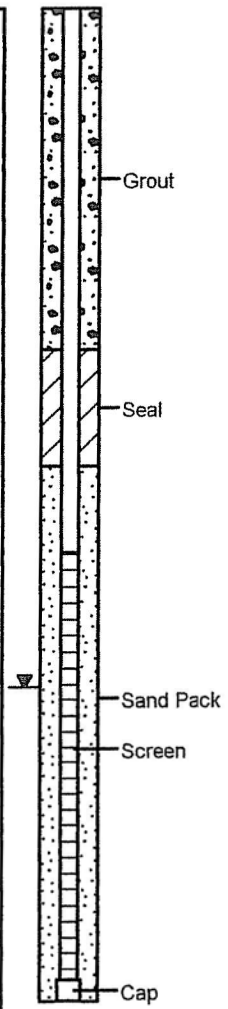
LOG OF BORING MW-26

Perma-Fix of South Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 9/9/04	Ground Elevation	: 192.95
Logged By	: SSM	GW Level	: 177.12
Drilling Company	: Qore	Date Measured	: 10/19/04
Drilling Method	: HSA		
TOC Elevation	: 192.55		

Depth in Feet	Samples	Blow Counts per 6"	Rec.%	DESCRIPTION	USCS	GRAPHIC
0	1	4-12-13-21	80	Clay, sandy, silty with organic matter	SC	
	2	7-15-16-21	80	Clay, as above	SC	
5	3	8-13-23-26	75	Clay, sandy, silty	SC	
	4	8-16-18-24	60	Clay, as above	SC	
	5	13-18-19-15	100	Sand, md. - crs., poorly sorted, with minor clay	SC	
10	6	6-7-9-8	100	Sand, as above	SD	
	7	8-8-10-10	90	Sand, md. - fn., with thin crs. layers; wet	SD	
15	8	8-12-13-18	90	Sand, as above, saturated	SD	
	9	3-5-13-21	90	Sand , fn. - md., better sorted, saturated	SD	
	10	6-12-11-20	75	Sand, as above, with thin clay layers	SD	
20	11	6-10-11-18	80	Sand, as above, increasing clay in bottom 6"	SC	
	12	5-12-12-16	90	Clay, very sandy & silty, mottled yellow/orange	SC	
25	13	4-10-11-12	90	Clay, as above	SC	
30						

Well: MW-26
Elev.: 192.55



Boring Terminated at 25.0' BGS

Boring Depth: 25'	Boring Diameter: 6.25"
Well Depth: 22.75'	Well Diameter: 2"
Well Material: PVC	Screen Slot: 0.010
Casing: 0-12.75'	Screen: 12.75'-22.75'
Bottom Cap: 23.25'	Sand: 10.75'-23.25'
Bentonite: 8.0'-10.75'	Grout: 0-8.0'

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Mill Creek Environmental Services
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Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

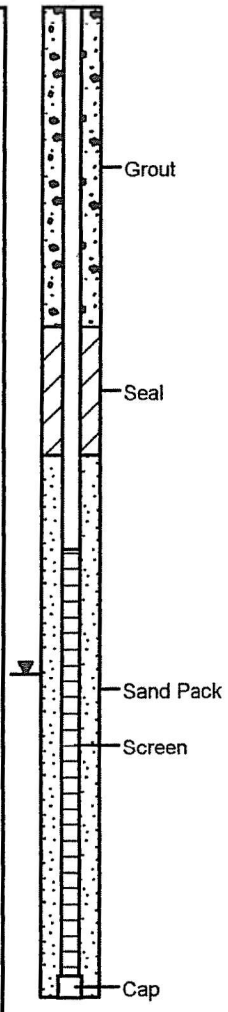
LOG OF BORING MW-27

Perma-Fix of South Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 9/9/04	Ground Elevation	: 191.96
Logged By	: SSM	GW Level	: 176.38
Drilling Company	: Qore	Date Measured	: 10/19/04
Drilling Method	: HSA		
TOC Elevation	: 191.44		

Depth in Feet	Samples	Blow Counts per 6"	Rec.%	DESCRIPTION	USCS	GRAPHIC
0	1	4-9-12-18	80	Clay, sandy, silty with organic matter	SC	
	2	7-10-15-21	80	Clay, as above	SC	
5	3	6-13-12-18	50	Clay, sandy, silty	SC	
	4	8-15-17-24	60	Clay, as above	SC	
	5	10-10-18-19	90	Sand, md. - crs., poorly sorted	SD	
10	6	8-7-12-14	100	Sand, fn.-md	SD	
	7	8-8-10-12	90	Sand, as above; wet	SD	
15	8	5-12-15-20	90	Sand, as above, saturated	SD	
	9	6-8-13-18	90	Sand , fn. - md., thin clayey layers, saturated	SD	
	10	6-10-12-21	90	Sand, as above, with thin clay layers	SC	
20	11	8-10-11-18	75	Sand, as above, increasing clay in bottom 6"	SC	
	12	8-15-17-15	75	Clay, very sandy & silty, mottled yellow/orange	SC	
25	13	6-12-17-20	75	Clay, as above	SC	
30						

Well: MW-27
Elev.: 191.44



Boring Terminated at 25.0' BGS
Boring Depth: 25' Boring Diameter: 6.25"
Well Depth: 22.7' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010
Casing: 0-12.7' Screen: 12.7'-22.7'
Bottom Cap: 23.2' Sand: 10.5'-23.2'
Bentonite: 7.5'-10.5' Grout: 0-7.5'

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LOG OF BORING MW-28

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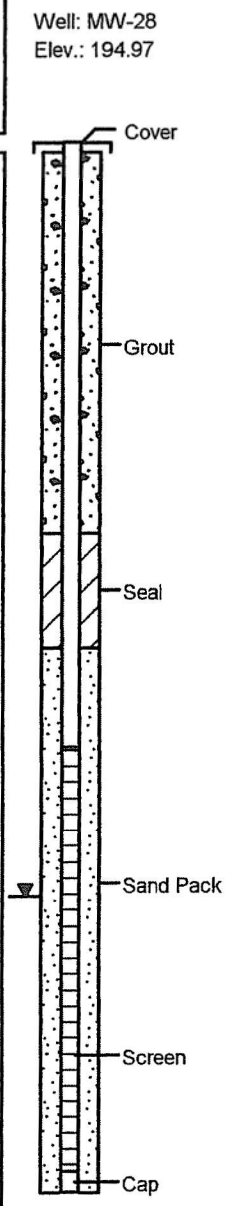
Permafix of South Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 9/9/04	Ground Elevation	: 195.21
Logged By	: SSM	GW Level	: 177.70
Drilling Company	: Qore	Date Measured	: 10/19/04
Drilling Method	: HSA		
TOC Elevation	: 194.97		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0	1	4-12-13-21	80	Clay. sandy, silty with organic matter	SC		
	2	7-15-16-21	80	Clay, as above	SC		
5	3	8-13-23-26	75	Clay, sandy & silty	SC		
	4	8-16-18-24	60	Clay, as above	SC		
	5	13-18-19-15	100	Sand, md.-cs., poorly sorted with minor clay	SC		
10	6	6-7-9-8	100	Sand, as above	SD		
	7	8-8-10-10	90	Sand, as above, wet	SD		
15	8	8-12-13-18	90	Sand, as above, saturated	SD		
	9	3-5-13-21	90	Sand, md.-fn., better sorted, saturated	SD		
	10	6-12-11-20	75	Sand, as above, thin clay layers	SD		
20	11	6-10-11-18	80	Sand, as above, increasing clay in botom 6"	SD		
	12	5-12-12-16	90	Sandy, clayey	SC		
25	13	6-10-16-22	75	Clay, very sandy & silty	SC		
	14			Clay, less sandy	CL		
30							



Boring Terminated at 28.0' BGS
Boring Depth: 28' Boring Diameter: 6.25"
Well Depth: 24.0' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-14.0' Screen: 14.0'-24.0'
Bottom Cap: 24.5' Sand: 11.7'-24.5'
Bentonite: 9.0'-11.7' Grout: 0-9.0'

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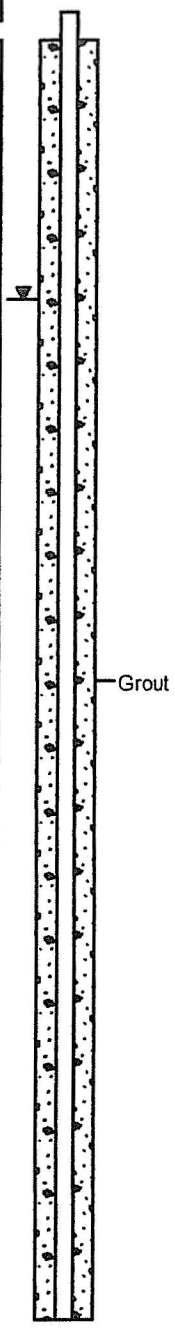
Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

LOG OF BORING MW-29

Perma-Fix oof South Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 9/10/04	Ground Elevation	: 176.32
Logged By	: SSM	GW Level	: 170.26
Drilling Company	: Qore	Date Measured	: 10/19/04
Drilling Method	: HSA		
TOC Elevation	: 175.68		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0	1	1-3-3-2	60	Sand, md. - cs., poorly-sorted, with organic matter; top 6" soil	SD		
	2	1-1-1-1	25	Sand, md. - cs., as above	SD		
5	3	3-2-4-4	75	Sand, as above	SD		
	4	6-9-10-13	90	Sand, cs., v. porly sorted, with clay as above; dry	SD		
	5	4-9-8-8	90	Sand, as above	SD		
10	6	3-7-6-6	90	Sand, as above, upper 1'; Sand, md. - cs., well-sorted, tan	SD		
	7	3-6-7-7	75	Sand, as above; wet	SD		
15	8	3-4-6-7	100	Sand, as above; with ls frags.	SD		
	9	2-5-7-11	100	Sand, as above	SD		
	10	2-4-7-9	100	Sand, as above, with thin calcareous layers	SD		
20	11	4-5-8-9	100	Sand, as above	SD		
	12	2-3-5-3	100	Sand, as above, top 20"; clay, silty, cream, lower 4"	SD		
25	13	1-1-1-1	100	Sand, md., clayey, with thin (1-2mm) calc. layers	SD		
	14	1-2-2-3	100	Top 1' as above; sand, md., very well-sorted, tan	SD		
	15	0-1-2-2	100	Sand, as above	SD		
30							



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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

ENVIRONMENTAL SERVICES

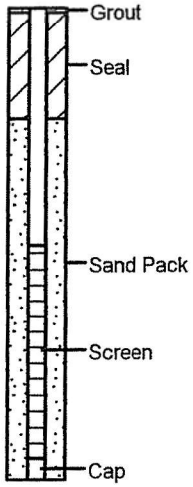
LOG OF BORING MW-29

Perma-Fix oof South Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Lowndes County, Georgia

Date Installed	: 9/10/04	Ground Elevation	: 176.32
Logged By	: SSM	GW Level	: 170.26
Drilling Company	: Qore	Date Measured	: 10/19/04
Drilling Method	: HSA		
TOC Elevation	: 175.68		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
30	16	0-0-1-2	100	Sand, as above; 1" clay layer 8" from top	SD		
	17	1-3-3-3	100	Sand, as above, upper 18"; clay, silty, lower 6"	SD		
35	18	0-0-1-1	100	Clay, as above, top 6"; sand, clayey, md., well-sorted, bottom 18"	CL		
	19	1-2-2-2	100	Sand, clayey, as above, thinly banded	SD		
	20	1-2-3-3	100	Sand and clay as above; clay decreasing with depth	SD		
40							

Well: MW-29
Elev.: 175.68



Boring Terminated at 40.0' BGS

Boring Depth: 41.0' Boring Diameter: 6.25"
Well Depth: 40.5' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-35.5' Screen: 35.5'-40.5'
Bottom Cap: 40.5' Sand: 32.6'-40.5'
Bentonite: 30.1'-32.6' Grout: 0-30.1'

45
50
55
60

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MW-100

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/17/06	DATE COMPLETED: 6/17/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.35	WATER DEPTH (FT. BTOC): 14.98
TOC ELEVATION (FT. MSL): 190.218	GROUND ELEVATION FT. MSL): 190.218
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-14.5' Silty medium sand; 65% sand, 25% silt, 10% clay; yellowish red (5YR 5/6); low plasticity; sand%: 60% medium, 25% fine, 10% very fine, 5% coarse; sub-angular; graded; dense; moist to dry; VOC odor	SM	14.5	2-3 ft.	3-4-6-7 5-7-9-13
				92.5		
	5			34.2		5-9-20-22
				150	6-7 ft.	
				220		4-7-9-11
				337		
				103		3-7-11-14 3-6-9-15
	10			283	11-12 ft.	
						5-7-9-15
		14.5-19', Silty fine sand; 60% sand, 25% silt, 15% clay; brown (10YR 5/3); low plasticity; sand%: 50% fine, 30% medium, 20% very fine; sub-rounded; moderately-poorly graded; dense; moist to saturated	SM	211		3-5-9-17
				155	17-17.5 ft. 17.5-18 ft. (PP)	3-5-9-17
	15	@18.5-18.7', Medium sand interbed; 85% sand, 15% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-rounded; graded; loose; saturated		13.0		
		19-24.5', Silty coarse sand; 70% sand, 25% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 50% coarse, 30% medium, 10% fine, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated; hydrocarbon stained @19-21.5 ft.	SM	3.7		3-5-7-9
				10.5		3-5-8-13
	20	@23-24', Color change to reddish yellow (7.5YR 6/6)				3-5-7-6
				0.0	25-25.5 ft. 25.5-26 ft. (PP)	2-3-5-9
	25	T.D. = 25 FT.				
	30					
	35					

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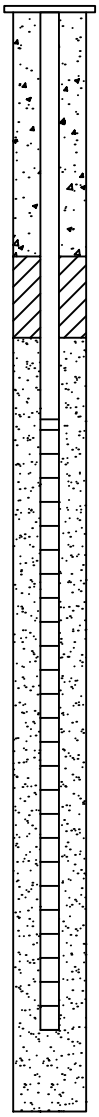
CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MW-101

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/17/06	DATE COMPLETED: 6/17/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 25.17	WATER DEPTH (FT. BTOC): 15.05
TOC ELEVATION (FT. MSL): 190.167	GROUND ELEVATION FT. MSL): 190.167
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-15', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 30% fine, 5% very fine, 5% coarse; sub-angular; moderately-poorly graded; loose; dry	SM	2.8	1-2 ft.	
	5			27.2	6-7 ft.	4-4-9-7
	10			19.3	11-12 ft.	1-2-9-11
	15	15-26', Clayey fine sand; 65% sand, 25% clay, 10% silt; light yellowish brown (10YR 6/4); low plasticity; sand%: 80% fine, 10% medium, 10% very fine; sub-angular; poorly graded; dense; moist to saturated	SC	40.3		4-6-8-9
	20			83.4		2-3-5-9
	25			69.5		2-3-5-7
		26-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 5% very fine, 5% very coarse; sub-angular; moderately-well graded; loose; saturated	SW	2.6		
		T.D. = 27 FT.				
	30					
	35					

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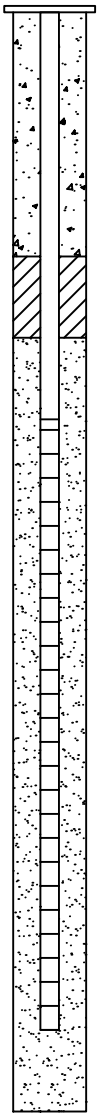
CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MW-102

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/13/06	DATE COMPLETED: 6/13/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 27.15	WATER DEPTH (FT. BTOC): 17.72
TOC ELEVATION (FT. MSL): 192.962	GROUND ELEVATION FT. MSL): 190.266
LOGGED BY: NED TURNER	



DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-5', Silty fine sand; 80% sand, 15% silt, 5% clay; reddish brown (5YR 4/4); non-plastic; sand%: 5% medium, 80% fine, 15% very fine; sub-angular; moderately-poorly graded; loose; dry; mild VOC odor	SM	2.8	1-2 ft.	
5	5-14', Fine sand; 80% sand, 15% silt, 5% clay; red (2.5YR 5/8); non-plastic; sand%: 50% fine, 35% medium, 15% very fine; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor	SP	27.2	5-6 ft.	2-5-11-17
10			19.3	10-11 ft.	1-2-8-13
15	14-20', Clayey fine sand; 40% sand, 30% clay, 30% silt; pale yellow (2.5Y 7/4); medium plasticity; sand%: 90% very fine, 10% fine; sub-rounded; poorly graded; loose; moist; strong VOC odor	SC	40.3		3-2-4-5
20	20-25.5', Clayey fine sand; 60% sand, 30% silt, 10% clay; yellow (10YR 7/8); low plasticity; sand%: 60% fine, 30% very fine, 10% medium; sub-rounded; poorly graded; loose; saturated; mild VOC odor @21-22', Color change to reddish yellow (7.5YR 6/8)	SC	83.4		4-5-9-11
25	25.5-27', Medium sand; 80% sand, 10% silt, 10% clay; yellow (10YR 7/8); low plasticity; sand%: 75% medium, 20% fine, 20% coarse, 5% very fine; sub-rounded; poorly graded; loose; saturated	SP	69.5 2.6		7-4-7-7
	T.D. = 27 FT.				
30					
35					

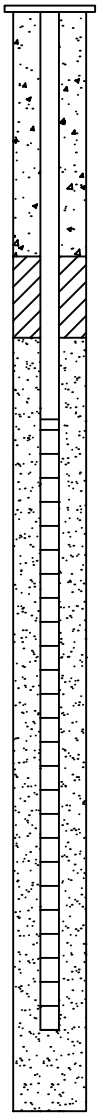
1004-MW-102.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MW-103

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 27.29	WATER DEPTH (FT. BTOC): 17.41
TOC ELEVATION (FT. MSL): 193.31	GROUND ELEVATION FT. MSL): 190.473
LOGGED BY: NED TURNER	

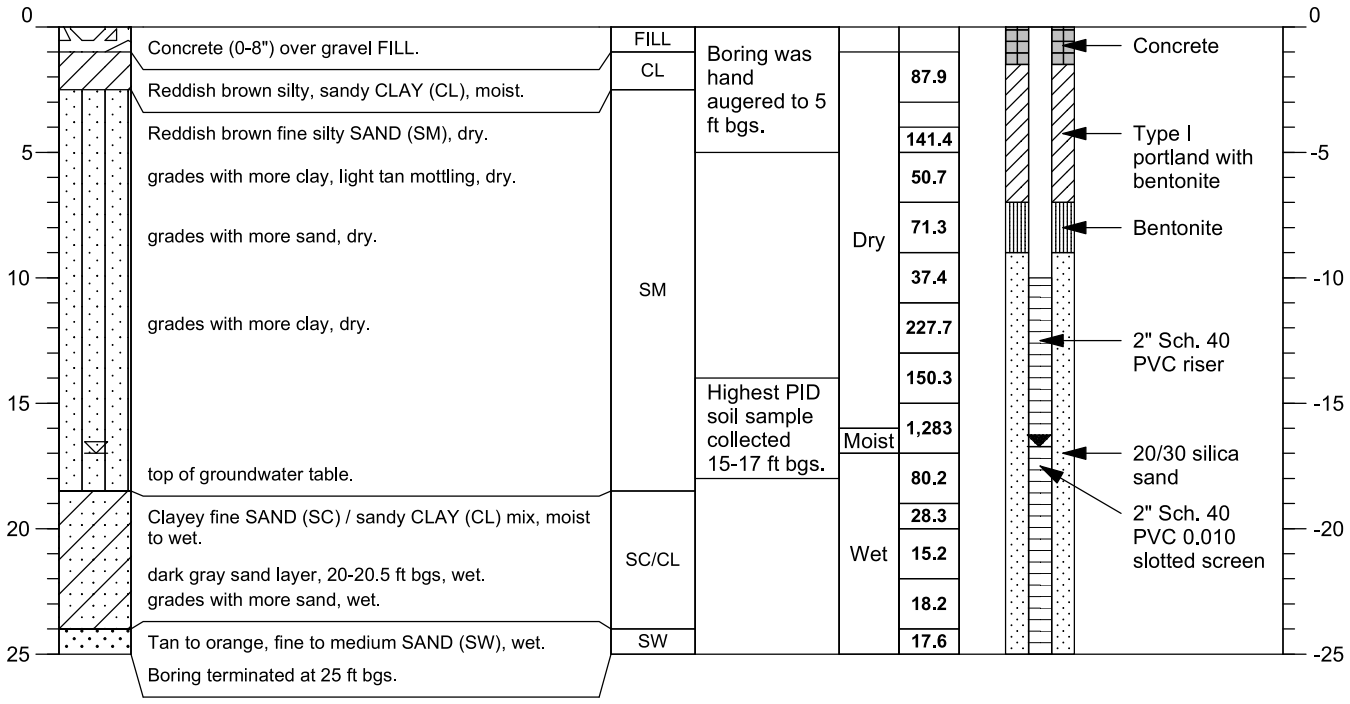
WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-15', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 30% fine, 10% very fine; sub-angular; moderately-poorly graded; loose; dry	SM	0.0	1-2 ft.	
	5	@6.5-7', Clay interbed; gray (5YR 6/1)		0.0	6-7 ft.	4-10-17-23
	10			0.0	11-12 ft.	3-7-11-18
	15	15-21', Clayey fine sand; 60% sand, 20% clay, 20% silt; strong brown (7.5Y 5/6); low plasticity; sand%: 80% fine, 10% medium, 10% very fine; sub-angular; poorly graded; dense; saturated	SC	0.0		2-6-9-11
	20			0.0		4-6-9-13
	25	21-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated @26-26.5', Clay interbed	SW	0.0		2-4-9-13
		T.D. = 27 FT.				
	30					
	35					

1004-MW-103.dwg

BORING LOG AND OBSERVATION WELL CONSTRUCTION DIAGRAM

BOREHOLE ID: OW-1	**CONTRACTOR:** BETTS DRILLING	**DRILLING RIG:** Geoprobe 3230 DT #2218
CLIENT: PERMA-FIX OF SOUTH GEORGIA	**DRILLER:** JAMES TYLER	**METHOD:** DPT / HSA / HA
PROJECT #: PERMA-023-0004	**GEOLOGIST:** R. PELLE	**SAMPLER:** 2" X 5' ACETATE LINER
LOCATION: VALDOSTA, GA	**DATE COMPLETED:** 11/29/2023	**TOTAL DEPTH (ft):** 25
EASTING (FEET): 2574729.099	**NORTHING (FEET):** 291130.418	**TOC/GSE (FT MSL):** 190.84 / 191.14

▽ DEPTH OF FIRST ENCOUNTERED WATER ▼ WATER LEVEL IN COMPLETED WELL (12/2/23)



NOTES:

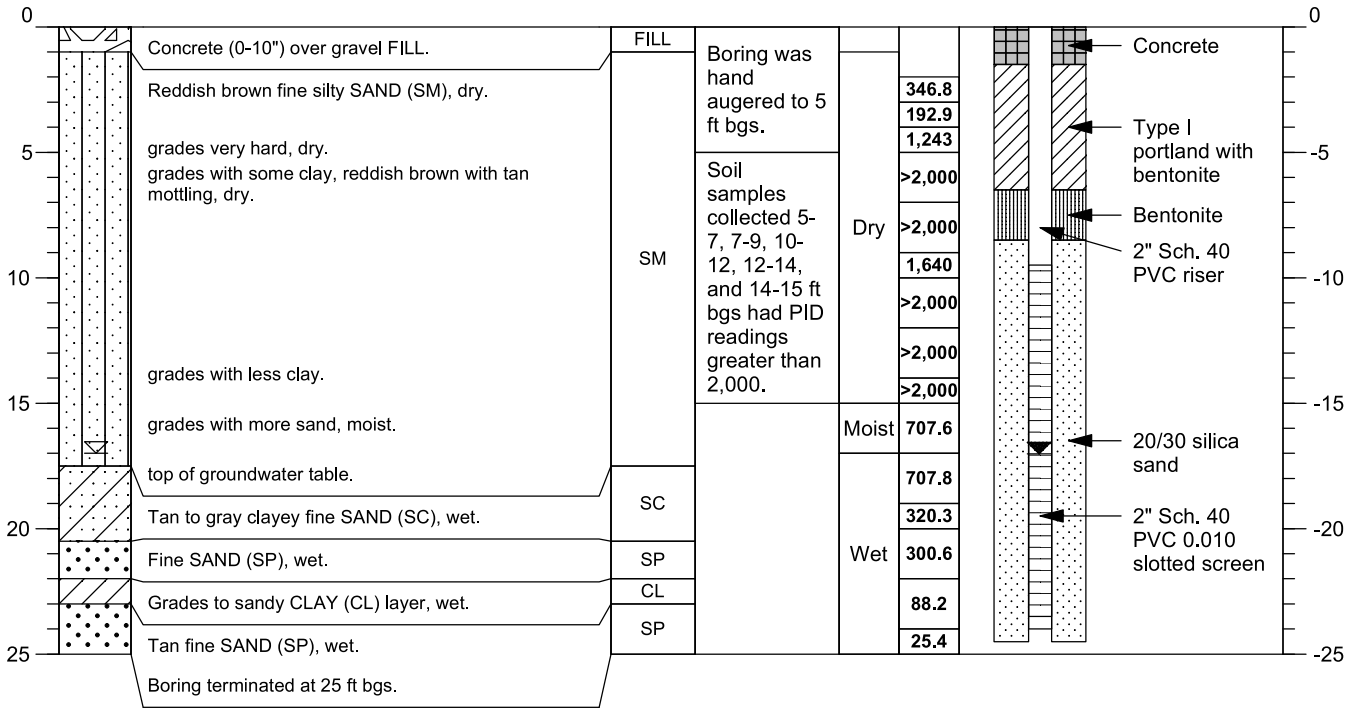
ft bgs - feet below ground surface
ft msl - feet above mean sea level
PID - photoionization detector
GPS-est. Survey Horizontal NAD 83 (State Plane, Georgia West)
HS - head space
ppm - part per million
GSE - Ground Surface Elevation
DPT - direct push technology
HSA - hollow stem auger
HA - hand auger
TOC - top of casing

Not to be used separate from associated report

BORING LOG AND OBSERVATION WELL CONSTRUCTION DIAGRAM

BOREHOLE ID: OW-2	**CONTRACTOR:** BETTS DRILLING	**DRILLING RIG:** Geoprobe 3230 DT #2218
CLIENT: PERMA-FIX OF SOUTH GEORGIA	**DRILLER:** JAMES TYLER	**METHOD:** DPT / HSA / HA
PROJECT #: PERMA-023-0004	**GEOLOGIST:** R. PELLE	**SAMPLER:** 2" X 5' ACETATE LINER
LOCATION: VALDOSTA, GA	**DATE COMPLETED:** 12/01/2023	**TOTAL DEPTH (ft):** 25
EASTING (FEET): 2574698.808	**NORTHING (FEET):** 291148.908	**TOC/GSE (FT MSL):** 190.99 / 191.32

▽ DEPTH OF FIRST ENCOUNTERED WATER ▼ WATER LEVEL IN COMPLETED WELL (12/2/23)



Trihydro CORPORATION

NOTES:

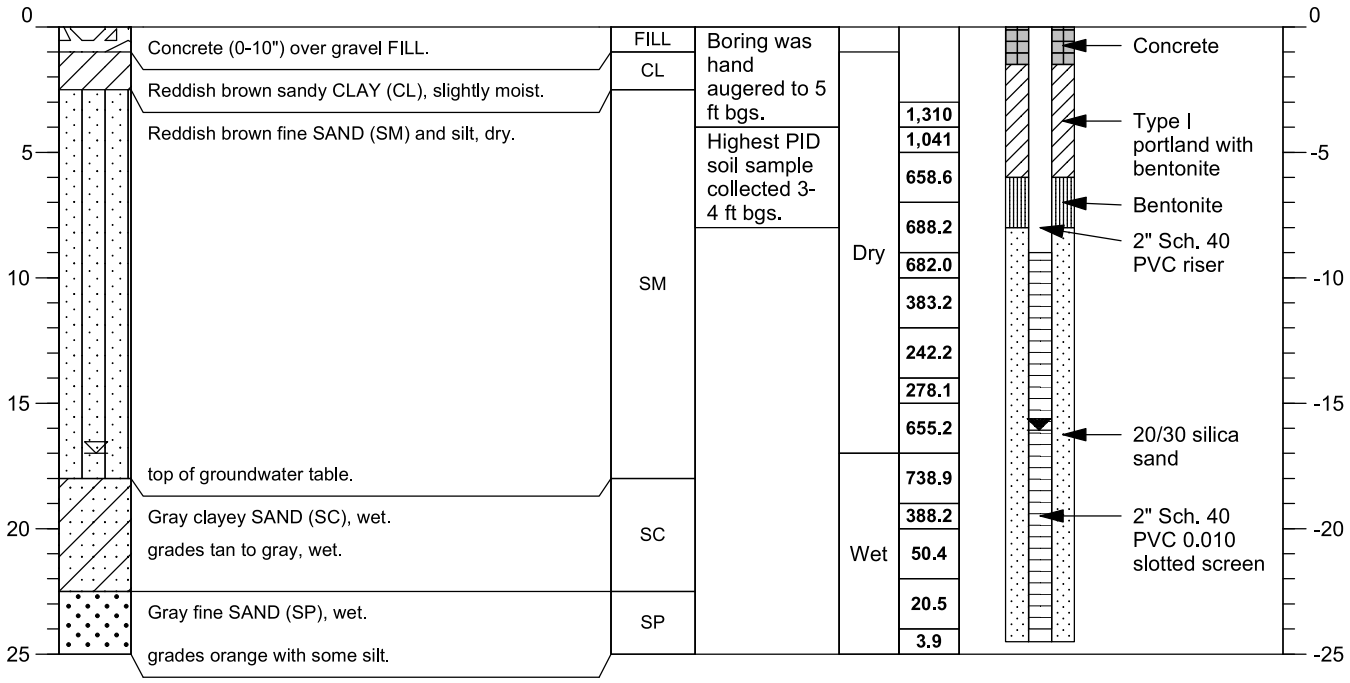
ft bgs - feet below ground surface
ft msl - feet above mean sea level
PID - photoionization detector
GPS-est. Survey Horizontal NAD 83 (State Plane, Georgia West)
HS - head space
ppm - part per million
GSE - Ground Surface Elevation
DPT - direct push technology
HSA - hollow stem auger
HA - hand auger
TOC - top of casing

Not to be used separate from associated report

BORING LOG AND OBSERVATION WELL CONSTRUCTION DIAGRAM

BOREHOLE ID: OW-3	**CONTRACTOR:** BETTS DRILLING	**DRILLING RIG:** Geoprobe 3230 DT #2218
CLIENT: PERMA-FIX OF SOUTH GEORGIA	**DRILLER:** JAMES TYLER	**METHOD:** DPT / HSA / HA
PROJECT #: PERMA-023-0004	**GEOLOGIST:** R. PELLE	**SAMPLER:** 2" X 5' ACETATE LINER
LOCATION: VALDOSTA, GA	**DATE COMPLETED:** 11/30/2023	**TOTAL DEPTH (ft):** 25.5
EASTING (FEET): 2574687.347	**NORTHING (FEET):** 291113.666	**TOC/GSE (FT MSL):** 190.56 / 190.92

▽ DEPTH OF FIRST ENCOUNTERED WATER ▼ WATER LEVEL IN COMPLETED WELL (12/2/23)



Trihydro CORPORATION

NOTES:

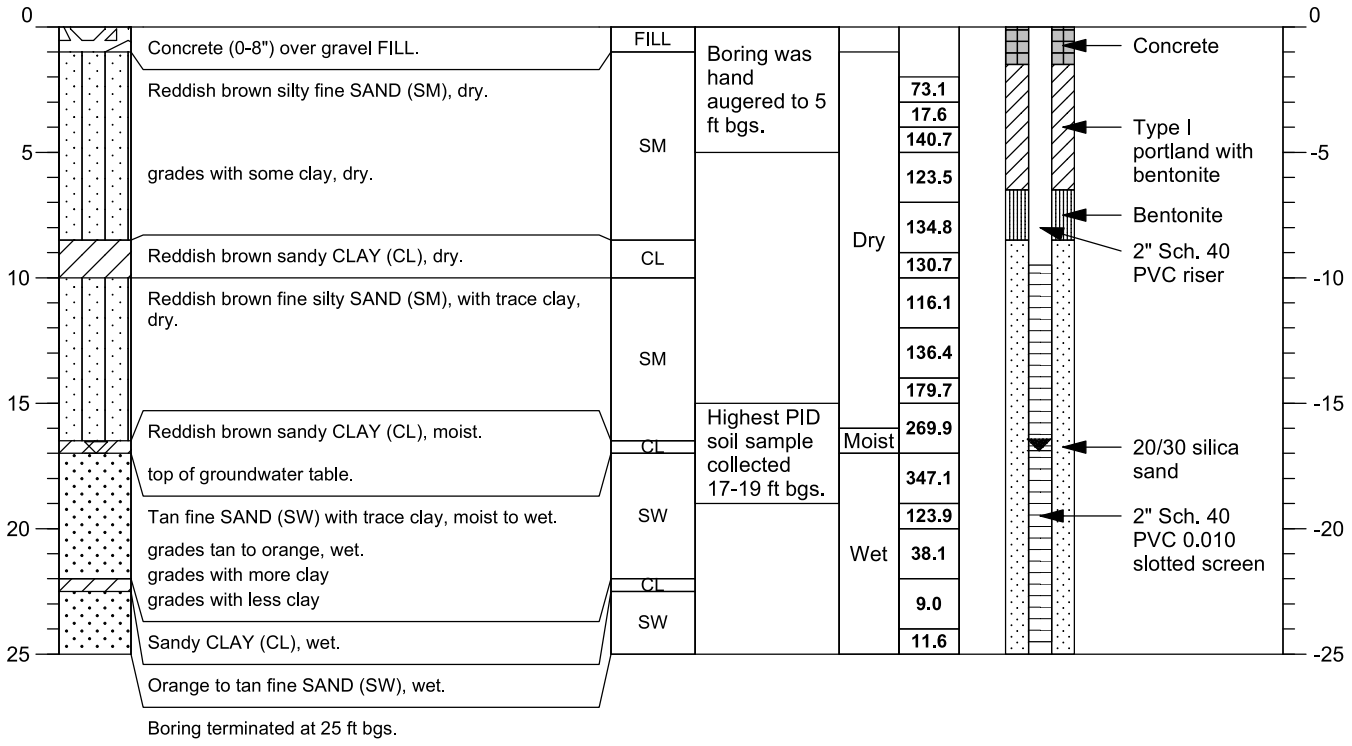
ft bgs - feet below ground surface
ft msl - feet above mean sea level
PID - photoionization detector
GPS-est. Survey Horizontal NAD 83 (State Plane, Georgia West)
HS - head space
ppm - part per million
GSE - Ground Surface Elevation
DPT - direct push technology
HSA - hollow stem auger
HA - hand auger
TOC - top of casing

Not to be used separate from associated report

BORING LOG AND OBSERVATION WELL CONSTRUCTION DIAGRAM

BOREHOLE ID: OW-4	**CONTRACTOR:** BETTS DRILLING	**DRILLING RIG:** Geoprobe 3230 DT #2218
CLIENT: PERMA-FIX OF SOUTH GEORGIA	**DRILLER:** JAMES TYLER	**METHOD:** DPT / HSA / HA
PROJECT #: PERMA-023-0004	**GEOLOGIST:** R. PELLE	**SAMPLER:** 2" X 5' ACETATE LINER
LOCATION: VALDOSTA, GA	**DATE COMPLETED:** 11/29/2023	**TOTAL DEPTH (ft):** 25
EASTING (FEET): 2574712.042	**NORTHING (FEET):** 291181.247	**TOC/GSE (FT MSL):** 190.08 / 190.38

▽ DEPTH OF FIRST ENCOUNTERED WATER ▼ WATER LEVEL IN COMPLETED WELL (12/2/23)



Trihydro CORPORATION

NOTES:

ft bgs - feet below ground surface
ft msl - feet above mean sea level
PID - photoionization detector
GPS-est. Survey Horizontal NAD 83 (State Plane, Georgia West)
HS - head space
ppm - part per million
GSE - Ground Surface Elevation
DPT - direct push technology
HSA - hollow stem auger
HA - hand auger
TOC - top of casing

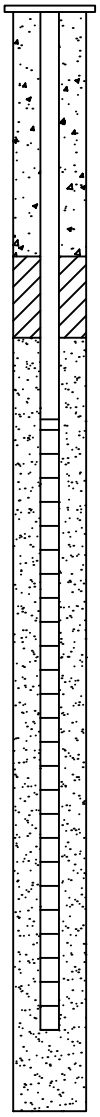
Not to be used separate from associated report

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: SVE-1

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/15/06	DATE COMPLETED: 6/15/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.20	WATER DEPTH (FT. BTOC): 18.26
TOC ELEVATION (FT. MSL): 193.524	GROUND ELEVATION FT. MSL): 190.591
LOGGED BY: NED TURNER	



DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-5', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 80% fine, 15% very fine, 5% medium; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor	SM	1522	-	
5	5-14', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 20% fine, 10% very fine, 10% coarse; sub-rounded; graded; dense; dry; strong VOC odor		1777		3-6-17-25
10		SM	1640		3-8-10-13
15	14-23', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellow (10YR 7/6); medium plasticity; sand%: 80% fine, 10% medium, 10% very fine; sub-rounded; moderately-poorly graded; dense; saturated		1086		2-5-7-8
	@17-17.5', Medium sand interbed; 90% sand, 10% silt; yellow (10YR 8/8); non-plastic; sand%: 70% medium, 20% fine, 10% very fine; sub-rounded; poorly graded; loose; saturated	SC/SP	940		
20			50.9		2-3-5-7
			15.7		
25	23-27', Medium sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 70% medium, 20% fine, 5% coarse, 5% very fine; sub-angular; moderately-poorly graded; loose; saturated	SP	842		1-5-11-18
			16.0		
	T.D. = 27 FT.				
30					
35					

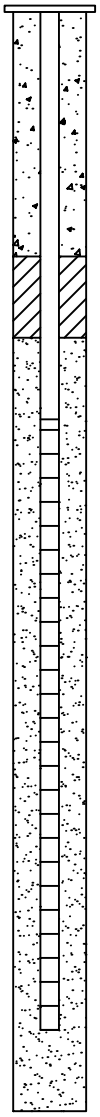
1004-SVE-1.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: SVE-2

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/15/06	DATE COMPLETED: 6/15/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 25.90	WATER DEPTH (FT. BTOC): 17.94
TOC ELEVATION (FT. MSL): 193.262	GROUND ELEVATION FT. MSL): 190.395
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5.5', Silty fine sand; 60% sand, 25% silt, 15% clay; light red (2.5YR 6/8); low plasticity; sand%: 70% fine, 20% very fine, 10% medium; sub-angular; moderately-poorly graded; dense; dry; strong VOC odor	SM	650	-	
	5			1615		3-15-21-18
		5.5-14', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 35% fine, 10% very fine, 5% coarse; sub-angular; graded; dense; dry; strong VOC odor	SM			
	10			1756		3-6-2-15
	15	14-25.5', Clayey fine sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity; dense; saturated; VOC odor @15-15.5', Sandy clay interbed; yellowish red (5YR 5/6) @16.7-17', Medium sand interbed; 80% sand, 15% silt, 5% clay; pale yellow (2.5Y 8/4); non-plastic; sand%: 50% medium, 35% fine, 15% very fine; sub-rounded; graded; loose; saturated	SC	1325		3-5-9-12
	20	@20-20.5', Sandy clay interbed; yellowish red (5YR 5/6); 40% clay, 35% sand, 35% silt @20.5-20.7', Medium sand interbed; as above		58.5 20.9		3-5-8-9
	25	25.5-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-angular; graded; loose; saturated	SW			2-3-7-11
		T.D. = 27 FT.				
	30					
	35					

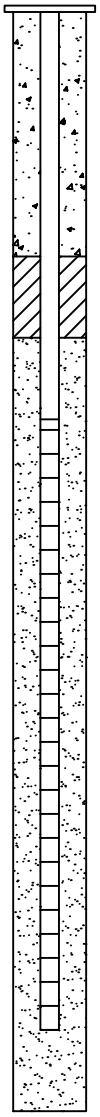
1004-SVE-2.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: SVE-3

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/15/06	DATE COMPLETED: 6/15/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 26.61	WATER DEPTH (FT. BTOC): 18.09
TOC ELEVATION (FT. MSL): 193.400	GROUND ELEVATION FT. MSL): 190.575
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-16', Silty medium sand; 70% sand, 25% silt, 5% clay; light red (2.5YR 6/8); non-plastic; sand%: 50% medium, 40% fine, 10% very fine; sub-angular; graded; loose; dry; mild VOC odor	SM	407	-	
	5			570		2-5-13-17
	10	@10-14', Color change to reddish yellow (5YR 6/8)		610		2-10-6-6
	15	@15-16', Color change to yellow (10YR 7/6)		992 278		1-3-6-9
		16-25', Clayey fine sand; 60% sand, 15% silt, 25% clay; yellow (10YR 7/6); moderate plasticity; sand%: 50% fine, 35% medium, 15% very fine; sub-rounded; moderately-poorly graded; dense; saturated; VOC odor	SC			
	20	@20.5', Hydrocarbon stained		26.0		1-5-7-12
		@21-21.3', Medium sand interbed; 90% sand, 10% silt; pale yellow (2.5Y 8/4); non-plastic; sand%: 60% medium, 15% coarse, 15% fine, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated		2.4		
		@21.7-22', Medium sand interbed; yellowish red (5YR 5/8); as above				
	25	25-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-rounded; graded; loose; saturated	SW	1.7		2-4-6-12
		T.D. = 27 FT.				
	30					
	35					

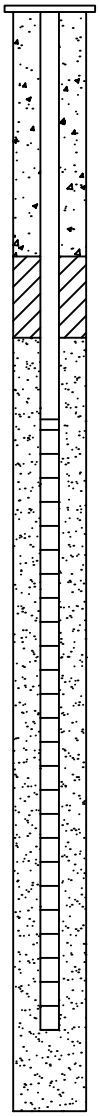
1004-SVE-3.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: SVE-4

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 24.86	WATER DEPTH (FT. BTOC): 18.00
TOC ELEVATION (FT. MSL): 193.330	GROUND ELEVATION FT. MSL): 190.487
LOGGED BY: NED TURNER	



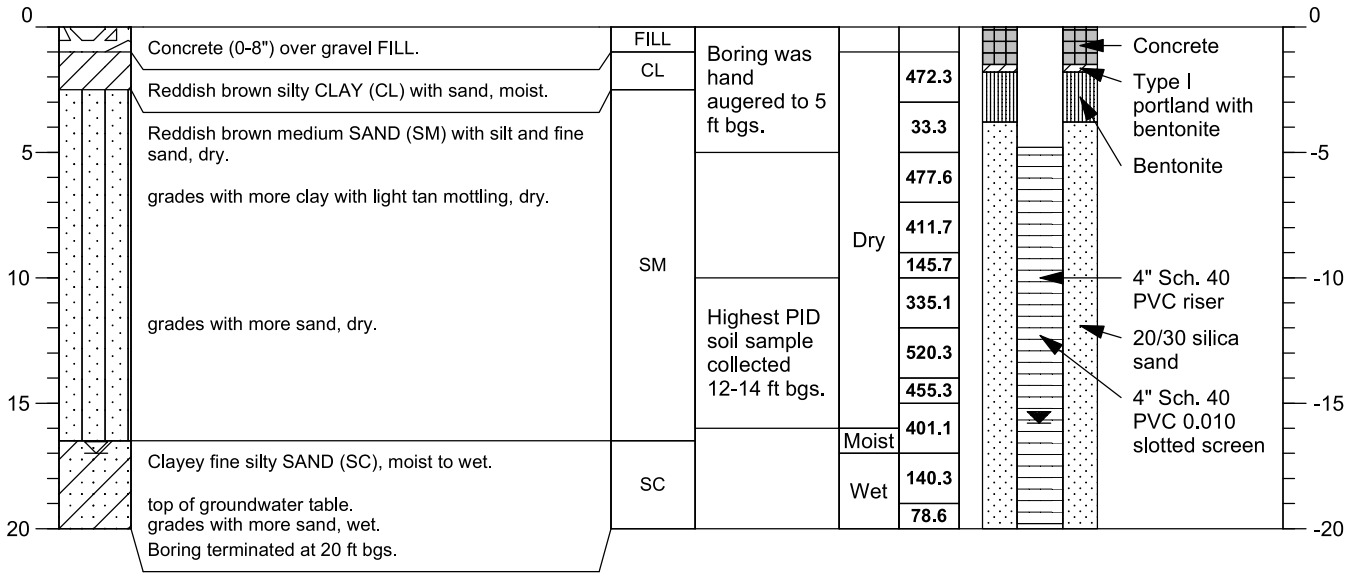
DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-15.5', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 20% fine, 10% very fine, 10% coarse; sub-rounded; moderately-poorly graded; loose; dry; VOC odor	SM	29.7	1-2 ft.	
5			704	6-7 ft.	1-2-9-13
10			545	11-12 ft.	1-2-7-7
15	15.5-21', Clayey fine sand; 60% sand, 15% silt, 25% clay; yellow (10YR 7/6); moderate plasticity; sand%: 70% fine, 20% medium, 10% very fine; sub-angular; moderately-poorly graded; dense; saturated	SC	111		2-4-4-5
	@16', Hydrocarbon stained		40.2		
	@16.7-17', Medium sand; 80% sand, 15% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 70% medium, 10% coarse, 15% fine, 5% very fine; sub-rounded; graded; loose; saturated		83.1		
20	@20-20.5', Coarse sand; 80% sand, 15% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 50% coarse, 20% medium, 20% very coarse, 10% fine; sub-rounded; graded; loose; saturated		8.3		2-5-7-8
	21-27', Medium sand; 85% sand, 10% silt, 5% clay; yellow (10YR 8/6); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 10% very fine; sub-rounded; graded; loose; saturated	SW			
25			2.8		3-7-9-11
	T.D. = 27 FT.				
30					
35					

1004-SVE-4.dwg

BORING LOG AND SOIL VAPOR EXTRACTION WELL CONSTRUCTION DIAGRAM

BOREHOLE ID: SVE-5	**CONTRACTOR:** BETTS DRILLING	**DRILLING RIG:** Geoprobe 3230 DT #2218
CLIENT: PERMA-FIX OF SOUTH GEORGIA	**DRILLER:** JAMES TYLER	**METHOD:** DPT / HSA / HA
PROJECT #: PERMA-023-0004	**GEOLOGIST:** R. PELLE	**SAMPLER:** 2" X 5' ACETATE LINER
LOCATION: VALDOSTA, GA	**DATE COMPLETED:** 11/30/2023	**TOTAL DEPTH (ft):** 20
EASTING (FEET): 2574717.488	**NORTHING (FEET):** 291133.789	**TOC/GSE (FT MSL):** 190.84 / 191.07

▽ DEPTH OF FIRST ENCOUNTERED WATER ▼ WATER LEVEL IN COMPLETED WELL (12/2/23)



Trihydro CORPORATION

NOTES:

ft bgs - feet below ground surface
ft msl - feet above mean sea level
PID - photoionization detector
GPS-est. Survey Horizontal NAD 83 (State Plane, Georgia West)
HS - head space
ppm - part per million
GSE - Ground Surface Elevation
DPT - direct push technology
HSA - hollow stem auger
HA - hand auger
TOC - top of casing

Not to be used separate from associated report

Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

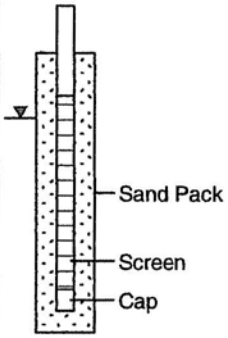
LOG OF BORING TW-1

Chemical Conservation of Georgia, Inc.
1612 James P. Rogers Circle
Valdosta, Georgia

Date Installed	: 12/20/00	Ground Elevation	: 168.80
Logged By	: TWM	GW Level	: 4.50
Drilling Company	: Betts	Date Measured	: 01-04-01
Drilling Method	: Hand Auger		
TOC Elevation	: 171.83		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0					OL		
				Surface: Organic Peat, Moist			
				Organic Peat, Black, Wet	OL		
5				Grey Clayey Sand, Wet			
					SC		

Well1: TW-1
Elev.: 171.83



Boring Terminated at 6.5 feet BGS

Boring Depth: 6.5' Boring Diameter: 4.0"
Well Depth: 6.0' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-1' Screen: 1'-6'
Bottom Cap: 6' Sand: 1'-6.5'

10
15
20
25
30

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Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534

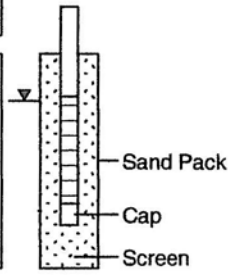
ENVIRONMENTAL SERVICES

LOG OF BORING TW-2

Chemical Conservation of Georgia, Inc.
1612 James P. Rogers Circle
Valdosta, Georgia

Date Installed	: 12/20/00	Ground Elevation	: 166.75
Logged By	: TWM	GW Level	: 3.80
Drilling Company	: Betts	Date Measured	: 01-04-01
Drilling Method	: Hand Auger		
TOC Elevation	: 171.07		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0				Surface: Organic Peat, Moist	OL		
				Grey, Aluvial Sand, Wet	SC		
5							
10							
15							
20							
25							
30							



Boring Terminated at 5.0 feet BGS
Boring Depth: 5.0' Boring Diameter: 4.0"
Well Depth: 4.0' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-1' Screen: 1'-4'
Bottom Cap: 4' Sand: 1'-4.0'

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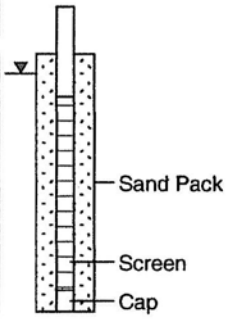
Mill Creek Environmental Services
1818 Perimeter Rd.
Dawsonville, Georgia 30534
ENVIRONMENTAL SERVICES

LOG OF BORING TW-3

Chemical Conservation of Georgia, Inc.
1612 James P. Rogers Circle
Valdosta, Georgia

Date Installed	: 12/20/00	Ground Elevation	: 167.15
Logged By	: TWM	GW Level	: 3.33
Drilling Company	: Betts	Date Measured	: 01-04-01
Drilling Method	: Hand Auger		
TOC Elevation	: 170.02		

Depth in Feet	Samples	Blows per 6-inches	% REC	DESCRIPTION	USCS	GRAPHIC	PID (ppm)
0				Surface: Black, Organic Peat, Moist	OL		
				Cuttings:Black, Organic Peat, Wet	OL		
5				Cuttings:Dark Grey Alluvial Sand, Wet	SC		



Boring Terminated at 6.0 feet BGS

Boring Depth: 6.0' Boring Diameter: 4.0"
Well Depth: 6.0' Well Diameter: 2"
Well Material: PVC Screen Slot: 0.010"
Casing: 0-1' Screen: 1'-6'
Bottom Cap: 6' Sand: 1'-6.0'

10
15
20
25
30

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EXHIBIT E-3

GROUNDWATER SAMPLING AND ANALYSIS PLAN

GROUNDWATER

SAMPLING AND ANALYSIS PLAN

PERMA-FIX OF SOUTH GEORGIA, INC.

1612 JAMES P. RODGERS CIRCLE

VALDOSTA, GA 31601

EPA ID No. GAD093380814

GDNR HW Facility Permit No. HW-020(D)

Revised March 24, 2025

PREPARED FOR:

Perma-Fix Environmental Services, Inc.
8302 Dunwoody Place, Suite 250, Atlanta, GA 30350

PREPARED BY:

GeoSouth Environmental Solutions, LLC
11250 Old St. Augustine Rd., Suite 15 PMB 333, Jacksonville, FL 32257

Project: PFSG-025-002

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1.0 INTRODUCTION

This Sampling and Analysis Plan (SAP) has been updated by GeoSouth Environmental Solutions, LLC (GeoSouth) on behalf of Perma-Fix to present field sampling procedures and protocols for data collection at the Perma Fix of South Georgia, Inc. (PFSG) Facility, and located at 1612 James P. Rodgers Circle, Valdosta, Georgia. This SAP specifically addresses procedures for collecting, handling, and analyzing groundwater samples. The SAP is designed to ensure that project quality assurance/quality control (QA/QC) activities including sampling, sample handling and storage, chain-of-custody, laboratory analytical procedures, data compilation, and reporting related to groundwater monitoring at the Facility are conducted in accordance with generally accepted procedures presented in the Region 4 United States Environmental Protection Agency (USEPA) Science and Ecosystem Support Division (SESD) Athens, Georgia, *Groundwater Sampling Operating Procedure*, SESDPROC-301-R4 (USEPA, 2017) guidance document. When the SESDPROC-301 procedure is updated, the most current version will be adopted.

1.1. Overall Project Objectives

The Groundwater samples will be collected for laboratory analysis from designated monitoring well locations around the site as a component of routine groundwater monitoring. Table 1 presents a current list of the 50 wells in the monitoring network along with their current sampling requirements. The monitoring well locations are depicted on Figure 1. Groundwater samples will be collected from the identified wells on a semi-annual basis with the results subsequently reported to GEPD semi-annually. Intended data usage is to monitor the groundwater impacts under the PFSG Facility.

1.2. Project Team

The project team will consist of an integrated group of professionals with specific areas of expertise and specialization to conduct the sampling, analysis, data management, and reporting in a manner that meets USEPA requirements. Perma-Fix will be responsible for maintaining and authorizing updates to this SAP to meet the most current regulatory requirements and to incorporate any modifications.

1.3. Facility Description

The PFSG facility occupies approximately 3.5 acres in the Azalea City Industrial Park at 1612 James P. Rodgers Circle, Valdosta, Georgia. The current site layout is illustrated in Figure 1. The facility is bound by the Valdosta Southern Railroad to the west and north, by Ryder Truck Maintenance to the east, and by Georgia Petroleum, Inc. to the south.

The PFSG facility is surrounded by a concrete block wall and chain link security fence topped with barbed wire. The facility entrance is secured with an electrically operated gate. A roof covers the operational portion of the facility and directs rainfall away from the former waste management and storage areas. The ground outside of the roofline is sloped to direct the rainfall runoff away from the former operational areas.

Eight-inch thick reinforced concrete covers the vehicle traffic areas located to the north, east, and south of the operational portion of the facility. The extreme northern portion of the facility is covered with crushed limestone and gravel. The western portion of the facility is covered primarily with new concrete pavement installed in 2010.

A warehouse is located to the north of the former operational portion of the facility. The warehouse building houses PFSG's administrative offices and personnel support facilities. The area between the warehouse and the northern property boundary currently contains a paved employee parking area and a large gravel parking lot.

Seven Solid Waste Management Units (SWMUs) were identified by GEPD during a file review and site inspection conducted in conjunction with a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA). Subsequent investigations of all seven SWMUs have been conducted during the RFAs that have occurred over the past 15 to 20 years.

2.0 GROUNDWATER SAMPLING PROCEDURES

Constituents for the groundwater monitoring program are identified on the Compound List Report provided in Appendix A. The list includes 66 compounds analyzable under Volatile Organic Compound (VOC) Method 8260B. Historical samples collected that included other non-VOC organic compounds and metals have shown that the primary impacts to groundwater are VOCs; therefore, routine sampling includes mainly VOCs. If additional work onsite requires analysis of parameters not included in Appendix A, the sample collection procedures will be included in a separate work plan or be added as an addendum to this SAP. Table 1 presents a summary of the groundwater monitoring well network and the required samples to be collected from each well.

The following sections describe the sampling procedures that will be utilized at PFSG.

2.1. Groundwater Sampling Procedures

Groundwater sampling procedures in this SAP are based on the guidelines provided in the most recent USEPA Region 4 SESD Groundwater Operating Procedure (SESDPROC-301-R3 dated March 6, 2013). When the SESDPROC-301 procedure is updated after the cited revision, the most current version will be adopted. These procedures are used to provide the most representative sampling data that meets the project data quality objectives, and ultimately, the technical defensibility of the results.

2.1.1. Documentation

A field book and/or groundwater sampling field data forms will be maintained to record pertinent information. The following information will be recorded on the field forms and/or field notebook. Groundwater sampling field data forms for this site are the Sampling & Stabilization Forms included in Appendix B of this SAP and the following information will be entered for each well sampled. Also, the calculation for one casing volume will be shown in the block for "Purge Volume Calculation."

- Sample date,
- Sampling personnel,
- Field equipment calibration date, • Time and location of sampling,
- Weather conditions during sampling,
- Depth to groundwater,
- Purging and stabilization data,
- Field parameters that include:
    - pH;
    - temperature;
    - turbidity (included in Region 4 guidance);
    - specific conductance;
    - dissolved oxygen (DO); and
    - oxidation-reduction potential (ORP),
- Sample ID,
- Sample number and method analysis, and
- Other pertinent observations.

2.1.2. Monitoring Well Visual Inspection

Each monitoring well must be inspected during each sampling event. Items to be checked include the outer protective casing, the outer protective casing cap, lock, inner casing well cap, the concrete seal, visual

damage, ponding of water, well labelling, is the measuring point marked, and missing gaskets/bolts/ washers. An example inspection checklist is provided in Appendix C.

2.1.3. Depth to Water and Total Depth Measurements

Prior to groundwater sampling, single-day site-wide groundwater level measurements will be collected from all existing monitoring wells in the groundwater monitoring network. Data will be used to create potentiometric surface maps and to determine groundwater flow directions and hydraulic gradients. Groundwater elevations will be determined from depth-to-water measurements using an electronic water level meter and the survey data for the sample location. Additionally, water level measurements will be recorded prior to any purging/pumping activity required for the sampling event. All groundwater level measurements will be recorded to an accuracy of +0.01 foot. Wells will be gauged according to the order of least contaminated to most contaminated based on the previous sampling event.

Total depth measurements are required to determine casing volumes for well purging. Total depth measurements will be collected at the same time depth-to-water measurements are collected using the same electronic water level indicator. Well depth measurements will be recorded to an accuracy of at least 0.1 foot.

2.1.4. Measurement Equipment Decontamination

USEPA Region 4 SESD Field Equipment Cleaning and Decontamination Procedure (SESDPROC-205 most current revision) is the guidance procedure for cleaning and decontaminating equipment in the field. The interface probe will be decontaminated between each sample location with laboratory-grade detergent and tap water solution followed by a distilled water rinse. Care will be taken to avoid equipment contact with the ground or other potential sources of contamination after decontamination procedures.

2.1.5. LNAPL/DNAPL Measurements

Light non-aqueous phase liquid (LNAPL) and dense non-aqueous phase liquid (DNAPL) have not been historically observed at this facility. However, should either the facility or the GEPD determine that LNAPL/DNAPL measurements are required, the following steps will be followed to define presence/ thickness of the layers:

To measure the thickness of LNAPL, lower an oil/water interface probe into the well until the signals activate. The interface probe typically features a dual signal tone system that detects a floating layer of LNAPL and a separate tone to signal the groundwater interface. The LNAPL thickness is difference in depth between the LNAPL interface tone and the underlying groundwater interface tone. If there is only water in the well and no LNAPL, there will only be the tone that signals the water interface.

The presence or absence of DNAPL is determined by lowering an interface probe to the bottom of the well and listening for a change in signal tone to indicate the interface of DNAPL below the overlying water column. To measure the approximate DNAPL thickness, subtract the total depth of the well from the DNAPL signal interface. Note that this method of DNAPL thickness estimating is mostly qualitative, because the DNAPL within the well casing is likely to be biased (limited) by the total depth of the well casing or potentially exaggerated by DNAPL trapped in the casing sump beneath the screened interval of the well.

Visual verification of LNAPL or DNAPL layers will be accomplished using a clear, weighted, double check ball bailer. For LNAPL, the bailer is slowly lowered until the bottom of the bailer is well into the water

layer with the top unsubmerged. The bailer is slowly retrieved and the interface layer is observed through the bailer. The procedure for DNAPL is similar except the bailer is slowly lowered to the bottom of the well then slowly retrieved. The double ball check valves will trap the interface and prevent water from entering the bailer as it is retrieved.

2.1.6. Sampling Equipment Inventory

A detailed list of sampling equipment will be reviewed prior to sampling to ensure sample collection is done correctly, efficiently, and safely. Below is a list of field instruments used for sample collection and field measurements.

- Flow-through cell with multi-parameter probes or equivalent individual meters that measure DO, specific conductance, temperature, pH, and ORP;
- Turbidity meter;
- Water level indicator;
- Dedicated Teflon®, or new, clean, Teflon-lined high density polyethylene sample tubing;
- Containers for purge water collection;
- Variable speed low flow electric submersible pump, a submersible pneumatic bladder pump or peristaltic pump, each equipped with variable rate controls. Submersible pumps used for sampling should be stainless steel;
- Sample containers;
- Documentation that includes field forms, chain-of-custody forms, custody seals, indelible ink pens, and shipping labels;
- Personal protective equipment; and
- Keys and tools required to access the wells.

2.1.7. Field Parameters

The following field parameters will be monitored with the use of a multi-sensor probe and flow-through cell: pH, temperature, specific conductivity, DO, and ORP. If the probe does not include a turbidity sensor, then that parameter will be monitored using a separate meter. All meters will be used in accordance with manufacturer's instructions. The meters will be decontaminated between sample collection events.

Field instrument calibration will be performed daily and recorded in the field logbook or on sampling forms. Field instruments that require calibration include: DO, ORP, specific conductance, pH, and turbidity sensors.

Field equipment calibration procedures will be provided by the equipment manufacturer. Prior to sampling, the field personnel assigned to sampling groundwater will review the manufacturer's equipment manual to ensure proper calibration of field equipment is performed correctly.

Calibration will be conducted daily before sampling groundwater using known standards within expiration dates. If unusual or out-of-range readings appear while sampling, then re-calibration of the field instrument will be performed. Generally, multiparameter probes and turbidity meters are rented from an outside supplier prior to sampling; therefore, the supplier, before equipment delivery, conducts maintenance. All maintenance performed will be conducted in accordance with the manufacturer's manual.

2.1.8. Purging Protocol

Purging removes stagnant water from the well, which is replaced by formation water that is representative of subsurface conditions. Purging of all wells at the PFSG facility will be done prior to groundwater sample collection using the Low Flow purge method presented in Section 3 of the SESD Groundwater Sampling Operating Procedure document. This method involves purging the well at a relatively low flow rate that minimizes drawdown, with the pump or tubing inlet located within the screened interval of the well. The well is sampled when water quality parameters are stable, adequately low turbidity is achieved, and the water level has achieved a stable drawdown (an unchanging water level). The following sections provide general well purging and sampling procedures for the collection of groundwater samples. The purging and sampling of the wells will be completed from the least contamination to the most contamination.

2.1.8.1. Purging

Wells are purged to eliminate stagnant water residing in the casing and/or screen that has undergone geochemical changes or loss of VOCs. The tubing intake will be maintained within the screen interval (intake preferred to be near the screened midpoint), but not near the bottom of the well, to avoid potential disturbance of accumulated casing sediment and elevated turbidity in the water column. At the conclusion of purging, the desired flow-weighted average of water entering the well under pumping conditions will be available for sampling.

In order to determine when a well has been adequately purged, the sampler will monitor the pH, specific conductance, DO, ORP, and turbidity of the groundwater removed and the volume of water removed during purging. The measurements will be recorded in a sampling log sheet that includes the start time of purging, the parameter measurements at intervals during purging, estimated pumped volumes, depths to water for Low-Flow sampling, and any notes of unusual conditions.

2.1.8.2. Parameter Stabilization Criteria

During well purging, indicator field parameters will be monitored for two purposes. Some field parameters will be used for a record of the sampling event, while the field indicator parameters will be used to determine groundwater stabilization indicating that adequate purge is achieved. Specific conductance, pH, DO, and turbidity will be utilized as purge stabilization parameters. Temperature and ORP will also be recorded, but not used as indicator parameters to determine purge stabilization. As a matter of practice, parameter measurements are generally recorded at 5-10 minute intervals.

Purging is considered complete and sampling may begin when the indicator field parameters have stabilized. Stabilization is considered to be achieved when three consecutive readings are within the following limits:

- pH: ± 0.1 standard pH units
- Specific Conductance: ± 5%
- DO: 0.2 mg/L or ± 10%
- Turbidity: below 10 NTU or ± 10%

It is anticipated that stabilization will be achieved with minimal purge volume evacuation, but if stabilization is not evident, purging will be ended after three saturated casing volumes have been removed.

In some situations, even with slow purge rates, stable drawdown cannot be maintained in the Low-Flow method. In this instance, the well will be purged to dryness (evacuated) and sampled upon recovery of

adequate volume for sampling. Sampling should occur as soon as adequate volume has recovered. The field parameters should be measured and recorded at the time of sample collection as the measurements of record for the sampling event.

2.1.9. Groundwater Sampling and Analysis

Upon stabilization of the indicator field parameters, groundwater samples may be collected. The intake point will remain at approximately at the mid-point of the screened interval. The extraction rate of the pump should be reduced as necessary to maintain a flow rate that minimizes sample disturbance during filling, and overfilling of the container which could result in aeration or loss of preservative.

Samples should not be collected from the discharge of the flow-through cell. Either disconnect the flow-through cell and sample from the new discharge tube, or if equipped, collect samples directly from a "T" connector with a valve located upstream of the flow-through-cell.

All groundwater monitoring wells (Table 1 and Figure 1) will be sampled for volatile organic compounds (VOCs). VOC samples will be collected in method- compliant containers (40 milliliter vials) and preserved with hydrochloric acid (HCL) to a pH of less than two. All containers will be provided by the laboratory and will contain the proper amount of preservative upon arrival at the facility. Once collected, the samples will be submitted to the laboratory for analysis by USEPA Method 8260B (or any method update if accepted by GDEP) of the 66 VOC compounds identified in Appendix A.

To fill each 40-milliliter vial, the following procedures will be followed:

- Fill the vial to form a meniscus at the top. Place the septum cap over the mouth of the vial and tightly screw it into place. Take care not to overfill the vials to prevent wash-out of the hydrochloric acid preservative. Attempts will be made to prevent the discharge hose from coming into contact with the inside sample collection containers. If the discharge hose contacts the inside of the container or the container contents, then the sample will be disposed of and a new sample collected.
- Hold the vial upside-down to check for bubbles that may have been jarred loose. If air bubbles are present, dispose of 40 ml vial and resample with a new 40 ml vial.

Follow procedures in Section 3 for sample labeling, chain of custody, and sample packing and shipment.

If the sampling event is modified by any procedural change, the rationale for the change will be discussed and documented on all field forms or in the field logbook.

2.1.9.1. Purge Water Management

Equipment that will be re-used will be decontaminated per the procedures described in Section 2.2 below. Decontamination and purge water collected during purging and sampling activities will be placed in DOT-approved drums with tight fitting lids and properly labeled. Upon completion of the event, the drums will be tested if necessary to update any existing waste management profiles, a manifest will be generated, and the drums will be shipped to a permitted TSDF for disposal.

2.2. Decontamination Procedure

USEPA Region 4 SESD Field Equipment Cleaning and Decontamination Procedure (SESDPROC-205 most current revision) is the guidance procedure for cleaning and decontaminating equipment in the field. The submersible pump will be decontaminated prior to each use and between each sample location.

Decontamination of the water-level probe is discussed in Section 2.1.3. This decontamination will be performed to minimize the potential for cross-contamination between sampling locations. Decontamination will be done using a laboratory detergent such as Alconox™ (or a comparable laboratory-grade detergent) and tap water solution followed by a distilled water rinse. Submersible pumps must be decontaminated both externally and internally, this can be accomplished by submerging and running the pumps through three "baths" including a rinse bath, detergent water bath, and distilled rinse bath. The water will be collected in drums and disposed of by PFSG in accordance with all applicable federal, state, and local regulations.

2.3. Field Logbook

A field well purging and sampling form shall be maintained documenting all groundwater field monitoring activities and record the following for each well:

- Site name and location.
- Well identifier.
- Measuring point description (e.g., north side of PVC pipe).
- Well depth, and measurement technique.
- Well screen length and pump/tubing intake depth.
- Static water level depth, date, time and measurement technique.
- Presence and thickness of immiscible liquid (NAPL) layers and detection method.
- Casing volume.
- Pumping rate, drawdown, indicator parameters values, calculated or measured total volume pumped, and clock time of each set of measurements.
- Type of tubing used and its length.
- Type of pump used.
- Clock time of start and end of purging and sampling activity.
- Types of sample bottles used and sample identification numbers.
- Preservatives used.
- Parameters requested for analyses.
- Field observations during sampling event.
- Name of sample collector(s).
- Weather conditions, including approximate ambient air temperature.
- Field QC samples collected.
- QA/QC data for field instruments.
- Any problems encountered should be highlighted.
- Description of all sampling/monitoring equipment used, including trade names, model number, instrument identification number, diameters, material composition, etc.
- The rationale for any deviation from the protocol in this SAP will be recorded on the Well Purging and Sampling Form.

3.0 SAMSPLE HANDLING, CHAIN OF CUSTODY, AND ANALYSIS

To ensure that samples are identified, packed, and shipped properly, the sample documentation, shipping, and chain of custody procedures outlined in this section will be used during the sampling program to maintain and document sample integrity during collection, transportation, storage, and analysis.

3.1. Sample Containers

All environmental samples will be placed in contaminant-free containers provided by the contract laboratory. Containers will be stored in clean areas to prevent exposure to fuels, solvents, and other contaminants. The containers that are recommended for sample collection, required preservatives (if applicable), and sample holding times will follow standard laboratory guidelines as well as USEPA guidance.

3.2. Sample Labels

Sample labels are used to properly identify the correct samples, laboratory analysis requested, preservative, date and time collected, and project name. The contract laboratory will provide the sample labels. An indelible ink marker will be used when filling out sample labels. The following information will be recorded on the sample label:

- Project Name
- Sample ID
- Sample Date
- Sample Time
- Analysis Requested
- Preservative
- Sampler - Initials of Field Engineer or Field Geologist collecting the sample.
- Remarks - Pertinent observations or further sample description (as appropriate).

All information on the sample label should match the information on the chain of custody and the field notebook.

3.3. Chain of Custody

Chain of custody (COC) procedures provide an accurate written record of the possession of each sample from the time it is collected in the field through laboratory analysis. A sample is considered in custody if one of the following applies:

- It is in an authorized person's immediate possession;
- It is in view of an authorized person after being in physical possession;
- It is in a secure area after having been in an authorized person's physical possession; and • It is in a designated secure area, restricted to authorized personnel only.

Field sampling personnel will be responsible for ensuring that proper documentation and custody procedures are initiated at the time of sample collection, and that individual samples can be tracked from the time of sample collection until custody of the samples is transferred to the contract laboratory performing the laboratory analyses. Sample custody and documentation procedures will be initiated at the time each sample is collected.

The contract laboratory will be responsible for maintaining sample custody and documentation from the time the laboratory receives the samples until final sample disposition. To minimize common problems such as labeling errors, transcription errors, and preservation failures, detailed procedures for properly recording sample information and analytical requests on COC records must be followed.

3.4. Contract Laboratory Chain of Custody Procedures

Upon arrival at the laboratory, if the samples and documentation are acceptable, each sample container will be assigned a unique laboratory identification number and entered into the laboratory's sample tracking system. The contract laboratory will be certified by the USEPA and will follow their SOPs for sample log-in, storage, tracking, and control. These procedures will be documented and available for review in the laboratory's Quality Assurance Plan (QAP). Sample custody will be maintained within the laboratory's secure facility until the samples are disposed. The contract laboratory will be responsible for sample disposal, which will be conducted in accordance with all applicable local, state, and federal regulations.

3.5. Transfer Sample to Laboratory

The field supervisor is responsible for the transfer of samples collected to the contract laboratory on the same day the samples are collected. Samples can be delivered to the contract laboratory by direct transfer (hand) or via express carrier (e.g. FedEx or UPS). In the event that samples cannot be transferred to the contract laboratory the lab project manager should be contacted to ensure that any problems associated with hold times can be addressed.

Shipping samples by common carrier increases the risk of samples containers being broken in route to the contract laboratory. The following is a list of procedures that will reduce the amount of breakage in route to the laboratory.

- Wrap all samples in protective wrap (bubble wrap);
- Pack cooler so that heavy samples (250 ml) are on the bottom and lighter samples are on top (40 ml vials);
- Use bubble wrap and/or packing material and pack ice and samples tight;
- Place COC in a water resistant bag and set in the cooler (large zip-lock bags). Keep the pink copy for the records;
- Secure both ends of the cooler with packing tape;
- Place a signed and dated custody seal on the lip of the cooler so that if opened the seal will tear;
- Ship cooler next day air and note Saturday delivery, if needed; and
- Retain all receipts, tracking numbers, and COC receipts and place in Field Notebook.

3.6. Groundwater Sample Analysis

The collected groundwater samples will be submitted to a laboratory accredited with an authority acceptable to EPD (NELAP for example) for analysis for the parameters listed in Appendix A in accordance with USEPA requirements:

- VOCs using USEPA Method SW-846 8260B (or any subsequent method update that is accepted by GEPD).

3.6.1. QA/QC Sample Collection

QA/QC sample duplicates are typically collected at different frequencies depending on the type of QA/QC sample collected. The following field QA/QC samples are proposed to be collected as part of groundwater and surface water sampling program:

- Equipment Rinse Blanks (one for every twenty samples)
- Trip Blanks
- Field Duplicates.

Equipment Rinse Blanks: Equipment rinse blanks will be collected whenever equipment is used at more than one sample location with decontamination performed in between. One equipment blank shall be collected for every twenty samples from a piece of equipment that undergoes decontamination. Equipment blanks should be identified as Equipment Blank or EB, followed by a sequential number on the chain-of-custody documents.

Trip Blanks: One trip blank sample, provided by laboratory, should be included per sample shipment. Thus, trips blanks should be submitted with each cooler for this project, and submitted for laboratory analysis for VOCs only.

Field Duplicates: Duplicate samples are to be included for each matrix at a minimum rate of one for every twenty samples (5% of total) and be submitted to the lab as "blind" samples. If less than twenty samples are collected during a particular sampling episode, one duplicate should be performed.

3.6.2. QA/QC of Analytical Results

The analytical methods, detection limits, and data quality objectives (DQOs) specified in this SAP will result in data of sufficient quality to be technically sound. The DQOs for this project include criteria set for the following:

- Field Quality Control and Assurance Samples;
- Laboratory and Field Precision;
- Laboratory Accuracy; and
- Sample Representativeness;

The following general QC indicators will be used in the data validation process:

Accuracy is a measure of the nearness of a result to the true or theoretical value. Accuracy limits are from the referenced EPA methods or are internally derived according to EPA guidelines using historical data. For like matrices, internally derived control limits must be statistically equivalent to the corresponding EPA method control limits. Accuracy is measured by calculating the Percent Recovery (P) as follows:

$$P = \frac{Observed\ Result}{Theoretical\ Value}\ x\ 100$$

or for spiked samples:

$$P = \frac{(Observed\ Result - Sample\ Background\ Result)}{Spike\ Value}\ x\ 100$$

Precision is a measure of the agreement between a set of replicate measurements without assumption or knowledge of the true value. As with accuracy, precision limits are from the referenced EPA method or are derived internally according to EPA guidelines using historical data.

Precision is measured by calculating the relative percent difference (RPD) of up to 20 percent, or agreement of the primary and duplicate results within a reporting limit increment. The RPD is calculated for all results for which either the primary, duplicate, or both sample results were detected using the following formula:

$$RPD = \frac{|\ Primary\ Sample - Duplicate\ |}{\left(\frac{Primary + Duplicate}{2}\right)}\ x\ 100\%$$

Comparability describes the effectiveness with which one set of data can be compared to another. Comparability is ensured through the use of standardized analytical methods, procedures, and reporting.

Representativeness describes the extent to which data accurately and precisely represents the true characteristics of a sample. Representativeness is ensured through the use of appropriate sample handling/storage procedures and standardized analytical methods. Efforts are made to ensure that analyses are performed on samples that are representative of the original source. This is accomplished, in part, by ensuring that samples are properly preserved, stored, and analyzed before the expiration of holding times.

4.0 DATA VALIDATION AND REPORTING

The purpose of data validation is to document data quality in an organized and systematic manner. A systematic data review and validation process will be conducted on data collected in the field and provided by the laboratory. This process will consist of:

- Review of field notes;
- Review of data set to ensure that project personnel followed the specifications laid out in this Work Plan;
- Review of QC samples to establish extent (if any) of field induced bias in the analytical data;
- Review of QC samples to establish accuracy and precision;
- Comparison of holding times, method detection limits, analytical results and action levels to target exceedances;
- Review of sample containers and preservation methods;
- Review of chain-of-custody procedures and documentation.

The data validation process will consider the precision, accuracy, representativeness, comparability, and completeness of the data set, as discussed in the previous sections.

The need for modifications to the data collection or evaluation process will be identified through the data review and validation process. The type of modification needed will depend upon the amount and type of affected data, and whether the quality of the data and project objectives may have been compromised. After review of any non-conformance, modifications and/or resolutions will be developed and implemented with any change identified and documented, along with the technical justification.

5.0 SAMPLING AND REPORTING

Sampling and analysis will be conducted in in accordance with the frequency specified in the facility hazardous waste permit. Groundwater Monitoring Reports will be submitted for each sampling event within sixty (60) days of the completion of the sampling event. All groundwater analytical data will be compared to the Groundwater Protection Standards as established by the facility post-closure permit. Each report will provide a discussion of the status of groundwater monitoring, deviations from SAP or any other permit requirements, a complete copy of field data sheets and well inspection checklists, recommendations for well repair, and any further work that may be required.

6.0 REFERENCES

United States Environmental Protection Agency (USEPA), 2023. Region 4 USEPA Science and Ecosystem Support Division Athens, Georgia, *Groundwater Level and Well Depth Measurement Operating Procedures,* Revised April 22, 2023, SESDPROC-105-R5.

United States Environmental Protection Agency (USEPA), 2017. Region 4 USEPA Science and Ecosystem Support Division Athens, Georgia, *Groundwater Sampling Operating Procedures,* Revised April 26, 2017, SESDPROC-301-R4.

United States Environmental Protection Agency (USEPA), 2023. Region 4 USEPA Science and Ecosystem Support Division Athens, Georgia, *Field Sampling Quality Control Operating Procedure,* Revised April 22, 2023, LSASDPROC-011-R7.

United States Environmental Protection Agency (USEPA), 2015. Region 4 USEPA Science and Ecosystem Support Division Athens, Georgia, *Field Equipment Cleaning and Decontamination Operating Procedure,* Revised December 18, 2015, SESDPROC-205-R3.

TABLES

TABLE I

Compliance Groundwater Monitoring Program

Perma-Fix of South Georgia, Inc., Valdosta, Georgia

	Well	Depth to Groundwater	Total Well Depth	Compliance Monitoring Parameters (Annually)	Compliance Monitoring Parameters (Semi-Annually)	Field Parameters (During Annual Sampling)
On-Site Monitoring Wells	MW-1S[2]	X	X	X	X	X
Shallow	MW-2S	X	X	X		X
	MW-3[1]	X	X	X	X	X
	MW-4S[2]	X	X	X	X	X
	MW-5S[2]	X	X	X	X	X
	MW-6S	X	X	X		X
	MW-7S	X	X	X		X
	MW-8S	X	X	X		X
	MW-9S	X	X	X		X
	MW-10S	X	X	X	X	X
	MW-11S	X	X	X		X
	MW-12S[2]	X	X	X	X	X
	MW-13S[2]	X	X	X	X	X
	MW-24S	X	X	X		X
	MW-103	X	X	X		X
Deep	MW-1D	X	X	X	X	X
	MW-2DR	X	X	X		X
	MW-4D	X	X	X		X
	MW-5D	X	X	X		X
	MW-6D	X	X	X		X
	MW-7D	X	X	X		X
	MW-8DR	X	X	X		X
	MW-9D	X	X	X		X
	MW-10D	X	X	X		X
	MW-11D	X	X	X	X	X
	MW-12D	X	X	X		X
	MW-13D	X	X	X	X	X
	MW-13DD	X	X	X	X	X
	MW-13D3	X	X	X	X	X
	MW-24D	X	X	X		X
Off-Site Monitoring Wells	MW-14S	X	X	X	X	X
Shallow	MW-16	X	X	X		X
	MW-17	X	X	X		X
	MW-18	X	X	X		X
	MW-19R	X	X	X		X
	MW-20S*	X	X	X		X
	MW-21S*	X	X	X		X
	MW-25S*	X	X	X		X
	MW-26	X	X	X		X
	MW-27	X	X	X		X
Deep	MW-14D	X	X	X	X	X
	MW-15	X	X	X	X	X
	MW-20	X	X	X	X	X
	MW-21	X	X	X	X	X
	MW-22	X	X	X	X	X
	MW-23	X	X	X		X
	MW-29	X	X	X		X
	TOTAL #	**47**	**47**	**47**	**18**	**47**

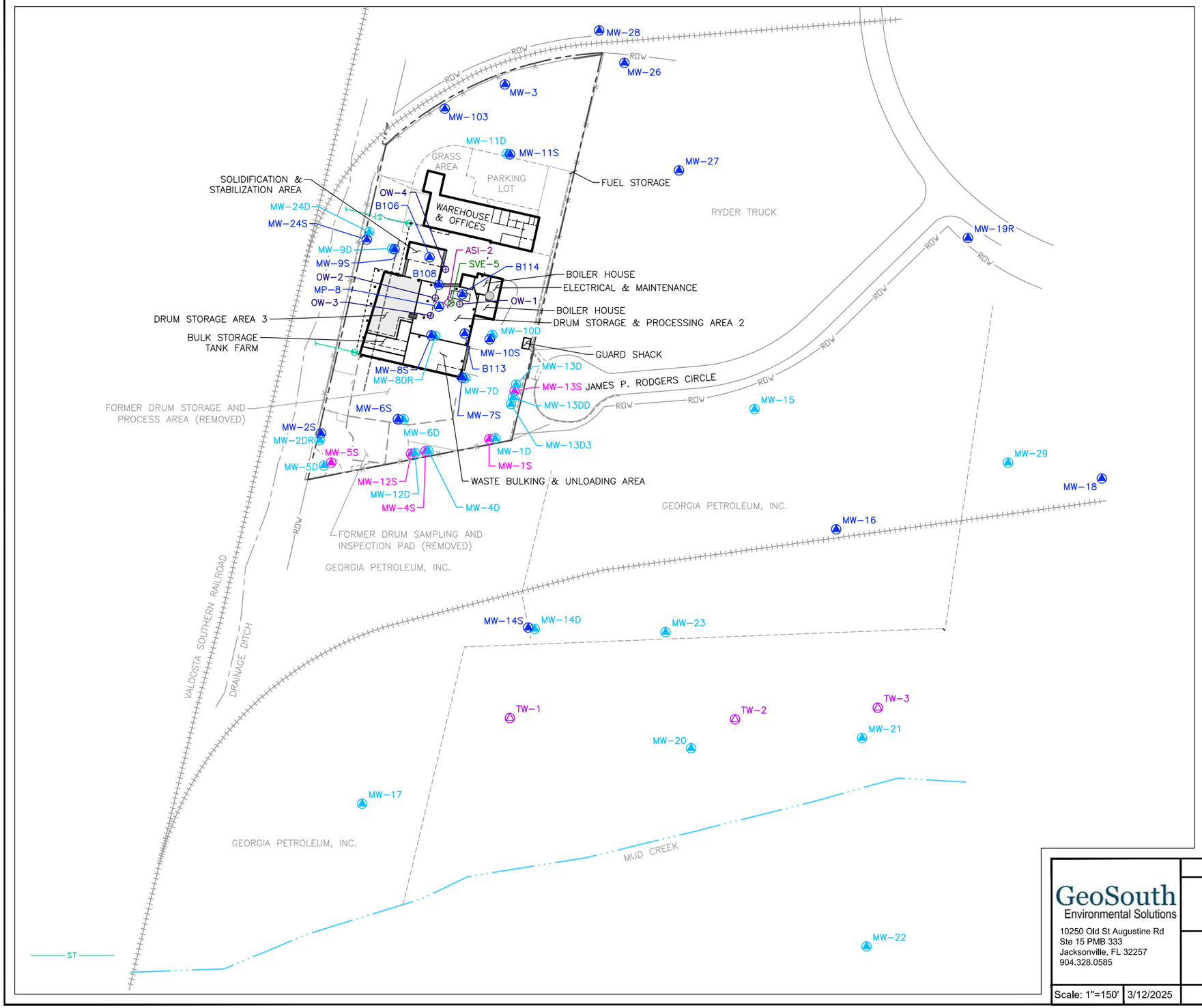
[1] - Background Well

[2] - Point of Compliance Wells

* - Pending installation

Field Parameters include: pH, temperature, turbidity, specific conductance, dissolved oxygen, and oxidation-reduction potential.

FIGURES



EXPLANATION

- MW-27 — SHALLOW MONITORING WELL
- MW-13D — DEEP MONITORING WELL
- MW-13S — POC MONITORING WELL
- TW-3 — TEMPORARY SHALLOW MONITORING WELL
- AIR SPARGE WELL
- SVE WELL
- OBSERVATION WELL
- WITHDRAWAL WELL
- ROOF DRAIN
- DRAINAGE LINE
- PROPERTY BOUNDARY
- FENCE
- RIGHT-OF-WAY
- BUILDING OUTER WALL
- DRAINAGE DITCH
- MUD CREEK
- ROOF LINE
- ROAD/CURB & GUTTER EDGE
- EXISTING STRUCTURE (REMOVED)
- OTHER EXISTING FEATURE
- VALDOSTA SOUTHERN RAILROAD

N

0 150'

GeoSouth Environmental Solutions
10250 Old St Augustine Rd
Ste 15 PMB 333
Jacksonville, FL 32257
904.328.0585

Scale: 1"=150' | 3/12/2025

FIGURE 1

SITE LAYOUT AND GROUNDWATER MONITORING WELL LOCATIONS

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

APPENDICES

APPENDIX A

ANALYTICAL COMPOUND LIST

Client Sample ID: Trip Blank

Lab Sample ID: 680-259739-14

Date Collected: 12/09/24 08:00

Matrix: Water

Date Received: 12/11/24 13:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.00036	U	0.0010	0.00036	mg/L			12/18/24 13:15	1
1,1,1-Trichloroethane	0.00021	U	0.0010	0.00021	mg/L			12/18/24 13:15	1
1,1,2,2-Tetrachloroethane	0.00040	U	0.0010	0.00040	mg/L			12/18/24 13:15	1
1,1,2-Trichloroethane	0.00032	U	0.0010	0.00032	mg/L			12/18/24 13:15	1
1,1-Dichloroethane	0.00033	U	0.0010	0.00033	mg/L			12/18/24 13:15	1
1,1-Dichloroethene	0.00033	U	0.0010	0.00033	mg/L			12/18/24 13:15	1
1,1-Dichloropropene	0.00028	U	0.0010	0.00028	mg/L			12/18/24 13:15	1
1,2,3-Trichlorobenzene	0.00081	U	0.0050	0.00081	mg/L			12/18/24 13:15	1
1,2,3-Trichloropropane	0.00048	U	0.0010	0.00048	mg/L			12/18/24 13:15	1
1,2,4-Trichlorobenzene	0.00053	U	0.0050	0.00053	mg/L			12/18/24 13:15	1
1,2,4-Trimethylbenzene	0.00043	U	0.0010	0.00043	mg/L			12/18/24 13:15	1
1,2-Dibromo-3-Chloropropane	0.0018	U	0.0050	0.0018	mg/L			12/18/24 13:15	1
Ethylene Dibromide	0.00033	U	0.0010	0.00033	mg/L			12/18/24 13:15	1
1,2-Dichlorobenzene	0.00031	U	0.0010	0.00031	mg/L			12/18/24 13:15	1
1,2-Dichloroethane	0.00025	U	0.0010	0.00025	mg/L			12/18/24 13:15	1
1,2-Dichloroethene, Total	0.00037	U	0.0020	0.00037	mg/L			12/18/24 13:15	1
1,2-Dichloropropane	0.00022	U	0.0010	0.00022	mg/L			12/18/24 13:15	1
1,3,5-Trimethylbenzene	0.00028	U	0.0010	0.00028	mg/L			12/18/24 13:15	1
1,3-Dichlorobenzene	0.00031	U	0.0010	0.00031	mg/L			12/18/24 13:15	1
1,3-Dichloropropane	0.00036	U	0.0010	0.00036	mg/L			12/18/24 13:15	1
1,4-Dichlorobenzene	0.00031	U	0.0010	0.00031	mg/L			12/18/24 13:15	1
2,2-Dichloropropane	0.00035	U	0.0010	0.00035	mg/L			12/18/24 13:15	1
2-Butanone (MEK)	0.0064	U	0.010	0.0064	mg/L			12/18/24 13:15	1
2-Chlorotoluene	0.00025	U	0.0010	0.00025	mg/L			12/18/24 13:15	1
2-Hexanone	0.0032	U	0.010	0.0032	mg/L			12/18/24 13:15	1
4-Chlorotoluene	0.00041	U	0.0010	0.00041	mg/L			12/18/24 13:15	1
Acetone	0.0037	U	0.010	0.0037	mg/L			12/18/24 13:15	1
Benzene	0.00027	U	0.0010	0.00027	mg/L			12/18/24 13:15	1
Bromobenzene	0.00024	U	0.0010	0.00024	mg/L			12/18/24 13:15	1
Bromochloromethane	0.00034	U	0.0010	0.00034	mg/L			12/18/24 13:15	1
Dichlorobromomethane	0.00025	U	0.0010	0.00025	mg/L			12/18/24 13:15	1
Bromoform	0.00059	U	0.0010	0.00059	mg/L			12/18/24 13:15	1
Bromomethane	0.0037	U	0.0050	0.0037	mg/L			12/18/24 13:15	1
Carbon disulfide	0.00043	U	0.0020	0.00043	mg/L			12/18/24 13:15	1
Carbon tetrachloride	0.00030	U	0.0010	0.00030	mg/L			12/18/24 13:15	1
Chlorobenzene	0.00015	U	0.0010	0.00015	mg/L			12/18/24 13:15	1
Chloroethane	0.0046	U	0.0050	0.0046	mg/L			12/18/24 13:15	1
Chloroform	0.00027	U	0.0010	0.00027	mg/L			12/18/24 13:15	1
Chloromethane	0.00054	U	0.0010	0.00054	mg/L			12/18/24 13:15	1
cis-1,2-Dichloroethene	0.00025	U	0.0010	0.00025	mg/L			12/18/24 13:15	1
cis-1,3-Dichloropropene	0.00026	U	0.0010	0.00026	mg/L			12/18/24 13:15	1

Client: Trihydro Corporation
Project/Site: PFSG, Valdosta GA Site

Job ID: 680-259739-1

Client Sample ID: Trip Blank
Date Collected: 12/09/24 08:00
Date Received: 12/11/24 13:00

Lab Sample ID: 680-259739-14
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorodibromomethane	0.00039	U	0.0010	0.00039	mg/L			12/18/24 13:15	1
Dibromomethane	0.00034	U	0.0010	0.00034	mg/L			12/18/24 13:15	1
Dichlorodifluoromethane	0.00036	U	0.0010	0.00036	mg/L			12/18/24 13:15	1
Ethylbenzene	0.00020	U	0.0010	0.00020	mg/L			12/18/24 13:15	1
Hexachlorobutadiene	0.00022	U	0.0050	0.00022	mg/L			12/18/24 13:15	1
Isopropylbenzene	0.00026	U	0.0010	0.00026	mg/L			12/18/24 13:15	1
4-Methyl-2-pentanone (MIBK)	0.0027	U	0.010	0.0027	mg/L			12/18/24 13:15	1
Methyl tert-butyl ether	0.00081	U	0.0050	0.00081	mg/L			12/18/24 13:15	1
Methylene Chloride	0.0032	U	0.0050	0.0032	mg/L			12/18/24 13:15	1
m-Xylene & p-Xylene	0.00049	U	0.0010	0.00049	mg/L			12/18/24 13:15	1
Naphthalene	0.0024	U	0.0050	0.0024	mg/L			12/18/24 13:15	1
n-Butylbenzene	0.00052	U	0.0010	0.00052	mg/L			12/18/24 13:15	1
N-Propylbenzene	0.00041	U	0.0010	0.00041	mg/L			12/18/24 13:15	1
o-Xylene	0.00026	U	0.0010	0.00026	mg/L			12/18/24 13:15	1
p-Isopropyltoluene	0.00044	U	0.0010	0.00044	mg/L			12/18/24 13:15	1
sec-Butylbenzene	0.00053	U	0.0010	0.00053	mg/L			12/18/24 13:15	1
Styrene	0.00027	U	0.0010	0.00027	mg/L			12/18/24 13:15	1
tert-Butylbenzene	0.00043	U	0.0010	0.00043	mg/L			12/18/24 13:15	1
Tetrachloroethene	0.00035	U	0.0010	0.00035	mg/L			12/18/24 13:15	1
Toluene	0.00025	U	0.0010	0.00025	mg/L			12/18/24 13:15	1
trans-1,2-Dichloroethene	0.00034	U	0.0010	0.00034	mg/L			12/18/24 13:15	1
trans-1,3-Dichloropropene	0.00023	U	0.0010	0.00023	mg/L			12/18/24 13:15	1
Trichloroethene	0.00020	U	0.0010	0.00020	mg/L			12/18/24 13:15	1
Trichlorofluoromethane	0.00033	U	0.0010	0.00033	mg/L			12/18/24 13:15	1
Vinyl acetate	0.00069	U	0.0020	0.00069	mg/L			12/18/24 13:15	1
Vinyl chloride	0.00040	U	0.0010	0.00040	mg/L			12/18/24 13:15	1
Xylenes, Total	0.00023	U	0.0010	0.00023	mg/L			12/18/24 13:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*60 - 124*		*12/18/24 13:15*	*1*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*		*12/18/24 13:15*	*1*
Dibromofluoromethane (Surr)	*97*		*70 - 130*		*12/18/24 13:15*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*12/18/24 13:15*	*1*

APPENDIX B

EXAMPLE PURGING AND SAMPLING FIELD FORMS

GROUNDWATER SAMPLING FIELD FORM

GeoSouth Environmental Solutions

PROJECT INFORMATION

Site: **Valdosta, GA facility** Client: **Perma-Fix of South Georgia, Inc.**

Project Number: _____ Task# _____ Start Date: _____ Time: _____

Field Personnel: _____ Finish Date: _____ Time: _____

WELL INFORMATION

Well ID: _____

Well Casing Diameter: _____ Inches

Screen Interval: _____ ft

Well Total Depth: _____ ft

❑ Flush Mount ❑ Riser Casing

EVENT TYPE

❑ Well Development
❑ Low-Flow / Low-Stress Sampling
❑ Well Sampling
❑ Other (Specify below)

PURGE INFORMATION

Purge Method: ❑ Electric Submersible Pump ❑ Submersible Bladder Pump ❑ Peristaltic Pump

Bailer Type: _____

Pump Type and Serial#: _____

Pump Intake Depth: _____

Stabilized Pumping Rate: _____

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth FT BTOC	Time (24-Hour)	Depth FT BTOC	Time (24-Hour)
LNAPL				
Depth to Water (DTW)				
DNAPL				
Total Well Depth (TD)				

Water Level Type / Serial #:

VOLUME CALCULATION AND PRODUCTION INFORMATION

Purge Calculation Method: ❑ Well Casing ❑ Low Flow Purge

Gallons Per Foot of Water: **1 in Csg = 0.04 | 2 in Csg = 0.16 | 4 in Csg = 0.65 | 6 in Csg = 1.5**

Water Column (TD-DTW): _____ **feet**

1 Well Volume: _____ **Gallons** 3 Well Volume: _____ **Gallons**

5 Well Volume: _____ **Gallons** **Total Purged:** _____ **Gallons**

Tubing type: ❑ Teflon ❑ TLPE ❑ HDPE Intake Depth: _____ **FT BTOC**

Well Purged Dry ❑Yes ❑ No QC Samples Collected: ❑ Dup ❑ MS/MSD

Water Quality Probe Type / Serial #

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (FT BTOC)	Drawdown (Feet)	Temp (°C)	pH (SU)	SpCond (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity

NOTES

PG. 1 OF ___

ABBREVIATIONS

SpCond. - Specific Conductance
ORP - Oxidation-Reduction Potential
FT BTOC - Feel Below Top of Casing
µS/cm - microSiemens per centimeter
SU - Standard Units
NM - Not Measured
Temp - Temperature
°C - Degrees Celsius
mV - milliVolts

Water Level Gauging Data and Inspection Fomr

Perma-Fix of South Georgia, Inc.

Project: Samplers: Date:

	Well ID	Casing Diameter	Time	DTW	TD	Comments
Off-Site Wells	MW-14D	2				
	MW-14S	2				
	MW-15	2				
	MW-16	2				
	MW-17	2				
	MW-18	2				
	MW-19R	2				
	MW-20	2				
	MW-21	2				
	MW-22	2				
	MW-23	2				
	MW-26	2				
	MW-27	2				
	MW-28	2				
	MW-29	2				
On-Site Wells	MW-1D	2				
	MW-1S	2				
	MW-2DR	2				
	MW-2S	2				
	MW-3	2				
	MW-4D	2				
	MW-4S	2				
	MW-5D	2				
	MW-5S	2				
	MW-6D	2				
	MW-6S	2				
	MW-7D	2				
	MW-7S	2				
	MW-8DR	2				
	MW-8S	2				
	MW-9D	2				
	MW-9S	2				
	MW-10D	2				
	MW-10S	2				
	MW-11D	2				
	MW-11S	2				
	MW-12D	2				
	MW-12S	2				
	MW-13D	2				
	MW-13D3	2				
	MW-13DD	2				
	MW-13S	2				
	MW-24D	2				
	MW-24S	2				
	MW-103	2				
	B106R	2				Do Not Sample
	B-108R	2				Do Not Sample
	B-113R	2				Do Not Sample
	B-114R	2				Do Not Sample
	MP-8	1				Do Not Sample

Note: Measure and sample wells from least to most contaminated.

APPENDIX C

GROUNDWATER MONITORING WELL VISUAL INSPECTION CHECKLIST

Groundwater Monitoring Well Visual Inspection Checklist

Perma-Fix of South Georgia, Inc.

Well ID	Inspection Date	Outer Protective Casing	Outer Protective Casing Cap	Locked	Inner Casing Well Cap	Concrete Seal Present/ Intact	Visual Damage	Casing Material	Casing Diameter	Ponded Water	Clearly Labelled	Measuring Point Marked	Gaskets/ Bolts/ Washers	Comments
MW-1D								PVC	2-inches					
MW-1S								PVC	2-inches					
MW-2DR								PVC	2-inches					
MW-2S								PVC	2-inches					
MW-3								PVC	2-inches					
MW-4D								PVC	2-inches					
MW-4S								PVC	2-inches					
MW-5D								PVC	2-inches					
MW-5S								PVC	2-inches					
MW-6D								SS	2-inches					
MW-6S								SS	2-inches					
MW-7D								SS	2-inches					
MW-7S								SS	2-inches					
MW-8DR								SS	2-inches					
MW-8S								SS	2-inches					
MW-9D								SS	2-inches					
MW-9S								SS	2-inches					
MW-10D								SS	2-inches					
MW-10S								SS	2-inches					
MW-11D								SS	2-inches					
MW-11S								SS	2-inches					
MW-12D								SS	2-inches					
MW-12S								SS	2-inches					
MW-13D								SS	2-inches					
MW-13D3								PVC	2-inches					
MW-13DD								PVC	2-inches					
MW-13S								SS	2-inches					
MW-14D								PVC	2-inches					
MW-14S								PVC	2-inches					

Groundwater Monitoring Well Visual Inspection Checklist

Perma-Fix of South Georgia, Inc.

Well ID	Inspection Date	Outer Protective Casing	Outer Protective Casing Cap	Locked	Inner Casing Well Cap	Concrete Seal Present/ Intact	Visual Damage	Casing Material	Casing Diameter	Ponded Water	Clearly Labelled	Measuring Point Marked	Gaskets/ Bolts/ Washers	Comments
MW-15								PVC	2-inches					
MW-16								PVC	2-inches					
MW-17								PVC	2-inches					
MW-18								PVC	2-inches					
MW-19R								PVC	2-inches					
MW-20								PVC	2-inches					
MW-21								PVC	2-inches					
MW-22								PVC	2-inches					
MW-23								PVC	2-inches					
MW-24D								PVC	2-inches					
MW-24S								PVC	2-inches					
MW-26								PVC	2-inches					
MW-27								PVC	2-inches					
MW-28								PVC	2-inches					
MW-29								PVC	2-inches					
MW-103								PVC	2-inches					
B106R								PVC	2-inches					
B-108R								PVC	2-inches					
B-113R								PVC	2-inches					
B-114R								PVC	2-inches					
MP-8								PVC	2-inches					

ss = Stainless Steel PVC = Polyvinyl chloride

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F. PROCEDURES TO PREVENT HAZARDS

This section presents the procedures utilized to prevent hazards for the PFSG facility, in accordance with the requirements of 40 CFR 270.14(b)(4), and (5), 264.14, 264.15, 264.17, 264.174, and 264.194.

F.1 SECURITY [40 CFR 270.14(b)(4) AND 40 CFR 264.14]

F.1.1 SECURITY PROCEDURES AND EQUIPMENT

In addition to the general security provisions of fencing, gates, and surveillance features shown on Figure B-1, several other features contribute to the safety and security of the facility. Employees will have ready access to report problem conditions immediately to the office via an intercom system. The intercom system will link all facility phones with one another.

Persons approaching the PFSG property are prevented from entering by a closed electric gate with an "Authorized Personnel Only" sign. Additionally, a closed-circuit television system monitors the entrance gate. Monitors exist in the General Manager's office and reception area.

F.1.2 24-HOUR SURVEILLANCE SYSTEM

PFSG is in an area that is patrolled by the City of Valdosta Police Department. Physical contact with the structures or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of the facility. The additional precaution of a locked gate and an 8-foot barbed-wire fence, maintain adequate security and public protection. A closed-circuit television system monitors the entrance gate.

F.1.2.1 BARRIER AND MEANS TO CONTROL ENTRY

As described in Section F.1, PFSG uses a barrier and television monitoring in lieu of security guards. A locked gate and an 8-foot barbed-wire fence with video monitoring exists to maintain security and public protection.

F.1.2.1.1 BARRIER

The PFSG facility is secured by a 48-inch solid concrete block wall topped by a 6-foot-high chain-link fence equipped with three strands of outward-leaning barbed wire on the south side and on the southwest perimeter up to the main entrance gate. The remaining facility perimeter has an 8-foot-high chain-link fence with barbwire on top. The main gate is an electric gate with an access code for the operator.

F.1.2.1.2 MEANS TO CONTROL ENTRY

All vehicles will enter and exit through the main entrance. The main gate will be electronically controlled by the main office. To gain access, visitors must request, via an intercom system, that the gate be opened. They will be required to sign in and out, including the time and date.

The south and west gates are for emergency evacuation only. The gates remain locked at all times. The facility manager and shift supervisor will have the keys to these locks and be responsible for opening them during emergencies.

F.1.2.2 WARNING SIGNS

Signs that are legible from a distance of at least 25 feet are posted at the main entrance, on the two emergency evacuation gates, and on the various parts of the facility where hazardous waste storage or handling takes place. These signs are visible from the angles of approach and bear the legend "Danger - Unauthorized Personnel Keep Out".

F.1.3 WAIVER

PFSG does not request a waiver of the security requirements of 40 CFR 264.14.

F.2 INSPECTIONS [40 CFR 270.14(b)(4) AND 40 CFR 264.15]

F.2.1 GENERAL INSPECTION REQUIREMENTS [40 CFR 264.15(a)]

PFSG has a published Inspection Plan (See Table F-1) that is used to ensure prevention of hazardous waste release to the environment from the facility, thus protecting against threat to human health and providing continuing protection of the environment. The regularly scheduled inspections described in the plan are designed to prevent and/or discover malfunctioning and/or deteriorating equipment, operator errors, problems, and/or procedural deficiencies that might cause or result in a release of hazardous waste constituents and adversely affect the environment or threaten human health. The type of equipment to be inspected includes operating and structural equipment, monitoring equipment, safety and emergency equipment, and security devices.

The Inspection Plan is divided into three functional areas of the overall facility as follows: general facility areas (including process units), container handling and storage facility, and Bulk Storage Tank Farm (including the Waste Bulking and Unloading Area). The specific aspects of the inspection plan presented for each of these functional areas include the following features: (1) type(s) of equipment to be inspected; (2) examples/evidence of potential problems; (3) frequency of inspection; and (4) procedure for inspection. The Inspection Plan describes the frequency of each inspection for each specific area and piece of equipment. The frequency is based either on a

specific regulatory requirement or on the estimated rate of possible deterioration of the equipment item and the probability of an adverse incident if a problem goes undetected between inspections. All deteriorating or malfunctioning equipment will be repaired or replaced. Other problem conditions will be remedied to preclude an environmental or human health hazard.

The General Manager will designate appropriate trained personnel to carry out the inspections identified in Table F-1.

F.2.1.1 TYPES OF PROBLEMS

Table F-1 presents the schedule for making the inspections described above. The items listed in the table are considered important because they aid in preventing, detecting, or responding to potential or actual environmental or human health hazards. Problems potentially associated with the inspection list items are also documented in Table F-1.

F.2.1.2 FREQUENCY OF INSPECTION [40 CFR 264.15(b)]

Table F-1 provides the recommended frequency of inspection for each item. The inspections will be performed, at a minimum, based on the frequency specified in Table F-1.

F.2.2 SPECIFIC PROCESS INSPECTION REQUIREMENTS

F.2.2.1 CONTAINER INSPECTION [40 CFR 264.174]

Inspection of the hazardous waste drums storage areas and processing facility is conducted per the inspection schedule provided in Table F-1. Results of each inspection are recorded on inspection log sheets titled “Facility Inspection Log Sheet”. An example of the Facility Inspection Log Sheet is provided in Table F-2. Information on the log sheet includes the inspector's name, job title, date, time of inspection, observations made, the remedial action taken, and the date of the remedial action taken. The issues that may be encountered are listed in Table F-1 for each item on the inspection schedule. This will prompt the inspector to be alert to these issues and look any others to ensure a complete inspection. The inspector is required to check the status of each item and indicate its condition as either acceptable or unacceptable. Regardless of the status, observations are made as to the number of containers, aisle spacing, access space, proper stacking, proper labeling, and inventory quantities, etc. If the status of a particular item is unacceptable, appropriate and complete information is recorded, including observation date, the recommended nature of repairs, and required remedial action date.

F.2.2.2 TANK INSPECTION [40 CFR 264.195]

Table F-1 lists the inspections that will be conducted on the storage tanks. Results of each inspection will be recorded on the Inspection Log Sheet. An example is provided in Table F-2.

Tank systems will be inspected daily for signs of cracks or leaks in containment areas, piping, level indicators, and the tank structures. This inspection will consist of visual evaluations for evidence of cracks, leaks, corrosion, or other damage. Areas surrounding tanks will be inspected for wet spots and dead vegetation or other evidence of a release.

The tanks at PFSG will be fitted with two features that are designed to prevent and control overfilling. A high-level detection device will set off audible and visual alarms whenever the liquid surface inside the tank reaches a pre-determined level. Just above the pre-determined level, a pipe connects the tanks at the same height so that, if no action has been taken to stop the flow of liquids into the tank after the high-level alarm has been activated, the liquids will overflow into another tank. However, the most effective overspill prevention system is the one provided by readings of the tank liquid level taken at the end of every shift. The readings indicate the volume available in the tank to store additional waste. This will inform the number of drums in the batch that can be processed during the shift. This will be limited to a volume smaller than the space available in the tank empty space. A tank level reading is also conducted before waste is transferred from a tanker to make sure that the volume of waste to be unloaded is smaller than the one available in the tank for storage.

The high-level alarm will be inspected monthly. Tanks will be tested annually to verify that the minimum shell thickness is maintained.

If it is necessary to enter a tank for internal inspection, a Confined Space Entry Permit using OSHA requirements (29 CFR Part 1910.146) will be prepared and followed.

In addition, the precautions listed below will be implemented before any entry into a hazardous waste storage or mixing tank is allowed:

1. A portable pump would be used to remove the tank material to a tank truck or another tank within the facility.
2. Assure all valves on all lines that convey fuel materials into the tank are closed and locked.
3. All mechanical devices that could cause injury to persons inside tanks will be made inoperative through standard lockout/tagout procedures.
4. Tank contents are to be removed from the tank.
5. Blowers will be used to purge fuel vapors from the tanks.

6. Vehicular and foot traffic in the tank area will be restricted.
7. The air inside the tank will be tested to determine oxygen content and flammable/explosive concentrations. A record will be kept of these monitoring results and will be available for inspection.
8. If these tests show the absence of oxygen deficiency, entry will be permitted. If air tests show the presence of any oxygen deficiency, additional precautions, as described below are to be followed.

When the absence of dangerous air contamination and/or oxygen deficiency cannot be ensured, the following precautions will be implemented:

1. NIOSH-approved self-contained breathing apparatus and full-body protective clothing will be worn.
2. An approved safety belt with attached line will be worn. The line is to be secured outside the tank entrance.
3. A second employee, provided with a readily accessible, NIOSH-approved self-contained breathing apparatus, will be stationed outside the tank entrance. A third employee will be required to be within sight and call of the standby employee at all times. The standby employee will enter the tank only in event of emergency and only after notifying at least one other employee of the emergency and of his/her intent to enter the tank.
4. When tank entry is made through the top opening, the safety belt will be replaced with a safety harness, and a hoisting device will be used.
5. No work involving a source of ignition (flame, spark, etc.) will be permitted if air testing shows that a flammable/explosive atmosphere is present or could develop.
6. Only lighting and electrical equipment approved in accordance with the Low Voltage Electrical Safety Orders will be used.
7. An employee trained in first aid and cardiopulmonary resuscitation (CPR) will be immediately available at all times.
8. Visual or radio communication will be always maintained between the employee working inside the tanks and the standby employee.

F.2.2.3 WASTE PILE INSPECTION

The PFSG facility does not operate waste piles for the purpose of storing, treating, or disposing of hazardous waste. Therefore, 40 CFR 264 Subpart L is not applicable.

F.2.2.4 SURFACE IMPOUNDMENT INSPECTION

The PFSG facility does not operate surface impoundments for the purpose of storing, treating, or disposing of hazardous wastes. Therefore, 40 CFR 264 Subpart K is not applicable.

F.2.2.5 INCINERATOR INSPECTION

The PFSG facility does not operate incinerators for the purpose of treating or disposing of hazardous wastes. Therefore, 40 CFR 264 Subpart O is not applicable.

F.2.2.6 LANDFILL INSPECTION

The PFSG facility does not operate a landfill for the purpose of treating or disposing of hazardous wastes. Therefore, 40 CFR 264 Subpart N is not applicable.

F.2.2.7 LAND TREATMENT INSPECTION

The PFSG facility does not utilize land treatment for the purpose of treating or disposing of hazardous wastes. Therefore, 40 CFR 264 Subpart M is not applicable.

F.2.2.8 MISCELLANEOUS UNITS INSPECTION

The PFSG facility does not operate miscellaneous units (e.g., shredders). Therefore, 40 CFR Subpart X is not applicable.

F.2.3 REMEDIAL ACTION

Should an inspection reveal that maintenance of a non-emergency nature is needed, the remedy will be carried out as quickly as possible to prevent impending or continued damage and reduce the potential need for emergency-action repairs in the future. The General Manager or their designee will be notified prior to executing any maintenance or repair work necessary if a shutdown of any facility operations is required. Such work will be performed at the direction of the General Manager. Before resuming operation of the equipment or systems repaired, the General Manager or his designee will inspect work done. Operation of the repaired equipment or systems will not resume until the General Manager, or his or her designee has issued official approval. If a hazard is imminent or has already occurred during an inspection or any time between inspections, remedial action will be taken immediately. If necessary, PFSG personnel will notify the appropriate authorities in accordance with the Contingency Plan (Section G) and initiate remedial actions.

In response to an emergency event involving the release of hazardous constituents to the environment, efforts will center upon containment of the hazard, removing it, and subsequently decontaminating the affected area. PFSG personnel will notify the appropriate authorities in accordance with the Contingency Plan (Section G) and initiate remedial actions. The Contingency Plan provides further details of specific procedures and actions.

F.2.4 INSPECTION LOG

An example of the Facility Inspection Log Sheet is provided in Table F-2. The Inspection Log will contain:

- Date and time of inspection
- Name(s) of the inspector(s)
- The items which were due to be inspected
- Observations made
- Date and nature of repairs/remedial actions taken

F.3 WAIVER OF PREPAREDNESS AND PREVENTION REQUIREMENTS

PFSG does not wish to request a waiver of the preparedness and prevention requirements under 40 CFR 264 Subpart C.

F.3.1 EQUIPMENT REQUIREMENTS [40 CFR 264.31 AND 40 CFR 264.34]

Internal and external communications, emergency equipment, and fire control equipment are described in detail below and in Section G.

F.3.1.1 INTERNAL COMMUNICATION

PFSG employees will be able to contact one another through use of the phone-to-phone intercom system. In addition, announcements will be broadcast from the office and heard throughout the plant by means of the public address system.

F.3.1.2 EXTERNAL COMMUNICATION

Employees will be able to contact the office through the intercom system. The office can sound an alarm and/or summon emergency assistance of local police or fire departments and local or state emergency response teams.

F.3.1.3 EMERGENCY EQUIPMENT

The future location of fire control (fire extinguishers) and other equipment for activities, such as decontamination, is shown on Figure G- 2. The first column of Table F-1 provides a detailed list of the equipment and materials available.

F.3.1.4 WATER/FOAM FOR FIRE CONTROL

PFSG maintains one fire hydrant on the plant grounds and has access to a second hydrant at the plant entrance. Each hydrant can deliver 500 gallons of water per minute, as indicated by Exhibit F-1. A fluorine-free foam-generating unit will be available in the plant that can deliver large amount of foam to extinguish large fires that may occur at the facility. Foam-dispensing hoses will be stationed in the Waste Bulking and Unloading Area.

F.3.2 AISLE SPACE REQUIREMENTS [40 CFR 264.35]

Aisle space will be maintained in container storage areas to allow safe access with a forklift and/or drum handler and inspection of all drums (see Figure D-1). A minimum of two feet of aisle space will be maintained in the container storage areas. Aisle space is also provided within the facility for the movement of fire protection equipment, spill control equipment, and decontamination equipment.

F.4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT

F.4.1 LOADING/UNLOADING OPERATIONS

Unloading and loading of hazardous waste containers will take place at the loading dock of the existing drum storage pad. A forklift with a drum-handling device will be used to load, unload, and move containers. The loading dock is elevated to allow the forklift direct access into the trailers. These features ensure safe and efficient unloading or loading of containers. The forklift operators will be trained in safe operation of the forklift.

Prior to processing, the containers will be sampled and cleared for acceptance through the completion of fingerprinting and/or appropriate laboratory analyses. After acceptance the containers will be identified, sorted, and moved to a compatible storage area. Container placement in the staging and storage areas (drum storage areas) is such that proper aisle space will be maintained at all times.

The Bulk Storage Tank Farm has an adjoining trailer loading area dedicated for bulk liquid unloading and loading. This transfer area is designed so that the trailers can be easily backed into place for processing. The area is surrounded on three sides by containment walls with a typical height of 38 inches. The fourth side of the area is the main trailer access. It is at the highest elevation and is capped with a 6-inch berm.

All hazardous waste storage areas, as well as waste bulking and unloading areas, are provided with a containment system. Storage areas for ignitable and reactive hazardous wastes will be provided with “No Smoking” signs.

F.4.2 RUNOFF

The entire hazardous waste management area will be surrounded by containment walls, and all hazardous waste management units will be covered with a roof as shown in Figure B-4a and Exhibit A-1. The roof will be equipped with a gutter system that collects all the rainfall and discharges it directly off-site into the drainage ditch on the west side of the property. This ensures that rain falling on the roof will minimize overall facility run-off before being discharged. The containment walls and berms ensure no run-on into the hazardous waste handling section of the facility.

The Drum Sampling and Inspection Area has a 38-inch wall on the north side and a 6-inch berm on the east side. On the west side of this pad, a ramp will slope up to the west and north to provide access to forklifts to the southwest corner of the Drum Storage and Process Area 2. This ramp will have a floor surface elevation of at least 6 inches above the pad floor to prevent liquids that may have accumulated in the Drum Sampling and Inspection Area from running off the west side of the pad. On the south side, a 2-inch roll-over berm confines accumulated liquids to the pad area. The Drum Sampling and Inspection Area's secondary containment volume is capable of holding almost 20% of the maximum pad storage capacity. The roof overhangs that surround the pad will reduce blown-in precipitation.

The bulk liquids are stored in the Bulk Storage Tank Farm, which is surrounded by a containment wall.

A roll-over berm along the east side of the Waste Bulking and Unloading Area keeps stormwater run-off from entering the area. The floor in this area is sloped to the southwest corner, which prevents liquid from escaping outside of the Waste Bulking and Unloading Area.

The Drum Storage and Process Area 2 is also surrounded by containment walls with a typical height of 48 inches. One of the walls has a 24-foot opening (with 6-inch berm) to facilitate equipment passage. The floor is sloped to direct material toward one of the two sump pits existing in the area.

The run-off from the open grounds outside the building perimeter flows toward a low area with a sump at the southwest corner of the property. Should a spill occur outside the building perimeter, such as a rupture in a tanker trailer moving from the facility entrance to the unloading area, the material would drain toward the low area. The sump is connected to a valved gravity drain line that discharges to the storm water drainage ditch adjacent to the western property boundary. The sump valve is always kept closed. Therefore, collected material will remain in the low area contained by the surrounding 48-inch-high walls.

The entire PFSG facility is located out of and away from the 100-year flood plain as demonstrated in Section B.3.2.

F.4.3 WATER SUPPLIES

Surface water, ground water, and public drinking water supplies are protected from any potential contamination by the design and construction of the facility. No other water supplies are endangered because the complete control or prevention of any contaminated run-off is maintained.

F.4.4 EQUIPMENT AND POWER FAILURE

All major operations at PFSG are dependent on electrical equipment. Battery-operated lights will be available to all personnel. In the event of a power failure, liquid transfers will be immediately stopped and will not be continued by manual controls. The entire facility operations can be closed within five minutes should a power failure occur. In the event of equipment failure, liquid transfers to and from the equipment will be immediately stopped. The General Manager will be notified for further instruction to conduct repairs. Processing will not be resumed until the General Manager has issued approval.

F.4.5 PERSONNEL PROTECTIVE EQUIPMENT

General information on personnel protective clothing and other emergency equipment is presented in Section G, the Emergency Contingency Plan. Proper use of protective equipment is covered in the initial and monthly Personnel Training Programs.

The safety equipment necessary to handle all wastes received will be maintained by PFSG. Each employee working in contact with the waste will be issued a respirator, gloves, hardhat, and eye protection. Replacement equipment will be available from central supply. Emergency shower and eyewash stations will be located in the Drum Sampling and Inspection Pad and the Drum Storage and Process Area 2.

F.5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTE [40 CFR 264.17, 264.176, 264.177, 264.198, AND 264.199]

F.5.1 PRECAUTIONS TO PREVENT IGNITION OR REACTION OF IGNITABLE OR REACTIVE WASTE

The Drum Storage and Process Area 2, Drum Storage Area 3, and Bulk Storage Tank Farm are the areas on the plant property where ignitable/reactive wastes will be stored. As discussed in Section D, the containers and tanks will be compatible with the contained wastes; therefore, the only source of ignition is external to the containers. As described in the next paragraph, sources of potential ignition are prohibited, to the greatest extent possible, from those areas where wastes are exposed during sampling, storage, and processing.

Any operation involving open flame, cutting, or welding in the container/tank storage areas and hazardous waste processing area requires a hot work permit issued by facility management. Tools utilized in these areas are spark-proof. “No Smoking” signs are posted throughout the facility, and smoking is prohibited within the active hazardous waste storage or processing areas of the facility. Each storage tank will be grounded to protect it from ignition sources. One end of a braided tinned copper wire will be connected to a bolt on the side manhole on each tank, and the other end is connected to a metal ground pole buried west of the tank farm containment.

Means of basic prevention include signs that will be placed in and around these areas with the legends, "No Smoking" and "Danger -Unauthorized Personnel Keep Out". Tools used, if any, around these wastes will be spark-proof. All drums will be appropriately labeled. Because the container waste storage facility is covered and has open sides, excessive heat buildup associated with solar insulation is prevented. Tanks will be vented at atmospheric pressure to operate at ambient conditions of temperature.

F.5.2 GENERAL PRECAUTIONS FOR HANDLING IGNITABLE OR REACTIVE WASTES OR ACCIDENTALLY MIXING INCOMPATIBLE WASTE

Incompatible wastes will not be mixed at PFSG. The drum storage areas are divided into various storage areas with dedicated secondary containment for each, such that incompatible wastes will not be stored together. There will be no opportunity for spills or releases of incompatible wastes to mix due to the segregated design of the containment structures for each area.

Compatibility of waste types as they are received at the facility will be evaluated using methods consistent with Sections C, D, and F. Drums containing ignitable wastes will be opened for sampling and processing, but only in the manner consistent with the process of blending compatible solvents, which if mixed would not result in ignition or explosive reactions. Drums showing incompatible hazard classes in the Drum Sampling and Inspection Area will be separated as soon as possible and transferred to their appropriate storage cell. Similarly, mixing in storage tanks will be managed the same way.

Due to the nature of the business at PFSG, only compatible solvents will be processed.

F.5.3 MANAGEMENT OF IGNITABLE OR REACTIVE WASTES IN CONTAINERS

Precautions taken in the drum storage areas to prevent accidental fire and explosion will include the proper storage of containers (e.g., stacking, aisle spacing, drum movement space, labeling and sealing of containers), a secondary containment volume in excess of 10% of stored volume in containers, posting of appropriate warning signs, and the presence of A-, B-, and C-type fire extinguishers. Prior to storage, each container will be sealed and labeled. Using proper storage procedures and sealing each container, along with the building roof, will prevent precipitation from contacting the drum. Aisle space will be maintained to allow working access without risk of damaging containers

by scraping, puncturing, or dropping. Containers holding ignitable or reactive wastes will be located at least 50 feet from the facility's property line in compliance with requirements in 40 CFR 264.176. The drum storage and container storage areas are shown in Figure D-1.

F.5.4 MANAGEMENT OF INCOMPATIBLE WASTES IN CONTAINERS

Container storage will be managed such that no incompatible waste will be stored together. Compatibility in the drum storage area will be provided by segregated areas with separate containment for each compatibility type and by separating drums containing incompatible waste shortly after unloading them. Only compatible wastes will be stored within each containment area. There will be no opportunity for mixing of spills or releases of incompatible waste. Removal of free liquids from containers will be done from one containment area at a time, and the removed liquid will be processed and stored separately from any liquid removed from incompatible waste containers. Compatibility of waste types as they are received at the facility will be evaluated using methods consistent with Sections C, D, and F.

Before any waste is repacked in a drum that was emptied at PFSG, information on the waste to be repacked and information on the waste previously held in the drum will be studied to determine whether they are compatible with each other. Information on the waste previously held in the drum will be obtained from the hazardous waste label displayed on the drum in which the new waste is to be repacked. Drums emptied at PFSG will continue to display the hazardous waste label that was on the drum before it was emptied. PFSG will determine compatibility between the waste to be repacked and the previously held waste by using the compatibility method described in Section C of this application.

F.5.5 MANAGEMENT OF IGNITABLE OR REACTIVE WASTE IN TANKS

No reactive waste solvents will be stored in any of the tanks.

The ignitable solvents accepted, stored, and processed will all be protected from ignition sources by: prohibiting smoking in the Bulk Storage Tank Farm, by requiring a hot work permit from management for operations in the tank farm involving open flame, cutting, or welding, and by using spark-proof tools in the tank farm.

The location of waste storage tanks will be in compliance with the buffer zone requirements for stable liquids (operating pressure 2.5 pounds per square inch gauge or less) in accordance with the NFPA publication "Flammable and Combustible Liquids" Code applicable to vertical tanks having emergency relief valves (NFPA 2021). A detailed description of compliance with this requirement is included in Section D of this application.

F.5.6 MANAGEMENT OF INCOMPATIBLE WASTE IN TANKS

The tanks will have separate piping systems. PFSG handles only compatible wastes for tank storage.

F.5.7 MANAGEMENT OF IGNITABLE OR REACTIVE WASTES IN WASTE PILES

PFSG does not operate hazardous waste piles; therefore, 40 CFR 264.256 is not applicable.

F.5.8 MANAGEMENT OF INCOMPATIBLE WASTE IN WASTE PILES

PFSG does not operate hazardous waste piles; therefore, 40 CFR 264.257 is not applicable.

F.5.9 MANAGEMENT OF IGNITABLE OR REACTIVE WASTES IN SURFACE IMPOUNDMENTS

PFSG does not operate hazardous waste surface impoundments; therefore, 40 CFR 264.229 is not applicable.

F.5.10 MANAGEMENT OF INCOMPATIBLE WASTE IN SURFACE IMPOUNDMENTS

PFSG does not operate hazardous waste surface impoundments; therefore, 40 CFR 264.230 is not applicable.

F.5.11 MANAGEMENT OF IGNITABLE OR REACTIVE WASTES IN LANDFILLS

PFSG does not operate hazardous waste landfills; therefore, 40 CFR 264.312 is not applicable.

F.5.12 MANAGEMENT OF INCOMPATIBLE WASTES IN LANDFILLS

PFSG does not operate hazardous waste landfills; therefore, 40 CFR 264.313 is not applicable.

F.5.13 MANAGEMENT OF IGNITABLE OR REACTIVE WASTES IN LAND TREATMENT

PFSG does not perform hazardous waste land treatment; therefore, 40 CFR 264.281 is not applicable.

F.5.14 MANAGEMENT OF INCOMPATIBLE WASTE IN LAND TREATMENT

PFSG does not perform hazardous waste land treatment; therefore, 40 CFR 264.282 is not applicable.

F.5.15 MANAGEMENT OF IGNITABLE OR REACTIVE WASTE IN MISCELLANEOUS UNITS

PFSG does not have miscellaneous units (e.g., shredders); therefore, 40 CFR 264 Subpart X is not applicable.

F.5.16 MANAGEMENT OF INCOMPATIBLE WASTE IN MISCELLANEOUS UNITS

PFSG does not have miscellaneous units (e.g., shredders); therefore, 40 CFR 264 Subpart X is not applicable.

TABLES

TABLE F-1. INSPECTION CHECKLIST, FREQUENCY, AND PROCEDURES
PERMA-FIX OF SOUTH GEORGIA, INC.
VALDOSTA, GA

Facility or Equipment Item	Examples/Evidence of Potential Problems	Frequency of Inspection	Inspection Procedures
Security Equipment			
Fence	Holes allowing entrance of livestock or unauthorized personnel	Weekly	Visual/walk around perimeter of facility
Front Gate	Damaged by incoming truck/locked	Daily *	Visual
Two evacuation side gates	Unlocked, damaged	Daily	Visual
Warning Signs	Missing sign, defaced	Weekly	Visual
Closed Circuit TV Monitor	No picture, blocked view	Daily *	Visual
Safety and Emergency Equipment			
General Alarm System	Inoperative alarm, battery	Weekly	Sound the alarm
Intercom System	Inoperative, poor connection	Daily *	Make intercom call
Fire Control Equipment Fire Extinguishers and Fire Hydrants	Empty, low pressure	Monthly	Check pressure gauges
External Communication Systems (telephones)	Inoperative telephone line	Daily *	Test
Personnel Equipment (respirator, gloves, safety shoes, goggles/face shield, protective clothing, chemical cartridges for organic vapors and acid gases)	Adequate supply, torn respirator cartridges, shelf-life expiration date	Weekly *	Visual
Standard industrial absorbents (Sorb-All, Vermiculite, Absorbent Pigs, etc.)	Out of stock	Weekly	Visual
Sandbags	Torn or worn	Weekly	Visual
Shovels	Damaged or out of stock	Weekly	Visual
Flexible Hoses w/quick couple fittings	Out of stock, damaged	Weekly*	Visual
Recovery Drums	Corrosion, structural damage	Monthly	Visual
Van-Type Trailer	Operational	Monthly	Visual
Emergency shower & Eyewash	Water pressure, leaking, drainage	Weekly	Test
Fire Blankets	Torn or worn, out of stock	Monthly	Visual
Public address (PA) system	Power failure, speakers	Daily	Test
Emergency lighting system	Battery failure, lights	Daily	Test
First aid equipment & Supplies	Items out of stock or inoperative	Weekly	Visual
Decontamination Facilities	Operational	Monthly	Manual
150 H.P. Steam Generator	Operational	Monthly	Manual
350 H.P. Steam Generator	Operational	Monthly	Manual
Tractor	Operational	Monthly	Manual
Portable Pumps	Leaking, cracks	Monthly	Visual

TABLE F-1. INSPECTION CHECKLIST, FREQUENCY, AND PROCEDURES
PERMA-FIX OF SOUTH GEORGIA, INC.
VALDOSTA, GA

Facility or Equipment Item	Examples/Evidence of Potential Problems	Frequency of Inspection	Inspection Procedures
Drum Handling Storage, Loading and Unloading Areas			
Container Placement	Storage area access/aisle space properly stacked	Daily	Visual
Containers	Deteriorating, leaking, corroding or opened containers	Daily	Visual
Container Handling Equipment (Forklift, Pallets)	Operational, damaged, sufficient supply	Daily	Visual
Labeling on Containers	Missing, complete and adequate, DOT Hazard Class belongs to cell	Daily	Visual
Impervious base and ramp	Cracks, holes, spills	Daily	Visual
Debris, refuse and liquid accumulation	Presence can cause accident, mobilization of spills/leaks	Daily	Visual
Secondary containment system	Cracks, deterioration, wet spots, dead vegetation	Daily	Visual
Aisle space and primary roads within the facility	Blockages	Daily	Visual
Warning signs	Damaged, defaced	Daily	Visual
Drum scraper	Scraper or safety features not working	Weekly	Visual
Sump in Drum Storage Area #3	Presence of hazardous waste	Weekly	Visual
Container loading/unloading areas	Leaks, spills, damaged containers	Daily	Visual
Fence, gate, and lock	Operational, unlocked, damage	Daily	Visual
Pumps, valves, flanges	Leaks, cracks, damage	Daily * Monthly**	Visual, (Leak Detection Monitor)
Tank Storage Area and Ancillary Equipment			
Containment Walls, immediate surrounding area	Cracks, deterioration, wet spots, dead vegetation	Daily	Visual
Base or foundation	Cracks, spalling, uneven settlement erosion, wet spots	Weekly	Visual
Valves, pumps, flanges	Leaks, cracks, damage	Daily* Monthly**	Visual (Leak Detection Monitor)
Valve Fittings	Leaks, cracks, damage	Daily	Visual
High Level alarm	Functioning properly	Monthly	Operate detection component
Tank (externally)			
Tank roof	Malfunction of roof's seals corrosion, loss of metal thickness	Daily	Visual
Tank shell	Corrosion of vapor space, and liquid level line, cracking, bulges, holes loss of metal, seams	Daily	Visual
Plate Joints	Corrosion, deformation, cracking	Daily	Visual
Solvent Recovery Area			
Pumps, valves, flanges	Operational, leaks, spills	Daily* Monthly**	Visual
Portable Equipment			
Pumps, valves, hoses	Leaks, cracks, damage	Daily* Monthly**	Visual (Leak Detection Monitor)
Processing Areas in Drum Storage & Process Area	Leaks, cracks in containment floor	Daily	Visual

Notes:

* Indicates that the equipment is inspected prior to use and during period of operation

** Equipment will be inspected and monitored in accordance with 40 CFR part 264 Subpart BB. See Exhibit D-16

TABLE F-2a. FACILITY INSPECTION LOG SHEET - DAILY
PERMA-FIX OF SOUTH GEORGIA, INC.
VALDOSTA, GA

Facility or Equipment Item	Date	Time	Inspector Name	Type of Problem Identified	Remedial Action Taken	Date Remedial Action Implemented
Security Equipment						
Front Gate						
Closed Circuit TV Monitor						
Safety and Emergency Equipment						
Intercom System						
External Communication Systems (telephones)						
55-gallon steel drums						
Public address (PA) system						
Emergency lighting system						
Drum Handling Storage, Loading and Unloading Areas						
Container Placement						
Containers						
Container Handling Equipment (Forklift, Pallets)						
Labeling Containers						
Impervious base and ramp						
Debris, refuse and liquid accumulation						
Secondary containment system						
Fence, gate and lock						
Aisle space and primary roads within the facility						
Warning signs						
Pumps, valves, flanges						
Tank Storage Area and Ancillary Equipment						
Containment Walls, immediate surrounding area						
Valves, pumps, flanges						
Valve Fittings						
Tank (externally)						
Tank roof						
Tank shell						
Plate joints						
Solvent Recovery Area						
Pumps, valves, flanges						
Portable Equipment						
Pumps, valves						
Hoses						

TABLE F-2b. FACILITY INSPECTION LOG SHEET - WEEKLY
PERMA-FIX OF SOUTH GEORGIA, INC.

Facility of Equipment Item	Date	Time	Inspector Name	Type of Problem Identified	Remedial Action Taken	Date Remedial Action Implemented
Security Equipment						
Fence						
Warning Signs						
Safety and Emergency Equipment						
General Alarm System						
Personnel Equipment (respirator, gloves, safety shoes, goggles/face shield, protective clothing, chemical cartridges for organic vapors and acid gases)						
Standard industrial absorbents (Sorb-All, Vermiculite, etc.)						
Sandbags						
Shovels						
Absorbent pigs						
Flexible Hoses w/quick couple fittings						
Emergency shower & Eyewash						
First aid equipment & Supplies						
Tank Storage Area and Ancillary Equipment						
Base or foundation						

Notes:

* Indicates that the equipment is inspected prior to use and during period of operation

** Equipment will be inspected and monitored in accordance with 40 CFR part 264 Subpart BB. See Exhibit D-16

TABLE F-2c. FACILITY INSPECTION LOG SHEET - MONTHLY
PERMA-FIX OF SOUTH GEORGIA, INC.

Facility of Equipment Item	Date	Time	Inspector Name	Type of Problem Identified	Remedial Action Taken	Date Remedial Action Implemented
Safety and Emergency Equipment						
Fire Control Equipment Fire Extinguishers and Fire Hydrants						
Recovery Drums						
Van-Type Trailer						
Fire Blankets						
Decontamination facilities						
Tractor						
150 H.P. Steam Generator						
350 H.P. Steam Generator						
Portable Pumps						
Drum Handling Storage, Loading and Unloading Areas						
Pumps, valves, flanges						
Tank Storage Area and Ancillary Equipment						
Valves, pumps, flanges						
High Level alarm						
Tank (externally)						
Tank roof						
Tank shell						
Solvent Recovery Area						
Pumps, valves, flanges						
Portable Equipment						
Pumps, valves						
Runoff Control System						
Stormwater management structures						

Notes:

* Indicates that the equipment is inspected prior to use and during period of operation

** Equipment will be inspected and monitored in accordance with 40 CFR part 264 Subpart BB. See Exhibit D-16

EXHIBITS

EXHIBIT F-1

FIRE HYDRANT INFORMATION

GEORGIA
AUTOMATIC SPRINKLER
COMPANY, INC.

FIRE PROTECTION
1405 HARBIN CIRCLE
VALDOSTA, GA 31601
Phone: (229)247-9939 Fax: (229)247-0274

Perma-Fix
1612 James P. Rodgers Dr.
Valdosta, Ga.
12-16-25
Hydrant Flow Test
By- Buddy Hall

Time: 9:05 AM
Static: 60 PSI
Residual: 40
Flow: 1060 GPM

Thank you

Buddy Hall
Inspector / Sales
bhall@gaautomatic.com
229-375-4977

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G-1. Contingency Plan

G. CONTINGENCY PLAN

This section presents the Contingency Plan for the PFSG Facility, in accordance with 40 CFR 270.14(b)(7) and 264 Subpart D. The Contingency Plan is included as Exhibit G-1.

The intent of 40 CFR 264, Subpart D (Contingency Plan and Emergency Procedures) is to ensure that hazardous waste facilities treating, storing, or disposing of hazardous wastes have established and implemented the requisite planned procedures to be followed in the event an emergency situation should occur. The purpose of the requirements under 40 CFR 264, Subpart C (Preparedness and Prevention), which was described for the PFSG facility in Section F, is to ensure that the facility is designed and equipped to minimize the possibility of accidents and prevent the occurrence of emergency situations. The requirements under 40 CFR 264 Subpart D relate to the actions that are to be taken in the event of an accident.

G.1 GENERAL INFORMATION

This Contingency Plan is for PFSG located in the Azalea City Industrial Park, just north of Mud Swamp Creek, at 1612 James Rodgers Circle, in Valdosta, Georgia. The hazardous/industrial wastes are generated off-site and transported to the facility for storage and consolidation. Relatively small quantities of sludges are generated on site from consolidation activities.

PFSG is a privately owned corporation. A general site plan and a full description of the facility is contained in Section B. A description of the wastes handled at PFSG is contained in Section C.

G.2 EMERGENCY COORDINATORS

If an emergency situation develops at the facility, the discoverer should contact the Emergency Coordinator(s) listed in Exhibit G-1, Attachment CP-1. Attachment CP-1 will be updated with the names and contact information of Emergency Coordinator(s) once the facility is staffed. If the Primary Emergency Coordinator is unavailable, the Alternate Emergency Coordinator should be called. The Primary Emergency Coordinator and Alternate Emergency Coordinator have complete authority to commit all available resources listed in the Contingency Plan in the event of an emergency. In this Contingency Plan, Emergency Coordinator refers to either the Primary or Alternate contact. Responsibilities of the Primary and Alternate Emergency Coordinators are described in Exhibit G-1, Section 3.0.

G.3 IMPLEMENTATION OF THE CONTINGENCY PLAN

The decision to implement the Contingency Plan depends upon the presence of an imminent or actual incident that could threaten human health or the environment. The purpose of this section is to illustrate the criteria guidance

under which the Emergency Coordinator or Alternate makes this decision. The implementation procedures are discussed in Exhibit G-1, Section 4.0.

G.4 EMERGENCY RESPONSE PROCEDURES

G.4.1 NOTIFICATION [40 CFR 264.56(a)]

In the event of an emergency, the Emergency Coordinator or Alternate will be notified first; subsequently, all facility personnel, appropriate Federal, state, or local agencies, and fire or police departments will also be notified by the Emergency Coordinator or Alternate (See Exhibit G-1, Attachment CP-1). The Primary Emergency Coordinator will make decisions regarding all implementation actions. In the absence of the Primary Emergency Coordinator, the Alternate Emergency Coordinator will make the decisions regarding all implementation actions. Notification procedures are described in Exhibit G-1, Section 4.5.1.

G.4.2 IDENTIFICATION OF HAZARDOUS WASTES [40 CFR 264.56(b)]

The identification of hazardous materials is presented in Exhibit G-1, Section 4.5.2.

G.4.3 ASSESSMENT [40 CFR 264.56(c) AND (d)]

The Emergency Coordinator or Alternate will assess possible hazards, both direct and indirect, to human health or the environment. The importance of the assessment process cannot be over-emphasized because it determines the nature of safety equipment to be used, procedures and notification for assistance of outside sources. The Primary Emergency Coordinator and/or the Alternate Emergency Coordinator are also in direct charge of the process including feedstock (spent solvent) manipulations. They will be knowledgeable of the materials and the appropriate handling techniques. Hazard assessment procedures are described in Exhibit G-1, Section 4.5.3.

G.4.4 CONTROL PROCEDURES [40 CFR 264.52(a)]

Potential accidents fall under three general classifications: (1) fire and/or explosions; (2) spills or material release; and (3) floods. Natural disasters, such as earthquakes or hurricanes, are assumed to fall into one of these three classifications. Control procedures are described in Exhibit G-1, Section 4.5.4.

G.4.5 PREVENTION OF RECURRENCE OR SPREAD OF FIRES, EXPLOSIONS, OR RELEASES [40 CFR 264.56(e)]

Prevention and response procedures are described in Exhibit G-1, Section 5.0.

G.4.6 STORAGE AND TREATMENT OF RELEASED MATERIAL [40 CFR 264.56(f) AND (g)]

Storage and treatment of released materials are described in Exhibit G-1, Section 6.0.

G.4.7 INCOMPATIBLE WASTES [40 CFR 264.56(h)(1)]

Incompatible waste management is described in Exhibit G-1, Section 8.0.

G.4.8 POST-EMERGENCY EQUIPMENT MAINTENANCE [40 CFR 264.56(h)(2) AND (i)]

Post-emergency equipment maintenance procedures are described in Exhibit G-1, Section 9.0.

G.4.9 CONTAINER SPILLS AND LEAKAGE [40 CFR 264.171]

Container spill and leakage response procedures are described in Exhibit G-1, Section 10.0.

G.4.10 TANK SPILLS AND LEAKAGE [40 CFR 264.194(c)]

Tank spills and leakage response procedures are described in Exhibit G-1, Section 11.0.

G.4.11 SURFACE IMPOUNDMENTS SPILLS, LEAKAGES AND SUDDEN DROPS [40 CFR 270.14(b)(7) AND 264.227]

PFSG does not operate surface impoundments; therefore, this section of the RCRA Part B Permit application guidelines is not applicable.

G.5 EMERGENCY EQUIPMENT [40 CFR 264.52(e)]

Emergency equipment is described in Exhibit G-1, Section 7.0.

G.6 COORDINATION AGREEMENTS [40 CFR 264.37, 264.52(c) AND 264.53(b)]

Coordination agreements are described in Exhibit G-1, Section 12.0.

G.7 EVACUATION PLAN [40 CFR 264.52(f)]

The evacuation plan is described in Exhibit G-1, Section 14.0.

G.8 REQUIRED REPORTS [40 CFR 264.56(j)]

Required reports are described in Exhibit G-1, Section 15.0.

EXHIBIT G-1

CONTINGENCY PLAN

PERMA-FIX OF SOUTH GEORGIA, INC.

1612 JAMES P. RODGERS CIRCLE

VALDOSTA, GA 31601

EPA ID No. GAD093380814

GDNR HW Facility Permit No. HW-020(D)

December 17, 2025

PREPARED FOR:

Perma-Fix Environmental Services, Inc.
8302 Dunwoody Place, Suite 250, Atlanta, GA 30350

PREPARED BY:

GeoSouth Environmental Solutions, LLC
11250 Old St. Augustine Rd., Suite 15 PMB 333, Jacksonville, FL 32257

Project: PFSG-025-002

Contingency Plan

APPROVALS

Title	Signature/Date
EHSQ Manager	
Waste Acceptance Manager	
Operations Manager	
VP/General Manager	Kevin Schmuggerow Digitally signed by Kevin Schmuggerow Date: 2025.12.18 13:15:18 -05'00'

REVISION CONTROL

Number	Change Description

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1.0 SCOPE AND OBJECTIVES

This Contingency Plan (hereafter referred to as "the Plan") describes an organized course of action to be taken by Facility personnel or outside organizations in response to possible hazardous waste emergencies at the Perma-Fix of South Georgia, Inc. (PFSG) facility (Facility), located in Azalea City Industrial Park, at 1612 James P. Rodgers Circle, in Valdosta Georgia. In addition, the Plan lists emergency equipment to be maintained on-site and designates the primary and alternate Site contacts. This Plan is designed to satisfy the requirements stipulated in 40 CFR 270.14(b)(7) and 264 Subpart D. A site location map is provided on Figure 1. A site plan is provided on Figure 2.

The Plan is designed to be a stand-alone document that provides instructions and guidance for responding to Facility emergencies. The Facility was designed and will be operated in a manner to prevent spills, fires, and explosions, in accordance with all permits and licenses. Personnel are trained to immediately implement and execute the Plan whenever there is an imminent or actual fire, explosion, or release of hazardous waste or hazardous waste constituents. Additionally, the Plan will be implemented in the event of natural disasters or bomb threats.

Updated copies of the Plan will be posted within the Facility and maintained in the Facility Operating Record. Copies of the Plan and subsequent updates will be supplied to the state and local agencies that may be called upon to assist in the event of an actual emergency at the Facility. A copy of this Plan will be submitted to other agencies after receiving approval by the Georgia Environmental Protection Division (GEPD) of this Plan.

2.0 FACILITY OPERATIONS

PFSG will conduct commercial waste bulking, storage, and transfer facility operation at its Valdosta, Georgia facility. Waste managed on-site will include a wide variety of hazardous, industrial, hazardous and non-hazardous wastes. PFSG will separately blend (bulk) compatible liquid fuels for reuse (i.e., energy recovery) in permitted, off-site incinerators, industrial furnaces, boilers, etc. PFSG will also consolidate, repackage, and sort waste materials for shipment and off-site treatment and/or disposal.

Permitted activities at the Facility include a variety of chemical and physical waste treatment activities. Specifically, PFSG will receive, store, and treat hazardous waste. Permitted waste codes and waste constituents proposed for receipt and processing at this Facility are provided in Tables 1 and 2.

Fuel blending (bulking) operations will be conducted by direct fluid hose transfer of liquid fuels into the bulk storage tanks located within the Bulk Storage Tank Farm.

Additional information regarding facility operations relevant to contingency plan implementation are addressed in the procedures noted below.

3.0 SITE CONTACTS

This Plan identifies a primary and alternate site contacts as indicated in Attachment CP-1. The individuals identified are familiar with all aspects of PFSG operations, trained in Contingency Plan implementation, and are capable of making appropriate decisions under emergency circumstances. The primary and alternate site contacts have the authority to commit the resources of PFSG required to implement the plan. The site contacts also have the authority to shut down and restart processing areas and evacuate plant personnel. A site contact will be able to reach the Facility in a short period of time, should it be necessary to respond after regular business hours. If the evacuation of surrounding areas is advisable as determined by the Site contact, immediate notification will be made to appropriate local authorities and the Site contact (or his/her designee) will be available to assist appropriate officials decide whether surrounding areas should be evacuated.

In this Contingency Plan, Emergency Coordinator refers to either the Primary or Alternate contact.

Responsibilities of the Primary and Alternate Emergency Coordinators include:

- Assessment of an emergency situation.
- Implementation of Contingency Plan procedures as specified in this application.
- Notification of plant personnel, local emergency response agencies, National Response Center, and GEPD when appropriate.
- Identification and characterization of any released materials.
- Assessment of potential hazards to human health and the environment associated with the emergency situation.
- Implementation of facility evacuation, if necessary.
- Issue assignments of appropriate personnel to firefighting, spill cleanup, or other emergency response activities as necessary.
- Determine and implement necessary course of action to prevent recurrence of an emergency situation and return to normal operation.
- Arrange for treatment, storage, or disposal and ensure proper management of any materials generated as a result of the emergency situation.
- Arrange for cleaning or replacement of emergency response equipment.
- Conduct inspection of equipment and subsequent notification of GEPD and local authorities.
- Submit written report documenting the emergency and response activities to GEPD.

4.0 IMPLEMENTATION

The Plan will be implemented whenever an incident or emergency at the Facility threatens or has the potential to threaten human health, the environment, and public or private property. The designated site contact will implement the Plan in the event of an imminent or actual emergency. The site contact will also provide coordinated assistance to the internal personnel and outside organizations responding to the emergency incident. Criteria for implementation of the Contingency Plan at the Facility include the following scenarios and potential emergencies:

4.1 FIRES AND/OR EXPLOSIONS

- A large fire has been discovered and the fire is not extinguished using portable fire extinguishers;
- Facility personnel have exhausted locally available fire extinguishers on a small fire and the fire continues to burn or spread;
- A fire causes the release of toxic fumes affecting the surrounding area;
- The fire spreads, which could possibly lead to ignition of materials at other locations on the site or could induce heat-induced explosions.
- The fire could possibly spread to off-site areas.
- A fire occurs in any of the hazardous waste management areas that is not immediately extinguished.
- Use of water or chemical fire suppressant could result in contaminated runoff;
- An imminent danger exists that an explosion will cause a safety hazard because of flying fragments or shock waves;
- An imminent danger exists that an explosion could ignite other hazardous waste at the facility;
- An imminent danger of an explosion exists that could result in release of toxic material; and/or,
- An explosion has occurred.

Emergency procedures for fire and explosion incidents are detailed on Attachments CP-2A and CP-2B.

4.2 SPILLS OR RELEASES

- A spill exceeds the size or seriousness that can be controlled and remediated by Facility personnel using portable equipment available in the immediate area of a spill or release;
- The spill could result in release of flammable liquids or vapors, thus causing a fire or gas explosion hazard;
- The spill could cause the release of toxic liquids or fumes;
- The spill is in an uncontained area;
- Vapors/fumes are visually observed from the containers/tanks at the facility, which could endanger human health or the environment; and/or,
- A spill or uncontrolled reaction has caused or could cause the release of hazardous waste or hazardous waste constituents to the air, surface water, groundwater, or soil.

Emergency procedures for spills and unplanned releases are detailed on Attachment CP-3.

4.3 NATURAL DISASTERS

A hurricane, tornado, or severe weather event is forecast for the immediate area of the Facility or has occurred at the Facility.

4.4 BOMB THREAT

A bomb threat concerning the Facility is received by the Facility personnel or by other persons who make the event known to the Facility personnel.

4.5 EMERGENCY RESPONSE PROCEDURES

4.5.1 NOTIFICATION

Facility personnel will immediately notify the site contact by telephone or intercom when an actual or imminent emergency is identified. If the emergency occurs after regular business hours, the site contact (or designated alternate) will be immediately notified using the telephone numbers listed in the Site contact List (Attachment CP-1). The Primary Emergency Coordinator will make decisions regarding all implementation actions. In the absence of the Primary Emergency Coordinator, the Alternate Emergency Coordinator will make the decisions regarding all implementation actions.

In the event of any fire or explosions, the Emergency Coordinator or Alternate will contact the GEPD and the Valdosta Fire Department unless the fire is confined to a small area, can be extinguished easily by facility personnel, and there is no opportunity for the fire to spread.

In the event of a spill or release of hazardous material, the Emergency Coordinator or Alternate will contact the GEPD and Valdosta Fire Department for aid in response if the spill or release has occurred outside the containment areas and cannot be remediated immediately by facility personnel. If the spill reaches navigable water, the USEPA Region IV Response Center will be notified. In the event of a natural disaster, the Emergency Coordinator or Alternate will contact the Lowndes County Emergency Management Agency if the effects of the event have resulted in damage which cannot be corrected by facility personnel or which threatens human health or the environment. In the event of a potential flood, the Emergency Coordinator or Alternate will contact the National Weather Service and the U.S. Army Corps of Engineers. In the event of a personal injury that cannot be treated with the available first aid equipment at the facility, the Emergency Coordinator or Alternate will contact the South Georgia Medical Center. The GEPD will be notified immediately whenever there is an imminent or actual emergency requiring implementation of the Contingency Plan, as determined by the Emergency Coordinator or Alternate.

Additionally, all site contacts have the capability to maintain contact by radio to key members of the process technician team. Copies of the Contingency Plan, which contains the Site contacts list, are posted in several areas of the Facility in hard cover binders in close proximity to processing, storage, and certain administrative areas.

Emergency notification and reporting information is further detailed in Attachment CP-4.

4.5.2 IDENTIFICATION OF HAZARDOUS MATERIALS

As a precaution, all hazardous waste received by PFSG is assumed to be ignitable and toxic. All smoke and fumes from fires and explosions will be assumed to be hazardous. The atmosphere around all spills will be assumed to be toxic and potentially reactive until determined to be otherwise. The site contact(s) or his/her alternate will make an inspection of the material(s) involved in an incident and determine the next course of action.

Whenever there is a release, fire, or explosion, the site contact(s) will (to the extent possible) immediately identify the character, source, amount, and aerial extent of any released materials. He/she may do this by visual observation (e.g., truck placards, container labels), review of facility records, and (if necessary) by chemical analysis. Facility records available for review include manifests, and waste analysis data on-site for at least three years, and then archived off-site. The site contact may consider incident character (i.e., size of spill or type of incident) as well as weather conditions when coordinating response actions.

4.5.3 HAZARD ASSESSMENT

As part of the Facility training program, Facility personnel are trained to assess the potential emergencies for which they have the capacity to respond. To assess possible hazards and determine appropriate response measures, the Emergency Coordinator or Alternate will obtain available information regarding any hazardous materials involved, including manifest information, container labeling, generator's profile sheet, and analytical data. Safety Data Sheets that will be maintained at the facility, will be used to identify information regarding the subject materials on the potential for generation of harmful gases, heat induced explosions, ignitability, toxicity, or corrosivity. This information would also be used to determine the best method for containing, extinguishing or cleanup of a spill or fire. The Emergency Coordinator or Alternate will obtain information on wind direction and speed, any imminent storms or lightning activity such that the effects of these weather conditions can be considered when evaluating the potential for migration of airborne releases, dilution, and runoff of spilled material outside a covered area with stormwater, and other effects.

The hazard assessment process includes evaluating the need for evacuation of surrounding areas. If the Emergency Coordinator or Alternate determines the facility has had a release, fire, or explosion that may threaten human health or the environment outside the facility, they will immediately notify appropriate local authorities and advise them concerning the appropriateness of evacuation. They will also immediately notify the National Response Center at 1 (800) 424-8802 and report per 40 CFR 264.56(d). The report shall include:

1. Name and telephone number of reporter;

2. Name and address of facility;
3. Time and type of incident;
4. Name and quantity of material(s) involved, to the extent known;
5. The extent of injuries;
6. The possible hazards to human health, or the environment, outside the facility.

The Emergency Coordinator or Alternate will order partial or full facility evacuation under the following circumstances:

- Fire that cannot be immediately controlled by facility personnel
- Spill or release has occurred resulting in a vapor cloud
- Occurrence of an explosion
- Bomb threat

If more serious events are immediately recognized, or the event exceeds the capabilities of portable extinguishing or spill control equipment, the site contact will notify local authorities and activate the on-site fire alarm. Upon arrival of the local authorities, the site contact will provide information regarding the Facility and available materials to prevent the spread of contamination. The local fire or emergency response official, upon arrival at the Facility, shall have primary control and authority (including evacuations) during an emergency situation at the Facility.

The affected employees' supervisor will assess medical emergencies. Either the Facility's local medical provider or a local emergency medical facility will treat any employee who is injured to the extent where the injury cannot be remedied by simple first aid.

Bomb threats will be treated as actual emergency events until determined otherwise. The Valdosta Police Department will make further assessments and recommendations to the Facility site contact.

The site contact, or an individual he/she designates, will assess the potential environmental effects of an incident using the following criteria:

- Potential effects of gases, vapors, and smoke.
- Potential effect of water run-off from fire control.
- Potential effect of fire-fighting foams or chemicals.
- Potential effect on local surface water or groundwater.

- Potential effect on human and animal health or life; inside and outside the facility.

4.5.4 CONTROL PROCEDURES

4.5.4.1 FIRE AND EXPLOSION

Facility employees are trained in fire prevention and response. Employees are trained to respond to small fires with portable fire extinguishers. A list of proposed emergency response equipment is provided on Attachment CP-5. The Valdosta Fire Department will respond to structural or large fires.

The HWMUs will be easily accessed by fire-fighting and other emergency vehicles and equipment. The on-site roadway system surrounds the HWMUs at the facility and is paved with concrete. These roads are appropriate for fire-fighting vehicles and allow access directly (within a few feet) to all facility areas. Valdosta Fire Department response time is 3 to 5 minutes.

PFSG employees will be on standby during all general facility emergencies. During times of power failure or severe weather, trained fire-protection personnel will be assigned to protect personnel and property. If a fire should break out, concentration will be placed on preventing the fire from spreading to nearby areas. The fire-fighting effort will be carried out by the trained employees until outside assistance has arrived

Specific instructions for responding to a fire and explosion at PFSG are contained in Attachments CP-2A and CP-2B.

In the event of fire or explosion, the following actions will be immediately taken:

- Alarm will be sounded.
- All work will cease, and all non-essential personnel will be evacuated to the designated assembly area.
- All valves and conveyance systems in the processing and storages areas will be secured. All loading, processing, and unloading operations or other site operations in the affected area will be shut down.
- All injured persons will be removed to safety, and medical treatment will be administered by qualified personnel. All other personnel not actively involved in firefighting will exit through the main PFSG facility gate and gather at a safe distance determined by the Emergency Coordinator or Alternate in charge. Note, the Primary and Alternate Emergency Coordinator will also determine the safe distance in the other emergency situations (mainly spills or material release because flooding is a very remote possibility at this site as discussed in

Section B.3.2), as well. If the emergency allows, the gathering place would be at the office. Rally points are shown in Figure 3.

- Ignitable waste and material will be removed from the affected area if possible.
- The site contact(s) and local authorities will be notified.

Because fire is a potential hazard in spills of flammable or ignitable materials, all possible sources of ignition will be eliminated to the greatest extent possible. Vehicular traffic and hazardous material or work activity in the area will cease until the spill is contained and safety is restored. If spilled materials are flammable or ignitable, the trained employees will respond with fire suppression equipment. Flushing with large quantities of water will be avoided, if possible. Only compatible wastes are stored in the same containment areas; hence, there should be no potential for mixing of incompatible materials.

Emergency procedures for fires have been developed by PFSG to deal with Class A, B, and C fires. The following paragraphs provide the details of those procedures.

Any employee of the facility who observes a fire must take the following actions:

General Considerations:

- Alert persons in the area of the existence of a fire.
- Notify supervisor and Emergency Coordinator or Alternate.
- Do not attempt to extinguish the fire without assistance unless it is a very small fire of known origin (paper, trash, etc.).
- Be sure the proper method for extinguishing a fire is being used. Be familiar with the capability of the extinguisher located near the work area (Class A, B, or C). Do not use water on oil or electrical fires. Use good judgment. If the fire is a very small trash fire, summon assistance and extinguish immediately using the proper extinguisher (Class A).

Electrical Fires (Class C):

The action procedures in the event of an electrical fire are outlined as follows:

- Notify person around a fire.
- Give the alarm.
- Notify Emergency Coordinator or Alternate.
- Evacuate the area. Maintain a safe distance between all personnel and the danger.
- The supervisory personnel will shut down the power.
- Extinguish the fire with an approved Class C extinguisher for an electrical fire.

- Should the fire seem uncontrollable or be located in the Georgia Power Company circuits, summon assistance from:

  Valdosta Fire Department (229) 333-1836 or Dial 911

  Georgia Power Company (888) 891-0938
- Do not use water to extinguish the fire. Only use approved Class C fire extinguisher.
- Never handle downed electrical wires or other components.
- Never take independent action. Always give the alarm and summon assistance.

Oil Fire (Class B):

The potential of an oil fire exists because oil wastes are handled at PFSG. Any employee at the facility who observes an oil fire must do the following:

- Alert persons in the area of the existence of a fire and evacuate to a safe area.
- Notify Emergency Coordinator or Alternate.
- The Emergency Coordinator or Alternate should determine extent of fire and hazard to personnel. Determine hazard to operation.
- The best way to extinguish a small oil fire is with a handheld Class B fire extinguisher suitable for oil fires.

Class D Fire:

Extinguishing a Class D fire should never be necessary at the PFSG site. These fires are caused by combustible metals, such as lithium, magnesium, titanium, zinc, sodium, and potassium, which are not handled at PFSG.

Procedure for Building Fire:

Any employee of the facility detecting a fire in a building or in such other location as to constitute a threat to building or occupants should take the following actions.

- Supervisor, Emergency Coordinator or Alternate, or other staff member should activate the signal, which can be accomplished by voice or public address system announcement or by siren alarm, for evacuating the building.
- At the evacuation signal, all occupants should evacuate the building by the closest unblocked exit. All windows and doors should be closed as a phase of evacuation action.

  The Emergency Coordinator or Alternate, or in their absence, the supervisor of a particular area, will notify the Fire Department (**Dial 911**), assure themself that building is evacuated, and determine location and intensity of fire.

Because of the ways that wastes are handled, major releases of ignitable or toxic material are very unlikely. However, the contingency operations recommended in "A Guide for Preparing RCRA Permit Applications for Existing Storage Facilities" are appropriate (USEPA 1982). These procedures including evacuation distances, modified for use at PFSG are adopted and given in the following pages.

All ignition sources within this area will be eliminated, and use of motorized vehicles within this area will be restricted or eliminated to help avoid ignition of the vapor. Such ignitions can cause a flashback to the source, and a larger problem than that related to the initial explosion and fire might develop. If the probability of an impending explosion is high, the entire area within a 2,000-foot radius of the source will be evacuated by the appropriate city, state or federal authorities.

Firefighting will not be done at the risk of injury to the persons involved; however, early containment of fires can significantly decrease total damage. Notification procedures are given in Attachment CP-4.

Area evacuation will only be necessary in case of a major fire or explosion. Specifics are outlined in Section 14.0, Evacuation Plan. All personnel will be trained in evacuation procedures and means of exit from their respective work areas.

Until evacuation is signaled, personnel who are not in an affected area will stay in their respective work areas. Contract personnel and visitors will be cleared from the facility and instructed to report to the office or outside rally points (Figure 3).

The Valdosta Fire Department will determine when the emergency has passed and consult with the Emergency Coordinator or Alternate before the "all clear" signal is given. All equipment used in the emergency must be cleaned and fit for use prior to resumption of operation in the affected areas.

For a small, incipient fire involving drums whose contents are not known (e.g., labels are not legible due to fire), the first attempt would involve using a multi-purpose fire extinguisher (i.e., ABC type). If unsuccessful, a Class D extinguisher will be used next. If this attempt fails, then the Emergency Coordinator or Alternate will direct employees to evacuate from the affected area.

For fires that are expected to create toxic gases, as determined by the Emergency Coordinator or Alternate, and that threaten human health or the environment, the Emergency Coordinator or Alternate will advise the Fire Department about it and will assist the local Fire Department in follow-up actions, as directed by the Fire Department.

4.5.4.2 MINOR SPILLS

Minor spills may occur during waste sampling, equipment maintenance, waste transfer, and treatment operations. Waste is managed throughout the Facility within secondary containment structures. Therefore, minor spills have minimal potential for off-site migration to the local environment. In most cases, these spills occur where adequate ventilation is present to dissipate any harmful vapors. These spills can generally be resolved using absorbent pads or materials.

4.5.4.3 MAJOR SPILLS

Major spills may result from overturned containers or ruptures in the storage tank, containers, piping, or hoses. Secondary spill containment has been installed around hazardous waste treatment process areas and storage locations within the Facility.

In the event of a major emergency involving a hazardous waste spill, the following general procedures will be used to allow a rapid and safe control response to the situation.

If an employee discovers a hazardous waste spill or storage area problem resulting in a release, they will immediately report it to the Emergency Coordinator or Alternate.

When contacted, the designated Emergency Coordinator or Alternate will obtain the following information:

- The material spilled or released.
- Location of the release or spillage of hazardous material.
- An estimate of quantity released and/or the rate at which it is being released.
- The direction in which the spill or vapor or smoke release is heading.
- Any injuries involved.
- Fire and/or explosion or possibility of these events.
- The area and materials involved and the intensity of the fire or explosion.

This information will help the Emergency Coordinator or Alternate assess the magnitude and potential seriousness of the spill or release. If the accident is determined to fall within the company's emergency response capabilities, the Emergency Coordinator or Alternate will contact and deploy the necessary facility personnel.

When there has been a spill or release to the environment, the Emergency Coordinator or Alternate will contact the GEPD. When there has been a spill or release that could threaten human health or the environment outside the facility, the Emergency Coordinator or Alternate will also notify the National

Response Center. If there is a threat that the Emergency Situation may intensify or if it is determined that facility personnel are not capable of adequately responding to the event, additional agencies will be contacted from the list in Attachment CP-4.

The initial response to any emergency will be directed toward protection of human health and safety and then the environment. Upon notification of a spill or release, the Environmental Coordinator or Alternate should alert personnel of the emergency situation by voice or public address system announcement or by sounding the alarm. Identification, containment, treatment, and disposal assessment will be the secondary response.

PFSG is located within a heavy industrial park with no nearby residential properties. This will be a remote event given the precautions taken with the waste handled and stored on-site. Winds in the area tend to vary. Assessment of meteorological conditions are accomplished by inquiry of National Weather Service online resources (https://forecast.weather.gov/data/obhistory/KVLD.html), or by calling the Valdosta Airport at (229) 333-1833.

If the Emergency Coordinator or Alternate determines that the company is unable to handle the emergency, then local, state, and/or federal authorities will be notified of the situation. Evacuation of all potentially affected facility areas will be initiated as soon as possible.

The following guidelines will be used in case of an accidental episode involving waste materials. These are general guidelines, and circumstances may dictate some alterations to these procedures.

Almost all waste spills and leaks are easily contained due to the design of the container storage facility and the tank farm area. Small spills occurring in these areas are cleaned up manually using absorbents, portable pump, if necessary, and/or 55-gallon drums. The source of the leak will be identified and isolated, if possible, by closing valves and shutting off pumps. A bucket or pail may be used to contain the leak. Absorbent will be used to contain and absorb the spill material. A portable pump or shovel will be used to remove the material to a 55-gallon drum.

For all large spills, releases, or serious leaks, the following would serve as the PFSG guidelines:

- Any person discovering a leak or spill will first attempt to contain the release and its source. Flow of liquids or gases from processes or equipment will be stopped, and valves will be closed to isolate the source of the leak or spill. After assessing the magnitude of the incident, the person will provide the Emergency Coordinator or Alternate with the following information:
    - Person(s) injured and seriousness of injury.

- Location of the spill or leak, material involved, and source (drums, etc.).
- The approximate amount spilled, an estimate of the liquid and/or gas discharge rate, and the direction the liquid flow or gaseous cloud is moving.
- Whether or not a fire is involved.

Next, the Emergency Coordinator or Alternate will:

- Initiate evacuation of the hazard area. For small spills or leaks, isolate at least 50 feet in all directions. For large spills, initially isolate at least 100 feet in all directions, and keep all persons upwind of the spill.
- Obtain medical attention for any injured persons. It may be helpful to instruct someone in initial first aid procedures. Then call the hospital.
- Call the fire department if a fire is involved that cannot be extinguished by facility personnel. Fight small fires with dry chemicals, carbon dioxide, or foam, and large fires with water spray, fog, or foam. Keep heat-exposed containers or tanks cooled with water spray. No reactive wastes are accepted at PFSG; thus, there should be no danger of reaction of the stored material with water. Drums may also be moved if threatened by a fire source. **If a rising sound comes from a tank or drum, or begins to discolor, withdraw from the area immediately.**
- Dispatch emergency personnel to the site to take the appropriate action.
- Contact the proper authorities (Attachment CP-4) if the spill or release is large. Contact local authorities first so that, if necessary, downstream water users and/or persons downwind of the vapor can be notified and evacuated, if necessary. If a large spill occurs, the initial evacuation area downwind should be 0.2 mile long (approximately 1,000 ft) by 0.1 mile wide (approximately 500 ft).

Cleanup personnel will then:

- Ensure that all persons not participating in the emergency response are removed from the hazard area.
- Use protective clothing and equipment.
- Given flammable or ignitable waste involvement, remove all ignition sources, and use spark- and explosion-proof equipment and clothing in containment and cleanup.
- If possible, stop the leak. Stop any liquid flow by closing valves or shutting off pumps, if not done previously. Materials will be kept on hand for temporary repairs, such as pails for temporarily containing leaking material, wrenches or other repair tools, welding equipment, and replacement valves and flanges.

- Remove any surrounding materials that could be damaged by contact with materials in the waste. Determine the major components in the waste at the time of the spill.
- Use absorbent pads, booms, earth, sandbags, and other inert material to contain and absorb the spill material.
- If wastes reach a drainage ditch, try to dam the outfall to the ditch by using sand, earth, sandbags, etc. If this is accomplished, dilute wastes in the ditch with large quantities of water and pump this material into temporary holding tanks or drums as soon as possible. If a spill enters a stream or ditch, use absorbent booms and sweeps around the outfall to contain and absorb water-insoluble organics.
- Place all containment and cleanup materials in drums for proper disposal. Some items, such as absorbent rags or booms, may have to be cut up.
- Place all recovered liquid wastes and contaminated soil in drums for proper disposal. Specific instructions for responding to a spill or unplanned release at the Facility are contained in Attachment CP-3, Emergency Procedures for a Spill/Unplanned Release. Attachment CP-3 includes a step-action table that summarizes those activities that should be taken immediately upon the discovery of a spill or release in any one of the process areas.

4.5.4.4 NATURAL DISASTERS

The most probable natural disasters to affect the Facility would be either a tornado or a hurricane. Warnings of approaching tornadoes and tropical storms/hurricanes will be received from the National Weather Service or local media. A NOAA emergency weather radio is kept in the offices and monitored during business hours for this purpose.

With tornadoes, there is usually little time to make preparations. The only emergency action that can be taken during a tornado warning is to have all employees move to the center of the building they are in. All employees working outside will be notified and required to move inside to a safer location.

Early warning is possible with tropical storms/hurricanes. If it becomes apparent that a tropical storm or hurricane may impact the Facility, the following tasks will be completed:

- Daily entries to the operating record will be made documenting the path/progress of the storm. This will include storm-tracking maps from weather agencies, written warnings from weather services, etc.
- If the forecast predicts a tropical storm or hurricane force winds (over 39 miles per hour) for the Facility, the following steps will be taken:
    - All double-stacked pallets of drums in the open warehouse will be placed on the floor.

- Any empty B-25 waste containers on site will be staged within the bermed processing areas to minimize damage caused by flying debris during high winds.
- All outside roll-off containers will be inspected to verify that covering tarps are secure.
- Containers subject to wet weather damage will be covered in plastic (e.g., fiber containers).
- Any equipment/supplies and other loose objects outside the main buildings will be brought inside, such as empty drums, over-packs, forklifts, spill kits, etc.
- Maintenance will verify that portable pumps are serviced and ready for use.
- Emergency response equipment (respirators, protective clothing, gloves, etc.) that might be needed to respond to a spill/fire/release will be placed in a location easily accessible to responders, such as under the front stairwell.

After the event is over and it is safe to go outside, site contacts will tour the facility to evaluate damage, if any, and implement the Contingency Plan as needed.

4.5.4.5 BOMB THREATS

All bomb threats will be reported to the site contact or company officials and subsequently to the Valdosta Police and Fire Departments. The Facility will be evacuated, and local authorities may conduct a bomb search. The Facility will remain unoccupied until the local authorities and site contacts determine the threat no longer exists.

4.5.4.6 POWER OR EQUIPMENT FAILURE

In the event of a power failure, all transfer pumps and treatment operations will stop. Existing automatic valves inherent in the design of the fluid transfer pumping equipment prevent reversal of flow in the fluid transfer lines. The container storage facilities are not rendered unsafe during a power failure. The site contact(s) and Facility maintenance personnel will survey potential damage resulting from a loss of power. Equipment will be repaired as soon as possible after power is restored. If equipment is beyond repair, it will be properly disposed or managed as scrap.

Power failure will not be a factor for container treatment operations since these operations are manually operated. Therefore, in the event of a power failure, the process will be shut down, and all container(s) will be closed until safe processing can be resumed. No other facility operations are anticipated to potentially result in safety or damage problems if interrupted by a power outage.

Emergency exit signs and lighting will be provided at critical locations throughout the facility and will be supplied with battery-backup power units providing up to 90 minutes reserve power. The Facility is not equipped with automatic emergency backup generators.

Equipment failure and malfunction will be recorded in the operating record. Maintenance personnel will check and repair malfunctioning equipment as needed. Equipment and instrument calibration will be performed as needed by qualified individuals to minimize the potential for equipment failure, or use of equipment in an "out of calibration" condition. The facility inspection schedule and inspection log sheets provide a mechanism for inspection of tanks and accessories and minimizes the potential for equipment failure and potential releases to the environment. Most equipment failures would not result in any release of hazardous constituents to the environment. In addition, storage and treatment areas are provided with secondary containment systems designed to prevent migration of released materials to environmental media. In the event that equipment failure results in a release, the incident response procedures outlined in this Contingency Plan are designed to address the most likely possible scenarios.

5.0 PREVENTION OF RECURRENCE OR SPREAD OF FIRES, EXPLOSIONS, OR RELEASES

In the event of a fire, explosion, or release, does not reoccur or spread to other facility areas, the following steps will be followed:

- The bulk storage tanks will be equipped with a high-level alarm system to prevent overfilling. The proper functioning of this system also will mitigate the possibility of a recurrent emergency situation.
- If not done previously, the operation of processes and equipment will be stopped.
- Emergency Coordinator or Alternate will direct facility personnel to monitor areas of the facility visually or otherwise for any signs that may indicate that a reoccurrence or spread of the incident is likely.
- If not done previously, spilled material and/or contaminated absorbent will be collected and removed to containers.
- These containers, along with other containers of waste in the area, will be removed to facilitate further cleaning, if necessary, or to isolate materials from a heat source.
- Facility personnel will stand by, at the direction of the Emergency Coordinator or Alternate, with fire extinguishers and will use water to cool equipment or containers that may still be at excessive temperatures from a previous fire or explosion.
- Facility personnel will tour affected areas of the Facility every two hours, inspecting for possible recurrences of fire or material release until the "all clear" determination has been announced.

6.0 STORAGE AND TREATMENT OF RELEASED MATERIAL

If PFSG halts operations in response to a fire, explosion, or release, the site contact will visually monitor for potential leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever appropriate.

Immediately after an emergency, the site contact must provide for the treatment, storage, or disposal of recovered waste, contaminated soil, or surface water, or any other material that results from a release, fire, or explosion at the Facility.

The equipment that will be available for containment and cleanup of a hazardous waste release is listed in Attachment CP5.

Collected waste, contaminated soil/surface water, or other material resulting from release response will be stored in a designated storage area (prior to treatment on-site or shipment off-site) based on the identity of the waste and conditions at the Facility. If the recovered material cannot be processed on-site, it will be characterized and disposed of properly in an approved off-site hazardous or non-hazardous waste management facility, as applicable. In most cases, the material will be containerized and stored in container storage areas used for management of the original waste. If incident conditions preclude storage in standard storage areas, temporary areas will be designated in accordance with the requirements of 40 CFR 262.34. In some cases, liquid waste may be collected directly onto a tanker and shipped off-site for proper disposal.

7.0 EMERGENCY EQUIPMENT

A list of emergency equipment available on-site is provided in Attachment CP-5, Emergency Equipment List. Emergency equipment, when not in use, will be located at the office/laboratory. Fire extinguishers and fire blankets will be located at the container storage area, tank farm, processing area, and office/laboratory. Locations and sizes of proposed fire extinguishers are shown on Figure 3. The facility will employ several mechanisms for fire control. The fire extinguishers will be dry-chemical ABC Types. Type A is capable of extinguishing fires involving ordinary combustible materials such as wood, cloth, paper, rubber, and many plastics. Type B is capable of extinguishing fires involving flammable liquids, solvents, oils, greases, tars, oil-based paints, lacquers, and flammable gases. Type C is capable of extinguishing fires involving energized electrical equipment. All fire extinguishers will comply with National Fire Code standards for portable fire extinguishers and will be inspected after each use or at least monthly. Records of these inspections are kept in the operating log.

Equipment for use in containing and cleaning up spilled hazardous wastes will be stored in strategically located areas (i.e., near the warehouse entry into the office building and at the lab area). A list of equipment and materials that will be stored and maintained is listed in Attachment CP-5, along with the function and location of each.

First aid supplies at the first aid station will include the following:

- Bandage Materials: Band Aids, Gauze Pads and Rolls, and Adhesive Tape
- Butterfly Bandages
- Antibacterial Ointments
- Splints
- Aspirin
- Emetic - syrup of Ipecac
- Local and Topical Anesthetics
- Eyewash Bottle and Solution
- Eye Patches

Emergency eyewash and shower stations will be located at the north and south ends of the tank farm area. Each unit will consist of a drench showerhead with “panic bar” - operated frost-proof valve, and an eyewash with a dirt cover and “panic bar” - operated frost-proof valve. A sign reading "EMERGENCY SHOWER AND EYEWASH FOUNTAIN" will be posted at each unit.

Protective clothing and equipment will be provided to protect employees during normal and emergency operations. Hard hats, protective eyewear, and steel-toed boots or shoes are the minimum protective clothing required. Other protective clothing equipment to be available on site will include:

Clothing:

- Tyvek Aprons or Coveralls
- Rubber and Neoprene Boots (ANSI 41.1)
- Chemical-resistant Suits (Level D protection)
- Polyethylene or neoprene gloves

Equipment:

- Face Shields and Extra Protective Eyeglasses (ANSI-Z87.1)
- Hard Hat (ANSI Z89.1 or Z89.2)
- Half-Face Chemical Cartridge Respirators w/Cartridges for Organic Vapors

This equipment will be located outside the office for easy access by personnel. It provides adequate personnel protection for use with the waste types accepted at PFSG.

A fire alarm system will be utilized at the plant site. The system will have an audible siren that can be heard throughout the plant, in addition to phone-to-phone communication. Available decontamination equipment will include high-pressure water cleaner(s).

Emergency communications will be handled by direct vocal contact, public address system, or intercom system. The plant site is relatively small, so direct vocal contact is often the most expedient method. The public address system will allow announcements to be broadcast from the office and heard throughout the entire plant in addition to telephone communications.

The site contact will supervise Facility personnel in the cleanup and treatment of hazardous wastes after the emergency is mitigated. If an outside emergency response/cleanup contractor is required, the site contact will interface with the outside contractor to ensure proper response or cleanup in accordance with procedures in the Contingency Plan and with Facility permits and licenses.

Corrosive materials will be neutralized in place, then absorbed and containerized. All others will be absorbed (if liquid) and containerized, followed by waste characterization, and, if necessary, analysis and shipment off-site for disposal. Large volumes of liquids may be pumped into containers or tanker trucks for appropriate management.

8.0 INCOMPATIBLE WASTE

The site contact will ensure that (in the affected area(s) of the Facility) no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed. Depending on the situation, this may require isolation of certain classes of material on-site, or loading and shipping certain classes of material off site. If any spill or release occurs in a containment area, this area will be roped off or posted as a restricted area until cleanup procedures are completed. The area would not be reopened for storage or processing until the Emergency Coordinator or Alternate has issued approval.

The container storage area is designed such that only compatible wastes will be stored in the same containment area. Thus, there should be no potential for accidental mixing of incompatible wastes. Only compatible materials will be processed together

9.0 POST-EMERGENCY EQUIPMENT MAINTENANCE

All emergency equipment listed in Attachment CP-5 and used during an emergency will be replenished or cleaned and inspected for integrity before operations are resumed.

After an incident, non-disposable emergency equipment listed in this Contingency Plan will be cleaned and made fit for its intended use and inspected. The GEPD and other state and local authorities will be notified that post-emergency equipment maintenance has been performed before operations will be resumed. Equipment used for emergency response will be decontaminated by steam cleaning, water washing, or other appropriate method. Used fire extinguishers will be re-charged, and depleted supplies will be restocked. Appropriate decontamination methods will be chosen based on the manufacturer's recommendation and/or the type/quantity of contamination present. Disposable equipment will be properly managed, and decontamination residues will be managed in accordance with 40 CFR 262.34.

10.0 CONTAINER SPILL AND LEAKAGE

Leaking containers will be overpacked into non-leaking secondary containers until processed; or the material in the leaking container will be transferred into another appropriate DOT container. No attempt will be made to repair leaking containers. Waste that leaked from a container will be absorbed and managed and disposed of appropriately.

The waste management processes will be conducted in areas equipped with secondary containment. Debris treatment, as well as container treatment activities, is conducted within secondary containment. Spills will be managed in the same manner as tank releases discussed below. Incidental spills will be removed from containment upon detection. Containment areas are subject to routine inspections to facilitate the detection of and timely response to leaking containers or accumulated liquids.

11.0 TANK SPILLS AND LEAKAGE

The bulk storage tanks at the Facility will be located within secondary containment in the Bulk Storage Tank Farm. Spills will be absorbed and managed as hazardous waste for proper disposal. If the tank itself develops a leak, the remaining waste will be pumped from the tank into containers, or directly into a tanker truck. The tank will then be assessed by a Georgia registered professional engineer and either repaired or closed in accordance with the approved closure plan contained in the Facility's Part B permit.

The Waste Bulking and Unloading Area is also equipped with secondary containment. Spills associated with bulk tanker truck deliveries will be managed in the same manner as tank releases discussed above. Incidental spills will

be removed in a timely manner. Additionally, these areas are subject to routine inspections to facilitate the detection of and timely response to leaking containers or accumulated liquids.

12.0 COORDINATION AGREEMENTS

Arrangements will be made with the following state and local authorities to provide emergency assistance to the facility:

NAME OF ORGANIZATION	FUNCTION
• City of Valdosta Fire and Rescue Department	• Respond to fires, explosions, spills, or releases
• City of Valdosta Police Department	• Primary responder for plant security & traffic control
• Lowndes County Sheriff's Office	• Secondary responder for plant security & traffic control
• South Georgia Medical Center	• Emergency medical treatment
• State of Georgia Department of Natural Resources Emergency Response Unit	• Assist in emergency response coordination efforts

Coordination agreements are intended to document each emergency response organization's ability and willingness to assist the PFSG facility in the event of an emergency incident.

Complete copies of the Plan after approval from GEPD will be sent to the local police and fire departments, nearby hospital, emergency response contractor, and state and local emergency response teams to familiarize them with the Facility and those actions needed in case of an emergency. Receipt of the plan will be confirmed by those agencies listed in Attachment CP-4. These agencies will be asked to review and comment on the plan. A copy of the final plan will be maintained at the PFSG facility. Documentation of each organization's acceptance or refusal to enter into a coordination agreement will be maintained in the Facility Operating Record. Example copies of these documents are provided as Attachments CP-6 and CP-7, respectively. In addition, the local hospital will be advised about the properties of hazardous waste handled at the facility and the types of injuries/illnesses that could result from fires, explosions, or releases at the facility.

Whenever the Plan is amended, copies of the amendments will be provided to these organizations. The invitation for site inspections will be offered whenever there are significant changes to Facility operations, or annually.

13.0 COORDINATION OF EMERGENCY SERVICES

This section of the Contingency Plan identifies outside organizations that are available for emergency response services. Written agreements with these organizations will be maintained in the Facility operating record. These service agencies and organizations are to be summoned only by the PFSG site contact or his/her alternate.

The following table summarizes those notifications and actions that should be undertaken in response to emergency situations that could arise at the Facility.

IN CASE OF A	THEN NOTIFY*	SIMULTANEOUS ACTIONS
• Fire or Explosion	Valdosta Fire Rescue Department Call 911, or (229) 333-1836	• Evacuate Facility employees to assembly location • Take attendance for missing persons • Site contact assists ranking Fire official
• Release of harmful or toxic gases or fumes	Valdosta Fire Rescue Department Call 911, or (229) 333-1836	• Evacuate Facility employees to upwind assembly location • Take attendance for missing persons • Site contact assists ranking Fire official
• Spill or release of hazardous materials or hazardous wastes	Local Hazardous Materials Response Team (Valdosta Fire Rescue Department) Call 911, or (229) 333-1836 OR GEPD Emergency Response Center (800) 241-4113 (24 hours) OR National Response Center (NRC) (800) 424-8802 (24 hours)	• Evacuate Facility employees to Assembly Location (as required) • Take attendance for missing persons (if required) • Site contact(s) evaluate the situation and potential hazards • Either coordinate in-house spill response (minor spills) or contact outside responders (major spills).

IN CASE OF A	THEN NOTIFY*	SIMULTANEOUS ACTIONS
• Bomb threat or unauthorized trespass	Valdosta Police Department Call 911, or (229) 242-2606 OR Lowndes County Sheriff's Office Call (229) 671-2900	BOMB THREAT • Evacuate Facility employees to assembly location • Take attendance for missing persons • Site contact assists ranking police official TRESPASS • Site contact & operations personnel check for tampering, theft, etc. • Resecure Facility
* Written reports and additional agency notifications may be required beyond those emergency notifications listed above (e.g., RQ report, or hazardous waste tank release, etc.).		

14.0 EVACUATION PLAN

Potential emergencies requiring evacuation from hazardous waste management areas are primarily fire hazards and the associated potential release of toxic, irritating, or asphyxiating gas/fumes, or bomb threat. In either case, Facility employees will execute the procedures listed below.

In the event of any major emergency, it will be necessary to follow an established set of procedures in a prompt and deliberate manner. Such established procedures will be adhered to as closely as feasible; however, in an emergency situation, the Emergency Coordinator or Alternate may deviate from the procedures to provide the most effective plan for bringing the situation under control. The Emergency Coordinator or Alternate is responsible for determining which emergency situations require facility evacuation. Criteria that must be considered by the Emergency Coordinator or Alternate include the following:

- Potential for a gaseous release
- Potential for explosion
- Potential for spread of fire
- Potential for severe weather effects
- Ability to control the situation

All employees are trained in evacuation procedures. Periodic evacuation drills are conducted to familiarize facility personnel of the primary and secondary evacuation routes and assembly locations throughout the Facility. An Emergency Evacuation Route Map is provided on Figure 3.

If the Emergency Coordinator or Alternate assesses any situation and determines that a threat to human health and safety is imminent, evacuation will be ordered. Rally points have been established at several locations throughout the plant should the plant or a portion of the plant require evacuation. Rally points are designated in Figure 3.

The facility will employ a fire alarm system to initiate evacuation of all facility areas. The intercom system, public address system, or voice will be used to notify key plant personnel as to the nature of the emergency and recommended plan of action. Total plant evacuation is initiated only by an Emergency Coordinator or Alternate.

When an evacuation is called for by the Emergency Coordinator or Alternate, the following actions will be taken:

- The signal for plant evacuation will be activated.
- No further entry of visitors, contractors, or trucks will be permitted. All non-emergency response vehicle traffic within the facility will cease. This will allow safe exit of personnel and movement of emergency equipment.
- All personnel, visitors, and contractors will immediately leave through the exit gate. Evacuation routes are shown in Figure 3.
- No persons shall remain or reenter the location unless specifically authorized by the Emergency Coordinator, Alternate or designee. In allowing this, the Emergency Coordinator, Alternate, or designee in charge assumes responsibility for those persons within the perimeter. Those within the fenced area will normally only include trained firefighting personnel or emergency-response teams.
- ALL persons will be accounted for by their immediate supervisor. Supervisors will designate an alternate exit if the first choice (main facility gate on the east) is inaccessible. To assist in this endeavor, the Emergency Coordinator or Alternate will use the intercom system or public address system, if necessary, to call other personnel and inform them of the nature of the emergency. Two personnel gates exist at PFSG: Gate 3 on the west and Gate 2 on the south. These gates are unlocked during working hours and are used only when access to the main gate is blocked.
- Any persons not leaving the site by the front gate regardless of reason must report to the front gate as soon as possible.
- During exit, the supervisor should try to keep his or her group together. The rally points are the office/laboratory and outside the main gate. Immediately upon exit through the gate, the highest-ranking employee (Emergency Coordinator, Alternate or supervisor in charge) will prepare a list of all personnel at the exit gate. All other personnel who have persons reporting to them should report immediately to the front gate for final accounting.

- Upon completion of the employee list, the supervisor in charge will hand carry the list to the Emergency Coordinator. All other personnel will remain at the gate area.
- Contract personnel should also be listed with the name of their company. Contract foremen should report to the front gate.
- A final tally of persons will be made by the Emergency Coordinator or Alternate.
- Attempts to find persons not accounted for may involve endangering lives of others.
- Reentry into the fenced area will be made only after clearance is given by the Emergency Coordinator or Alternate. At his or her direction, a signal or other notification will be given for reentry into the plant.
- In all questions of accountability, immediate supervisors will be held responsible for those persons reporting to them. Visitors will be the responsibility of those employees they are seeing. Contractors are the responsibility of those persons administering the individual contracts. Truck drivers are the responsibility of the container storage area and/or tank-farm area supervisor, where the truck is loading/unloading. The presence of visitors, contractors, and truck drivers at the rally points will be confirmed using the visitor log. The Emergency Coordinator or Alternate will ensure that this log is taken to the rally point.

Criteria for implementation of the Facility evacuation plan include the following scenarios and potential emergency situations:

14.1 FIRE AND EXPLOSION

All Facility employees will be trained in the Facility's evacuation plan procedures in the event of a fire or explosion. Employees will be instructed to evacuate the Facility using either primary or alternate emergency evacuation routes, as instructed. Employees shall remain at the assembly location until the ranking fire official and/or site contact have given clearance, unless conditions warrant an off-site evacuation.

14.2 RELEASE OF TOXIC, IRRITATING, OR ASPHYXIATING GASES OR FUMES

A remote possibility exists for the release of gases or fumes that may cause toxic, irritating, or asphyxiating effects on Facility employees. Employees will be instructed to evacuate the Facility and proceed to the designated assembly point for attendance counts. If the primary evacuation routes and assembly point are unusable due to encroaching gases or fumes, employees shall use the secondary evacuation routes and assembly point, depending on wind direction or dispersal of fumes or gases. Employees shall remain at the assembly location until clearance has been given by either the site contact or ranking emergency official, unless conditions warrant an off-site evacuation.

14.3 BOMB THREAT

If a bomb threat is received by the Facility, all employees are instructed to evacuate the Facility via either primary or secondary evacuation routes. All employees will evacuate and proceed to either the primary assembly area or a

secondary assembly area designated by the site contact for an attendance count. Employees shall remain at the assembly location until the ranking police official or the site contact has given clearance.

14.4 PROCEDURE SIGNALS

An internal announcement will be broadcasted using the telephone or alternate public address system. All personnel and employees are instructed to evacuate the facility through the front door or closest exit.

- The site contact or designee will make the announcement on the telephone or alternate public address system and to make the following announcement:
  *"**ATTENTION!!** THE PERMA-FIX EMERGENCY EVACUATION SYSTEM IS NOW BEING EXECUTED. A SITUATION EXISTS REQUIRING IMMEDIATE EVACUATION OF THE FACILITY. PLEASE CALMLY EXIT THE FACILITY AND ASSEMBLE AT THE DESIGNATED AREA."*
- The site contact(s) shall direct the evacuation. In the event of an issue of accountability, and if conditions allow, the site contact(s) shall re-enter the Facility to locate personnel. While site contacts are inside the perimeter of the Facility, they shall maintain radio contact with other site contacts and the head counter at all times.
- In a situation that does not warrant re-entry by PFSG site contacts, entry of the Facility shall be performed by the local emergency response authorities, with their findings communicated to on-site PFSG emergency personnel.
- Primary evacuation routes have been established and are depicted on Figure 3. Additionally, secondary evacuation routes have been established in order to provide employees with an alternate route to the assembly location so that an attendance count may be taken. Secondary routes are utilized in the event that primary routes are unusable due to fire, heat, smoke, fumes, or asphyxiating gases. Figure 2 illustrates the areas where potential facility hazard locations could exist.
- Evacuation Route Maps are posted at strategic locations throughout the Facility to guide employees to assembly location by illustrating the established primary and secondary evacuation routes.
- Upon complete evacuation of the Facility, all employees will immediately assemble in the cul-de-sac drive at the east side entrance (or alternate assembly location) as directed by the site contact. In the event that toxic or irritating gases are generated, the site contact shall direct further evacuation from the area to a safe upwind location. Authorized emergency response personnel remaining in the area will be required to don appropriate personal protective equipment.
- The head counter or designee shall account for all PFSG and non-PFSG personnel by using a current employee list and sign-in roster, and shall communicate by radio to the site contact(s) when an issue of accountability exists. When all personnel have been accounted for, the head counter will then report personnel accountability to the site contact(s).
- All employees will remain at the assembly point location until instructed otherwise by the site contact or outside authority.

The site contact will advise the appropriate responding agencies if there is a need for the evacuation of the surrounding area.

15.0 REQUIRED REPORTS

The GEPD will be notified immediately whenever there is an imminent or actual emergency requiring implementation of the Contingency Plan, as determined by the Emergency Coordinator or Alternate. As required by 40 CFR 264.56(j), a report will be given to the GEPD Director within 15 days for any emergency event (e.g., fire, explosion, etc.) that requires implementing the contingency plan. In addition to these reporting requirements for state and federal authorities, PFSG also has internal reporting requirements. The incidents listed below require that an incident report be completed and returned to the safety director within 5 working days and made part of the operating record.

- All fires.
- Unusual gas or vapor releases.
- Chemical spills of more than 10 gallons (or smaller volumes if highly toxic materials are involved).
- All injuries except minor cuts and bruises (all burns and chemical irritations).
- All equipment damage due to malfunction or operating error.
- All "near misses" of the above variety that could have had serious consequences.

The report will include the following:

- Name, address, and telephone number of the owner/operator.
- Name, address, and telephone number of the facility.
- Date, time, and type of incident (e.g., fire, explosion).
- Name and quantity of material(s) involved.
- The extent of injuries, if any.
- An assessment of actual or potential hazards to human health or the environment, where this is applicable.
- Estimated quantity and disposition of recovered material from the incident.

In case of occurrence of a fire or explosion from the facility that could threaten the environment or human health outside the facility, it will be reported verbally to the GEPD within 24 hours, and a written report will be provided within 5 days. The verbal report will include the name, address, I.D. number, and telephone number of the facility; its owner or operator; the name and quantity of materials involved; the extent of any injuries; an assessment of actual or potential hazards; and the estimated quantity and disposition of recovered material. The written submission will contain:

- A description and cause of the fire or explosion at the facility.
- If not corrected, the expected time of correction, and the steps being taken to reduce, eliminate, and prevent recurrence of the fire or explosion.

The Plan will be reviewed and immediately amended, if necessary, whenever:

- The Plan fails in an emergency;
- The list of emergency equipment changes;
- Changes occur in the Facility's design, construction, operating, maintenance, or other circumstances that materially increase the potential for fires, explosions, or releases of hazardous waste, or changes, the response necessary in an emergency;
- The list of site contacts changes; or,
- The Facility permit is revised.

TABLES

Perma-Fix of South Georgia, Inc.

Table 1

List of Waste Codes Accepted at the Facility

D001	D037	P002	P048	P103	U016	U055	U092	U131	U168	U208	U328
D002	D038	P003	P049	P104	U017	U056	U093	U132	U169	U209	U353
D003	D039	P004	P050	P105	U018	U057	U094	U133	U170	U210	U359
D004	D040	P005	P051	P106	U019	U058	U095	U134	U171	U211	U382
D005	D041	P007	P054	P108	U020	U059	U097	U135	U172	U213	U409
D006	D042	P008	P057	P109	U021	U060	U098	U136	U173	U214	U410
D007	D043	P010	P058	P110	U022	U061	U099	U137	U174	U215	U411
D008	F001	P011	P059	P111	U023	U062	U101	U138	U176	U216	
D009	F002	P012	P060	P113	U024	U063	U102	U140	U177	U217	
D010	F003	P013	P062	P114	U025	U064	U103	U141	U178	U218	
D011	F004	P014	P064	P115	U026	U066	U105	U142	U179	U219	
D012	F005	P015	P066	P116	U027	U067	U106	U143	U180	U220	
D013	F006	P016	P067	P118	U028	U068	U107	U144	U181	U221	
D014	F007	P017	P068	P119	U029	U069	U108	U145	U182	U222	
D015	F008	P018	P069	P120	U030	U070	U109	U146	U183	U223	
D016	F009	P021	P070	P121	U031	U071	U110	U147	U184	U225	
D017	F010	P022	P071	P123	U032	U072	U111	U148	U185	U226	
D018	F011	P023	P072	P185	U034	U073	U112	U149	U186	U227	
D019	F012	P024	P073	P201	U035	U074	U113	U150	U187	U228	
D020	F019	P026	P074	P202	U036	U075	U114	U151	U188	U230	
D021	F032	P027	P075	P203	U037	U076	U115	U152	U189	U231	
D022	F034	P028	P077	P204	U038	U077	U116	U153	U190	U232	
D023	F035	P029	P082	P205	U039	U078	U117	U154	U191	U233	
D024	F037	P030	P084	U001	U041	U079	U118	U155	U192	U235	
D025	F038	P034	P085	U002	U042	U080	U119	U156	U193	U236	
D026	F039	P036	P087	U003	U043	U081	U120	U157	U194	U237	
D027	K001	P037	P088	U004	U044	U082	U121	U158	U196	U238	
D028	K048	P038	P089	U005	U045	U083	U122	U159	U197	U239	
D029	K049	P039	P092	U007	U046	U084	U123	U160	U200	U240	
D030	K050	P040	P093	U008	U047	U085	U124	U161	U201	U242	
D031	K051	P041	P094	U009	U048	U086	U125	U162	U202	U243	
D032	K052	P043	P097	U010	U049	U087	U126	U163	U203	U244	
D033	K061	P044	P098	U011	U050	U088	U127	U164	U204	U246	
D034	K062	P045	P099	U012	U051	U089	U128	U165	U205	U247	
D035	K086	P046	P101	U014	U052	U090	U129	U166	U206	U248	
D036	P001	P047	P102	U015	U053	U091	U130	U167	U207	U249	

TABLE 2. LIST OF PREVIOUSLY PERMITTED HAZARDOUS WASTES, IDENTIFICATIONS, AND HAZARD CLASSIFICATIONS FOR PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GEORGIA

Waste Description	Hazardous Waste Code	CAS Registry Number	EPA Hazard Code	DOT Hazard Class	Reactivity Group Number	Estimated Annual Quantity (gallons)
Ignitable Liquid	D001		I	3	101	100,000
Corrosive	D002		C	8	1,2,3,10	30,000
Reactive	D003		R	3, 4.1, 5.2, 6.1, 8	103	5,000
Arsenic	D004		T	6.1	24	25,000
Barium	D005		T	4.3	24	2,500
Cadmium	D006		T	6.1	24	25,000
Chromium	D007		T	9	24	25,000
Lead	D008		T	6.1	24	25,000
Mercury	D009		T	8	24	2,500
Selenium	D010		T	6.1	24	2,500
Silver	D011		T	9	24	10,000
Endrin	D012		T	9	17	2,500
Lindane	D013		T	9	17	2,500
Methoxychlor	D014		T	9	17	2,500
Toxaphene	D015		T	9	17	2,500
2,4-D	D016		T	9	17	2,500
2,4,5-TP (Silvex)	D017		T	9	17	2,500
Benzene	D018		T	3	16	25,000
Carbon Tetrachloride	D019		T	6.1	17	25,000
Chlordane	D020		T	9	17	2,500
Chlorobenzene	D021		T	3	17	10,000
Chloroform	D022		T	6.1	17	10,000
O-Cresol	D023		T	6.1	31	2,500
M-Cresol	D024		T	6.1	31	2,500
P-Cresol	D025		T	6.1	31	2,500
Cresol	D026		T	6.1	31	2,500
1,4-Dichlorobenzene	D027		T	6.1	17	2,500
1,2-Dichloroethane	D028		T	3	17	2,500
1,1 Dichloroethylene	D029		T	3	17	2,500
2,4-Dinitrotoluene	D030		T	6.1	27	2,500
Heptachlor	D031		T	9	17	2,500
Hexachlorobenzene	D032		T	6.1	17	2,500
Hexachlorobutadiene	D033		T	6.1	17	2,500
Hexachloroethane	D034		T	9	17	2,500
Methyl Ethyl Ketone	D035		T	3	19	10,000
Nitrobenzene	D036		T	6.1	27	2,500
Pentachlorphenol	D037		T	9	17,31	2,500
Pyridine	D038		T	3	7	2,500
Tetrachloroethylene	D039		T	6.1	17	10,000
Trichloroethylene	D040		T	6.1	17	10,000
2,4,5-Trichlorophenol	D041		T	9	17,31	2,500
2,4,6-Trichlorophenol	D042		T	9	17,31	2,500
Vinyl Chloride	D043		T	3	17, 103	2,500
Spent Halogenated Solvents	F001		T	9	17	105,000
Spent Halogenated Solvents	F002		T	9	17	105,000
Spent Non-Halogenated Solvents	F003		I	9	16,14,4,19	100,000
Spent Non-Halogenated Solvents	F004		T	9	27,31	2,500
Spent Non-Halogenated Solvents	F005		I,T	9	16,4,19	100,000
Electroplating Sludges	F006		T	9	24	2,500
Spent Cyanide Plating Solutions	F007		R,T	9	24	2,500
Cyanide Plating Bath Residues	F008		R,T	9	24	2,500
Spent stripping solutions from Cyanide Plating	F009		R,T	9	24	2,500
Quench Bath Residues from Cyanide Oil Baths	F010		R,T	9	24	2,500
Spent Cyanide Solutions/Slat Bath Pot Cleaning	F011		R,T	9	24	2,500
Quench Wastewater Sludge	F012		T	9	11	2,500
Wastewater Treatment Sludge	F019		T	9	24	15,000
Chlorophenolic Residuals	F032		T	9	17,31	2,500
Creosote Residuals	F034		T	9	17,31	2,500
Arsenic/Chromium Residuals	F035		T	9	24	2,500
Petroleum Refinery Primary Sludge	F037		T	9	24	2,500
Petroleum Refinery Secondary Sludge	F038		T	9	24	2,500
Leachate from Wastes	F039		T	9	24	2,500

TABLE 2. LIST OF PREVIOUSLY PERMITTED HAZARDOUS WASTES, IDENTIFICATIONS, AND HAZARD CLASSIFICATIONS FOR PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GEORGIA

Waste Description	Hazardous Waste Code	CAS Registry Number	EPA Hazard Code	DOT Hazard Class	Reactivity Group Number	Estimated Annual Quantity (gallons)
Wastewater Sludge from Creosote/Pentachlorophenol Wood	K001		T	9	31	2,500
Dissolved Air Float	K048		T	9	24	2,500
Stop Oil Emulsion Solids	K049		T	9	24	2,500
Heat Exchanger Sludge	K050		T	9	24	2,500
API Separator Sludge	K051		T	9	24	2,500
Petroleum Tank Bottoms	K052		T	9	24	2,500
Emission Control Dust/Sludge	K061		T	9	24	2,500
Spent Pickle Liquor	K062		C,T	9	24	2,500
Solvent Washes & Sludge	K086		T	9	24	10,000
Warfarin & Salts when > .03%	P001	81-81-2	H	9	X	2,500
Acetamide, N-(Aminothioxomethyl)	P002	591-08-2	H	9	6	2,500
Acrolein	P003	107-02-8	H	6.1	5, 103	2,500
Aldrin	P004	309-00-2	H	6.1	17	2,500
Allyl Alcohol	P005	107-18-6	H	6.1	4	2,500
5-(Aminomethyl)-3-Isoxazolol	P007	2763-96-4	H	9	7	2,500
Aminopyridine	P008	504-24-5	H	6.1	7	2,500
Arsenic Acid (H3AsO4)	P010	131-74-8	H	6.1	24	2,500
Arsenic Oxide (As2O5)	P011	1303-28-2	H	6.1	24	2,500
Arsenic Oxide (As2O3)	P012	1327-53-3	H	6.1	24	2,500
Barium Cyanide	P013	542-62-1	H	6.1	24,11	2,500
Benzenethiol	P014	108-98-5	H	6.1	X	2,500
Beryllium	P015	7440-41-7	H	6.1	24	2,500
Dichloromethylether	P016	542-88-1	H	3	14	2,500
2-propanone, 1-bromo- (or) bromoacetone	P017	598–31–2	H	6.1	19	2,500
Brucine	P018	357-57-3	H	6.1	X	2,500
Dinoseb	P020	88-85-7	H	9	27,31	2,500
Calcium Cyanide	P021	592-01-8	H	6.1	11	2,500
Carbon Disulfide	P022	75–15–0	H	3, 6.1	33	2,500
Acetaldehyde, Chloro-	P023	107-20-0	H	6.1	5,17	2,500
Benzenamine, 4-Chloro-	P024	106-47-8	H	9	17	2,500
1-(o-Chlorophenyl)thiourea	P026	5344-82-1	H	9	12	2,500
3-Chloropropionitrile	P027	542-76-7	H	9	17,26	2,500
Benzene, Chloromethyl	P028	100-44-7	H	6.1	17	2,500
Copper Cyanide	P029	544-92-3	H	6.1	11,24	2,500
Cyanides	P030	57-12-5	H	6.1	11	2,500
2-Cyclohexyl-4,6-dinitrophenol	P034	131-89-5	H	9	11,31	2,500
Arsonous Dichloride, Phenyl	P036	696-28-6	H	9	24	2,500
Dieldrin	P037	60-57-1	H	6.1	17	2,500
Arsine, Diethyl-	P038	692-42-2	H	6.1	24	2,500
Disulfoton	P039	298-04-4	H	9	32	2,500
O,O-Diethyl O-pyrazinyl Phosphorothioate	P040	297-97-2	H	9	32	2,500
Diethyl-p-nitrophenyl Phosphate	P041	311-45-5	H	9	32	2,500
Diisopropylfluorophosphate	P043	55-91-4	H	9	32	2,500
Dimethoate	P044	60-51-5	H	9	32	2,500
Thiofanox	P045	39196-18-4	H	9	X	2,500
Benzeneethanamine, alpha, alpha-dimethyl-	P046	122-09-8	H	9	X	2,500
4,6-Dinitro-o-cresol & Salts	P047	534-52-1	H	6.1	27,31	2,500
2,4-Dinitrophenol	P048	51-28-5	H	9	27,31	2,500
Dithiobiuret	P049	541-53-7	H	9	X	2,500
Endosulfan	P050	115-29-7	H	9	17,20	2,500
Endrin	P051	72-20-8	H	9	17	2,500
Aziridine	P054	151-56-4	H	6.1	7,103	2,500
Acetamide, 2-Fluoro-	P057	640-19-7	H	9	6	2,500
Acetic Acid, Fluoro-, Sodium Salt	P058	62-74-8	H	9	X	2,500
Heptachlor	P059	76-44-8	H	9	17	2,500
Isodrin	P060	465-73-6	H	9	17	2,500
Hexaethyl Tetraphosphate	P062	757-58-4	H	9	32	2,500
Methyl Isocyanate	P064	624-83-9	H	6.1	18	2,500
Methomyl	P066	16752-77-5	H	9	9,20	2,500
Aziridine, 2-methyl	P067	75-55-8	H	3	7	2,500
Methyl Hydrazine	P068	60-34-4	H	3	8	2,500
2-methyllactonitrile (or) propanenitrile, 2-hydroxy-2-methyl-	P069	75–86–5	H	6.1	27	2,500

TABLE 2. LIST OF PREVIOUSLY PERMITTED HAZARDOUS WASTES, IDENTIFICATIONS, AND HAZARD CLASSIFICATIONS FOR PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GEORGIA

Waste Description	Hazardous Waste Code	CAS Registry Number	EPA Hazard Code	DOT Hazard Class	Reactivity Group Number	Estimated Annual Quantity (gallons)
Aldicurb	P070	116-06-3	H	9	9,20	2,500
Methyl Parathion	P071	298-00-0	H	6.1	32	2,500
alpha-Naphthylthiourea	P072	86-88-4	H	6.1	12	2,500
Nickel carbonyl (or) nickel carbonyl ni(co)4, (t-4)-	P073	13463–39–3	h	6.1	24	2,500
Nickel Cyanide	P074	557-19-7	H	6.1	11,24	2,500
Nicotine & Salts	P075	54-11-5	H	6.1	X	2,500
Benzenamine, 4-Nitro-	P077	100-01-6	H	6.1	7,27	2,500
N-Nitrosodimethylamine	P082	62-75-9	H	9	7,27	2,500
N-Nitrosomethylvinylamine	P084	4549-40-0	H	9	X	2,500
Octamethylpyrophosphoramide	P085	152-16-9	H	9	X	2,500
Osmium Tetroxide	P087	20816-12-0	H	6.1	24	2,500
Endothall	P088	145-73-3	H	9	3	2,500
Parathion	P089	56-38-2	H	6.1	32	2,500
Phenylmercury Acetate	P092	62-38-4	H	6.1	24	2,500
Phenylthiourea	P093	103-85-5	H	9	X	2,500
Phorate	P094	298-02-2	H	9	32	2,500
Famphur	P097	52-85-7	H	9	X	2,500
Potassium Cyanide	P098	151-50-8	H	6.1	11	2,500
Argentate(1-), bis(Cyano-C)-, Potassium	P099	506-61-6	H	6.1	11,24	2,500
Ethyl Cyanide	P101	107-12-0	H	9	26	2,500
Propargyl Alcohol	P102	107-19-7	H	3	4	2,500
Selenourea	P103	630-10-4	H	9	X	2,500
Silver Cyanide	P104	506-64-9	H	6.1	11,24	2,500
Sodium Azide	P105	26628-22-8	H	6.1	102	2,500
Sodium Cyanide	P106	143-33-9	H	6.1	11	2,500
Strychnine & Salts	P108	57-24-9	H	6.1	X	2,500
Tetraethyldithiopyrophosphate	P109	3689-24-5	H	6.1	32	2,500
Tetraethyl Lead	P110	78-00-2	H	6.1	24	2,500
Tetraethyl Pyrophosphate	P111	107-49-3	H	6.1	32	2,500
Thallic Oxide	P113	1314-32-5	H	9	X	2,500
Thallium (1) Selenide	P114	12039-62-0	H	6.1	24	2,500
Thallium (1) Sulfate	P115	7446-18-6	H	6.1	24	2,500
Thiosemicarbazide	P116	79-19-6	H	9	X	2,500
Trichloromethanethiol	P118	75-70-7	H	6.1	17,20	2,500
Ammonium Vanadate	P119	7803-55-6	H	6.1	24	2,500
Vanadium Pentoxide	P120	1314-62-1	H	6.1	24	2,500
Zinc Cyanide	P121	557-21-1	H	6.1	11,24	2,500
Toxaphene	P123	8001-35-2	H	9	17	2,500
1,3-dithiolane-2-carboxaldehyde, 2,4-dimethyl-, o- [(methylamino)-carbonyl]oxime (or) tirpate	P185	26419–73–8	H	6.1	5	2,500
Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate (or) promecarb	P201	2631–37–0	H	6.1	9	2,500
M-cumenyl methylcarbamate (or) 3-isopropylphenyl n-methylcarbamate (or) phenol, 3-(1-methylethyl)-, methyl carbamate	P202	64–00–6	H	6.1	9	2,500
Aldicarb sulfone (or) propanal, 2-methyl-2-(methyl-sulfonyl)-, o-[(methylamino)carbonyl] oxime	P203	1646–88–4	H	6.1	9	2,500
Physostigmine (or) pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-methylcarbamate (ester), (3as-cis)-	P204	57–47–6	H	6.1	9	2,500
Zinc, bis(dimethylcarbamodithioato-s,s')-, (or) ziram	P205	137–30–4	H	6.1	9	2,500
Acetaldehyde	U001	75-07-0	I	3	5	2,500
Acetone	U002	67-64-1	I	3	19	2,500
Acetonitrile	U003	75-05-8	I,T	3	26	2,500
Acetophenone	U004	98-86-2	T	9	19	2,500
2-Acetylaminofluorene	U005	53-96-3	T	9	X	2,500
Acrylamide	U007	79-06-1	T	6.1	6	2,500
Acrylic Acid	U008	79-10-7	I	8	3,103	2,500
Acrylonitrile	U009	107-13-1	T	3	26,103	2,500
Mitomycin C	U010	50-07-7	T	9	X	2,500
Amitrole	U011	61-82-5	T	9	X	2,500
Aniline (I,T)	U012	62-53-3	I,T	6.1	7	2,500
Auramine (or) benzenamine, 4,4'-carbonimidoylbis[n,n-dimethyl-	U014	492-80-8	T	9	7	2,500
Azaserine	U015	115-02-6	T	9	X	2,500
Benz(c)acridine	U016	225-51-4	T	9	X	2,500
Benzal Chloride	U017	98-87-3	T	9	17	2,500
Benz(a)athracene	U018	56-55-3	T	9	16	2,500
Benzene	U019	71-43-2	I,T	3	16	2,500
Benzenesulfonic acid chloride (c,r) (or) benzenesulfonyl chloride (c,r)	U020	98-09-9	C,R	3,8	17	2,500

TABLE 2. LIST OF PREVIOUSLY PERMITTED HAZARDOUS WASTES, IDENTIFICATIONS, AND HAZARD CLASSIFICATIONS FOR PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GEORGIA

Waste Description	Hazardous Waste Code	CAS Registry Number	EPA Hazard Code	DOT Hazard Class	Reactivity Group Number	Estimated Annual Quantity (gallons)
Benzidine	U021	62-53-3	T	6.1	7	2,500
Benzo(a)pyrene	U022	50-32-8	T	9	16	2,500
Benzene, (trichloromethyl)- (or) benzotrichloride (c,r,t)	U023	98-07-7	C,R,T	8	17	2,500
Dichloromethoxy ethane	U024	111-91-1	T	9	17	2,500
Dichloroethyl ether	U025	111-44-4	T	9	14,17	2,500
Chlornaphazine	U026	494-03-1	T	9	X	2,500
Dichloroisopropyl ether	U027	108-60-1	T	6.1	14	2,500
Diethylhexyl Phthalate	U028	117-81-7	T	9	X	2,500
Methyl Bromide	U029	74-83-9	T	2.3	17	2,500
4-Bromophenyl phenyl ether	U030	101-55-3	T	9	14	2,500
n-Butyl Alcohol	U031	71-36-3	I	3	4	2,500
Calcium Chromate	U032	13765-19-0	T	9	24	2,500
Chloral	U034	75-87-6	T	6.1	5,17	2,500
Chlorambucil	U035	305-03-3	T	9	X	2,500
Chlordane, alpha & gamma isomers	U036	57-74-9	T	9	17	2,500
Chlorobenzene	U037	108-90-7	T	3	17	2,500
Chlorobenzilate	U038	510-15-6	T	9	X	2,500
p-Chloro-m-cresol	U039	59-50-7	T	6.1	17,31	2,500
Epichlorohydrin	U041	106-89-8	T	6.1	17,34	2,500
2-Chloroethyl vinyl ether	U042	110-75-8	T	9	17,14	2,500
Ethene, chloro- (or) vinyl chloride	U043	75-01-4	T	2.1	17	2,500
Chloroform	U044	67-66-3	T	6.1	17	2,500
Methyl Chloride	U045	74-87-3	I,T	2.1	17	2,500
Chloromethyl methyl ether	U046	107-30-2	T	3	14,17	2,500
beta-Chloronaphthalene	U047	91-58-7	T	9	17	2,500
o-Chlorophenol	U048	95-57-8	T	6.1	31	2,500
4-Chloro-o-toluidine, hydrochloride	U049	3165-93-3	T	6.1	17	2,500
Chrysene	U050	218-01-9	T	9	16	2,500
Creosote	U051		T	9	31	2,500
Cresol	U052	1319-77-3	T	6.1	31	2,500
Crotonaldehyde	U053	4170-30-3	T	3	5	2,500
Cumene	U055	98-82-8	I	9	14,16,17	2,500
Cyclohexane	U056	110-82-7	I	3	29	2,500
Cyclohexanone	U057	108-94-1	I	3	19	2,500
Cyclophosphamide	U058	50-18-0	T	9	6	2,500
Daunomycin	U059	20830-81-3	T	9	X	2,500
DDD	U060	72-54-8	T	9	17	2,500
DDT	U061	50-29-3	T	9	17	2,500
Diallate	U062	2303-16-4	T	9	X	2,500
Dibenz(a,h)anthracene	U063	53-70-3	T	9	16	2,500
Dibenzo(a,i)pyrene	U064	189-55-9	T	9	16	2,500
1,2-Dibromo-3-chloropropane	U066	96-12-8	T	6.1	17	2,500
Ethane, 1,2-dibromo-	U067	106-93-4	T	6.1	17	2,500
Methylene Bromide	U068	74-95-3	T	6.1	17	2,500
Dibutyl phthalate	U069	84-74-2	T	9	13	2,500
o-Dichlorobenzene	U070	95-50-1	T	6.1	17	2,500
m-Dichlorobenzene	U071	541-73-1	T	9	17	2,500
p-Dichlorobenzene	U072	106-46-7	T	6.1	17	2,500
3,3-Dichlorobenzidine	U073	91-94-1	T	9	7,17	2,500
1,4-Dichloro-2-butene	U074	764-41-0	I,T	9	17	2,500
Dichlorodifluoromethane (or) methane, dichlorodifluoro-	U075	75-71-8	T	2.2	17	2,500
Ethane, 1,1-dichloro-	U076	75-34-3	T	3	17	2,500
Ethane, 1,2-dichloro-	U077	107-06-2	T	3	17	2,500
1,1-Dichloroethylene	U078	75-35-4	T	9	17	2,500
1,2-Dichloroethylene	U079	156-60-5	T	9	17	2,500
Methylene Chloride	U080	75-09-2	T	6.1	17	30,000
2,4-Dichlorophenol	U081	120-83-2	T	9	17,31	2,500
2,6-Dichlorophenol	U082	87-65-0	T	9	17,31	2,500
Propylene dichloride	U083	78-87-5	T	3	17	2,500
1,3-Dichloropropene	U084	542-75-6	T	3	17	2,500
1,2:3,4-Diepoxybutane	U085	1464-53-5	I,T	9	X	2,500
N,N'-Diethylhydrazine	U086	1615-80-1	T	9	8	2,500

TABLE 2. LIST OF PREVIOUSLY PERMITTED HAZARDOUS WASTES, IDENTIFICATIONS, AND HAZARD CLASSIFICATIONS FOR PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GEORGIA

Waste Description	Hazardous Waste Code	CAS Registry Number	EPA Hazard Code	DOT Hazard Class	Reactivity Group Number	Estimated Annual Quantity (gallons)
O,O-Diethyl S-methyl dithiophosphate	U087	3288-58-2	T	9	32	2,500
Diethyl phthalate	U088	84-66-2	T	9	13	2,500
Diethylstilbesterol	U089	56-53-1	T	9	X	2,500
Dihydrosafrole	U090	94-58-6	T	9	X	2,500
3,3'-Dimethoxybenzidine	U091	119-90-4	T	9	*	2,500
Dimethylamine	U092	124-40-3	I	2.1,3	7	2,500
p-Dimethylaminoazobenzene	U093	60-11-7	T	9	7,8	2,500
7,12-Dimethylbenz(a)anthracene	U094	57-97-6	T	9	X	2,500
3,3'-Dimethylbenzidine	U095	119-93-7	T	9	X	2,500
Dimethylcarbamoyl Chloride	U097	79-44-7	T	8	X	2,500
1,1-Dimethylhydrazine	U098	57-14-7	T	3,6.1	8	2,500
1,2-Dimethylhydrazine	U099	540-73-8	T	3,6.1	8	2,500
2,4-Dimethylphenol	U101	105-67-9	T	9	31	2,500
Dimethyl phthalate	U102	131-11-3	T	9	X	2,500
Dimethyl Sulfate	U103	77-78-1	T	6.1	14	2,500
2,4-Dinitrotoluene	U105	121-14-2	T	6.1	27	2,500
2,6-Dinitrotoluene	U106	606-20-2	T	6.1	27	2,500
Di-n-Octyl phthalate	U107	117-84-0	T	9	X	2,500
1,4-Dioxane	U108	123-91-1	T	3	14	2,500
1,2-Diphenylhydrazine	U109	122-66-7	T	9	8	2,500
Dypropylamine	U110	142-84-7	I	3	7	2,500
Di-n-propylnitrosoamine	U111	621-64-7	T	9	7,27	2,500
Ethyl acetate	U112	141-78-6	I	3	13	2,500
Ethyl acrylate	U113	140-88-5	I	3	13,103	2,500
Ethylenebisdithiocarbamic acid, salts & esters	U114	111-54-6	T	9	9	2,500
Ethylene Oxide	U115	75-21-8	I,T	2.3	34,103	2,500
Ethylenethiourea	U116	96-45-7	T	9	12	2,500
Ethyl Ether	U117	60-29-7	I	3	14,17	2,500
Ethyl methacrylate	U118	97-63-2	T	3	13	2,500
Ethyl methanesulfonate	U119	62-50-0	T	9	13	2,500
Fluoranthene	U120	206-44-0	T	9	16	2,500
Trichloromonofluoromethane	U121	75-69-4	T	9	17	30,000
Formaldehyde	U122	50-0-0	T	3,9	5	2,500
Formic acid	U123	64-18-6	C,T	8	3	2,500
Furan	U124	110-00-9	I	3	14	2,500
Furfural	U125	98-01-1	I	3	5	2,500
Glycidylaldehyde	U126	765-34-4	T	3	5	2,500
Hexachlorobenzene	U127	118-74-1	T	6.1	17	2,500
Hexachlorobutadiene	U128	87-68-3	T	6.1	17	2,500
Lindane	U129	58-89-9	T	9	17	2,500
Hexachlorocyclopentadiene	U130	77-47-4	T	6.1	*	2,500
Hexachloroethane	U131	67-72-1	T	9	17	2,500
Hexachlorophene	U132	70-30-4	T	6.1	17	2,500
Hydrazine (r,t)	U133	302-01-2	R,T	3,6.1,8	8,10,105	2,500
Hydrofluoric Acid	U134	7664-39-3	C,T	8	1,15	2,500
Hydrogen sulfide (or) hydrogen sulfide h2s	U135	7783-06-4	T	2.3,2.1	33	2,500
Cacodylic Acid	U136	75-60-5	T	6.1		2,500
Indeno[1,2,3-cd]pyrene	U137	193-39-5	T	9	X	2,500
Methyl iodide	U138	74-88-4	T	6.1	17	2,500
Isobutyl Alcohol	U140	78-83-1	I,T	3	4	2,500
Isosafrole	U141	120-58-1	T	9	X	2,500
Kepone	U142	143-50-0	T	9	17,19	2,500
Lasiocarpine	U143	303-34-4	T	9	13	2,500
Lead acetate	U144	301-04-2	T	6.1	24	2,500
Lead phosphate	U145	7446-27-7	T	9	24	2,500
Lead subacetate	U146	1335-32-6	T	9	24	2,500
Maleic anhydride	U147	108-31-6	T	8	3	2,500
Maleic hydrazide	U148	123-33-1	T	9	8	2,500
Malononitrile	U149	109-77-3	T	6.1	26	2,500
Melphalan	U150	148-82-3	T	9	X	2,500
Mercury	U151	7439-97-6	T	8	24	2,500
Methacrylonitrile	U152	126-98-7	I,T	3	26	2,500

TABLE 2. LIST OF PREVIOUSLY PERMITTED HAZARDOUS WASTES, IDENTIFICATIONS, AND HAZARD CLASSIFICATIONS FOR PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GEORGIA

Waste Description	Hazardous Waste Code	CAS Registry Number	EPA Hazard Code	DOT Hazard Class	Reactivity Group Number	Estimated Annual Quantity (gallons)
Methanethiol (i,t) (or) thiomethanol (i,t)	U153	74-93-1	I,T	2.3,2.1	20	2,500
Methanol	U154	67-56-1	I	3	4	30,000
Methapyrilene	U155	91-80-5	T	9	X	2,500
Methyl Chlorocarbonate	U156	79-22-1	I,T	6.1	13,17	2,500
3-Methylcholanthrene	U157	56-49-5	T	9	17	2,500
4,4'-Methylenebis(2-Chloraniline)	U158	101-14-4	T	9	7,17	2,500
Methyl Ethyl Ketone	U159	78-93-3	I,T	3	19	30,000
2-butanone, peroxide (r,t) (or) methyl ethyl ketone peroxide (r,t)	U160	1338-23-4	R,T	5.2	19,30	2,500
Methyl Isobutyl Ketone	U161	108-10-1	I	3	19	2,500
Methyl methacrylate	U162	80-62-6	I,T	3	13,103	2,500
Guanidine, n-methyl-n'-nitro-n-nitroso- (or) mnng	U163	70-25-7	T	9	27	2,500
Methylthiouracil	U164	56-04-2	T	9	X	2,500
Naphthalene	U165	91-20-3	T	4.1	16	2,500
1,4-Naphthalenedione	U166	130-15-4	T	9	X	2,500
alpha-Naphthylamine	U167	134-32-7	T	6.1	7	2,500
beta-Naphthylamine	U168	91-59-8	T	6.1	7	2,500
Nitrobenzene	U169	98-95-3	I,T	6.1	27	2,500
p-Nitrophenol	U170	100-02-7	T	6.1	29,31	2,500
Nitropropane	U171	79-46-9	I,T	3	27	2,500
N-Nitrosodi-n-butylamine	U172	924-16-3	T	9	7,27	2,500
N-Nitrosodiethanolamine	U173	1116-54-7	T	9	7,27	2,500
N-Nitrododiethylamine	U174	55-18-5	T	9	7,27	2,500
N-Nitroso-N-ethylurea	U176	759-73-9	T	9	27	2,500
N-Nitroso-N-methylurea	U177	684-93-5	T	9	27	2,500
N-Nitroso-N-methylurethane	U178	615-53-2	T	9	27	2,500
N-Nitrosopiperidine	U179	100-75-4	T	9	27	2,500
N-Nitrosopyrrolidine	U180	930-55-2	T	9	27	2,500
5-Nitro-o-toluidine	U181	99-55-8	T	6.1	27	2,500
Paraldehyde	U182	123-63-7	T	3	5	2,500
Pentachlorobenzene	U183	608-93-5	T	9	17	2,500
Pentachloroethane	U184	76-01-7	T	6.1	17	2,500
Pentachloronitrobenzene	U185	82-68-8	T	9	17,27	2,500
1,3-Pentadiene	U186	504-60-9	I	9	28,103	2,500
Phenacetin	U187	62-44-2	T	9	X	2,500
Phenol	U188	108-95-2	T	6.1	31	2,500
Phosphorus sulfide (r) (or) sulfur phosphide (r)	U189	1314-80-3	R	4.1	33	2,500
Phthalic anhydride	U190	85-44-9	T	8	1	2,500
2-Picoline	U191	109-06-8	T	3	7	2,500
Pronamide	U192	23950-58-5	T	9	6	2,500
1,3-Propane sultone	U193	1120-71-4	T	9	X	2,500
n-Propylamine	U194	107-10-8	I,T	3	7	2,500
Pyridine	U196	110-86-1	T	3	7	2,500
p-Benzoquinone	U197	106-51-4	T	6.1	19	2,500
Reserpine	U200	50-55-5	T	9	X	2,500
Resorcinol	U201	108-46-3	T	6.1	31	2,500
Saccharin, & Salts	U202	81-07-2	T	9	X	2,500
Safrole	U203	94-59-7	T	9	14	2,500
Selenium dioxide	U204	7446-08-4	T	6.1	1,24	2,500
Zinc, bis(dimethylcarbamodithioato-s,s')-, (or) ziram	U205	7488-56-4	T	6.1	33	2,500
Streptozotocin	U206	18883-66-4	T	9	X	2,500
1,2,4,5-Tetrachlorobenzene	U207	95-94-3	T	9	17	2,500
1,1,1,2-Tetrachloroethane	U208	630-20-6	T	9	17	2,500
1,1,2,2-Tetrachloroethane	U209	79-34-5	T	9	17	2,500
Tetrachloroethylene	U210	127-18-4	T	6.1	17	2,500
Carbon Tetrachloride	U211	56-23-5	T	6.1	17	10,000
2,3,4,6-Tetrachlorophenol	U212	58-90-2	T	9	17,31	2,500
Tetrahydrofuran	U213	109-99-9	I	3	14	2,500
Thallium (I) acetate	U214	563-68-8	T	6.1	24	2,500
Thallium (I) carbonate	U215	6533-73-9	T	6.1	24	2,500
Thallium (I) chloride	U216	7791-12-0	T	6.1	24	2,500
Nitric acid, thallium(1+) salt (or) thallium(i) nitrate	U217	10102-45-1	T	6.1,5.1	24	2,500
Thioacetamide	U218	62-55-5	T	9	6	2,500

TABLE 2. LIST OF PREVIOUSLY PERMITTED HAZARDOUS WASTES, IDENTIFICATIONS, AND HAZARD CLASSIFICATIONS FOR PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GEORGIA

Waste Description	Hazardous Waste Code	CAS Registry Number	EPA Hazard Code	DOT Hazard Class	Reactivity Group Number	Estimated Annual Quantity (gallons)
Thiourea	U219	62-56-6	T	9	6,12	2,500
Toluene	U220	108-88-3	T	3	16	30,000
Toluenediamine	U221	25376-45-8	T	9	X	2,500
o-Toluidine hydrochloride	U222	636-21-5	T	9	X	2,500
Benzene, 1,3-diisocyanatomethyl- (r,t) (or) toluene diisocyanate (r,t)	U223	26471-62-5	R,T	6.1	18	2,500
Bromoform (or) methane, tribromo-	U225	75-25-2	T	6.1	17	2,500
Methyl Chloroform	U226	71-55-6	T	6.1	17	30,000
1,1,2-Trichloroethane	U227	79-00-5	T	9	17	30,000
Trichloroethylene	U228	79-01-6	T	6.1	17	30,000
2,4,5-Trichlorophenol	U230	95-95-4	H	9	17,31	2,500
2,4,6-Trichlorophenol	U231	88-06-2	H	9	17,31	2,500
2,4,5-T	U232	93-76-5	H	9	3,17	2,500
Silvex (2,4,5-TP)	U233	93-72-1	H	9	3,17	2,500
Tris(2,3-dibromopropyl)phosphate	U235	126-72-7	T	9	13	2,500
Trypan blue	U236	72-57-1	T	9	X	2,500
Uracil mustard	U237	66-75-1	T	9	X	2,500
Ethyl carbamate (urethane)	U238	51-79-6	T	9	9	2,500
Xylene	U239	1330-20-7	I	3	16	30,000
2,4-D salts & esters	U240	94-75-7	T	9	3,17	2,500
Pentachlorophenol	U242	87-86-5	H	9	17,31	2,500
1-Propene, 1,1,2,3,3,3-hexachloro-	U243	1888-71-7	T	9	17	2,500
Thiram	U244	137-26-8	T	9	12	2,500
Cyanogen Bromide	U246	506-68-3	T	6.1	11	2,500
Methoxychlor	U247	72-43-5	T	9	17	2,500
Warfarin & Salts	U248	81-81-2	T	9	X	2,500
Zinc phosphide zn3p2, when present at concentrations of 10% or less	U249	1314-84-7	T	6.1	24	2,500
o-Toluidine	U328	95-53-4	T	6.1	7	2,500
p-Toluidine	U353	106-49-0	T	6.1	7	2,500
Ethylene glycol monoethyl ether	U359	110-80-5	T	3	4,14	2,500
Sodium Dimethyl-Dithiocarbamate	U382	128-04-1	T	9	9	2500
Carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-, dimethyl ester (or) thiophanate-methyl	U409	23564-05-8	T	9	9	2500
Ethanimidothioic acid, n,n'-[thiobis[(methylimino)carbonyloxy]]bis-, dimethyl ester (or) thiodicarb	U410	59669-26-0	T	9	9	2500
Phenol, 2-(1-methylethoxy)-, methylcarbamate (or) propoxur	U411	114-26-1	T	6.1	9	2500

FIGURES

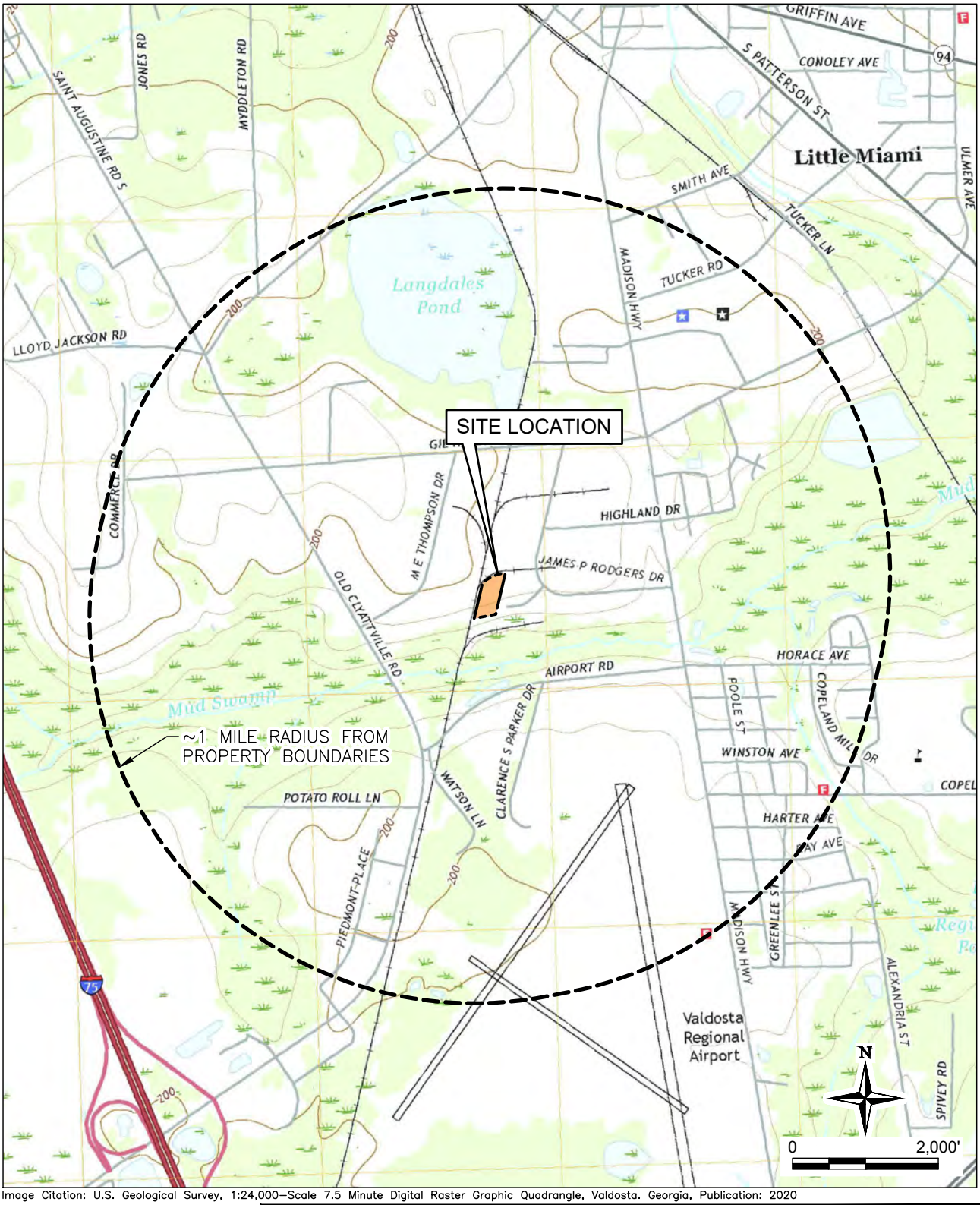


Image Citation: U.S. Geological Survey, 1:24,000–Scale 7.5 Minute Digital Raster Graphic Quadrangle, Valdosta. Georgia, Publication: 2020

QUADRANGLE LOCATION

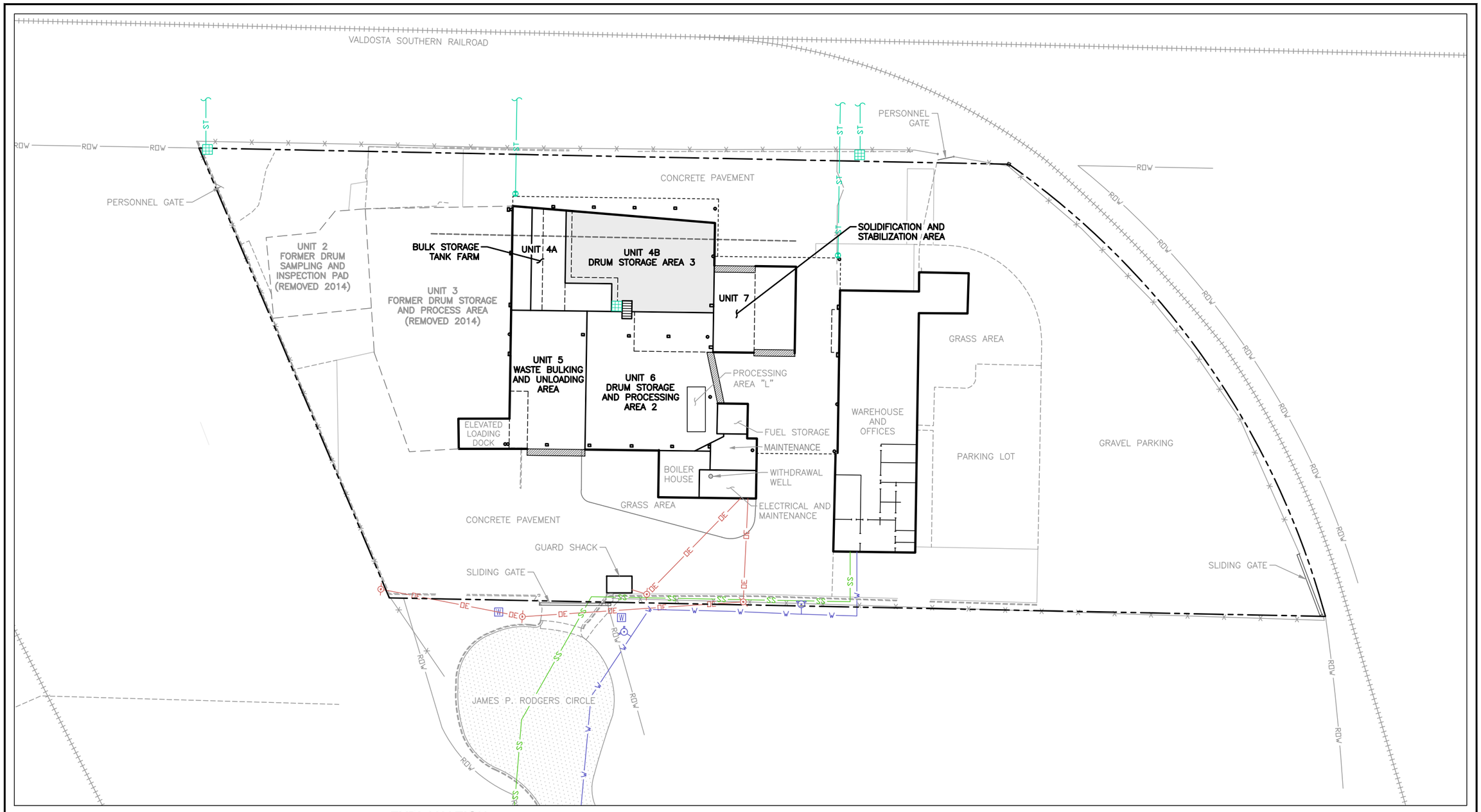
GeoSouth
Environmental Solutions
10250 Old St Augustine Rd
Ste 15 PMB 333
Jacksonville, FL 32257
904.328.0585

Scale: 1"=2000' | 12/5/2025

FIGURE 1

SITE LOCATION MAP

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



EXPLANATION

SUMP	OVERHEAD ELECTRICAL AND PHONE LINE	ROAD/CURB AND GUTTER EDGE	
ROOF DRAIN	SANITARY SEWER LINE	EXISTING STRUCTURE (REMOVED)	
UTILITY POST	PROPERTY BOUNDARY	OTHER EXISTING FEATURE	
FIRE HYDRANT	FENCE	VALDOSTA SOUTHERN RAILROAD	
WATER METER	RIGHT-OF-WAY	6" HIGH BERM	
WITHDRAWAL WELL	BUILDING OUTER WALL	HWMU	HAZARDOUS WASTE MANAGEMENT UNIT (IDENTIFIED WITH BOLD TEXT)
DRAINAGE LINE	ROOF LINE	POC	POINT OF COMPLIANCE
WATER LINE			

N

0 60'

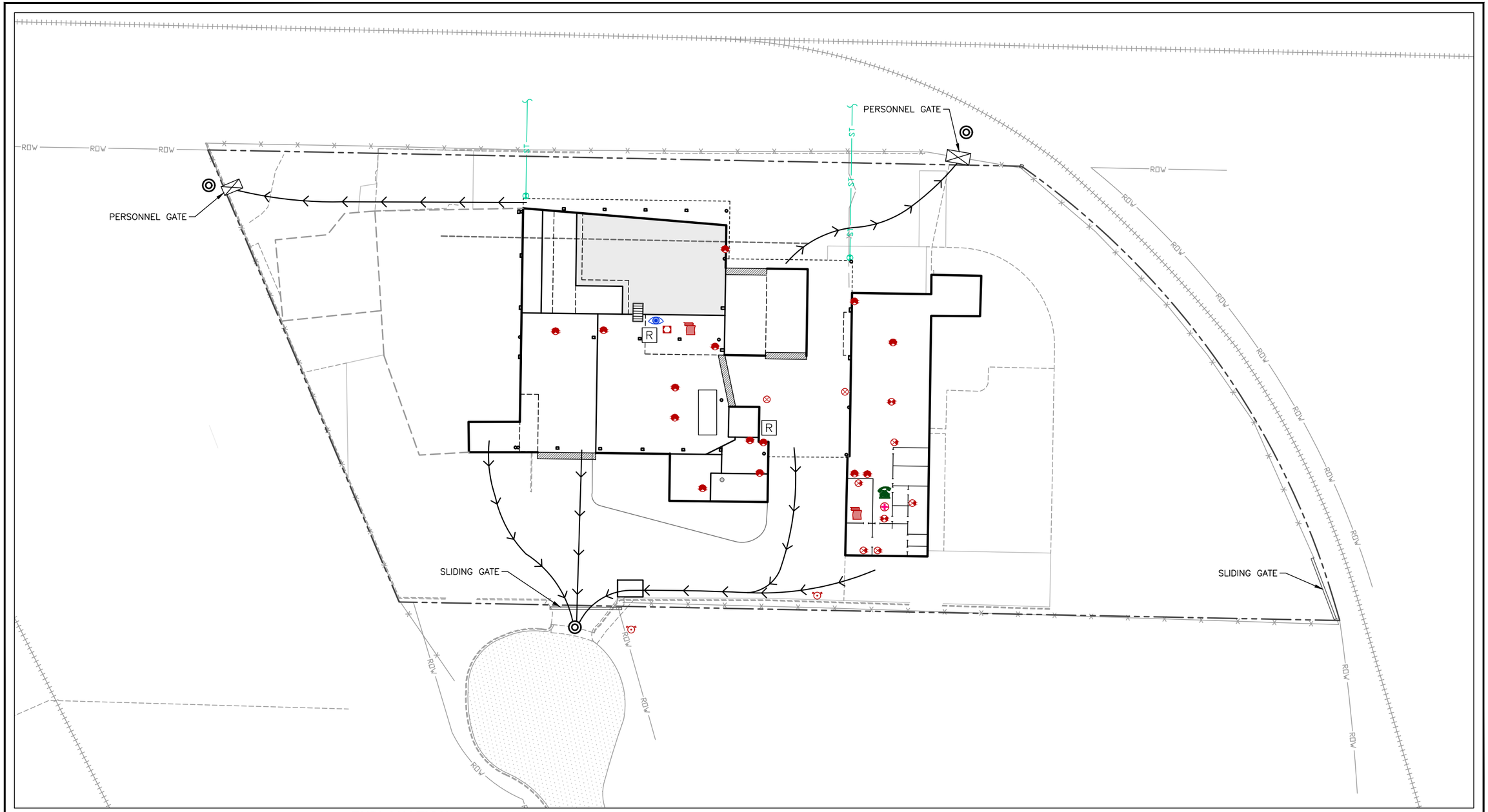
GeoSouth Environmental Solutions
10250 Old St Augustine Rd
Ste 15 PMB 333
Jacksonville, FL 32257
904.328.0585

Scale: 1"=60' | 12/10/2025

FIGURE 2

SITE PLAN WITH HWMUs

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



EXPLANATION

- RALLY POINT
- FIRE HYDRANT
- 25 lbs HAND HELD FIRE EXTINGUISHER
- 10 lbs HAND HELD FIRE EXTINGUISHER
- 5 lbs HAND HELD FIRE EXTINGUISHER
- 20 lbs HAND HELD FIRE EXTINGUISHER
- MEDIUM 50 lbs PORTABLE FIRE EXTINGUISHER
- LARGE PORTABLE (300 lbs) DRY CHEMICAL FIRE EXTINGUISHER
- TELEPHONE/INTERCOM
- FIRST AID STATION
- EMERGENCY SHOWER/EYE WASH
- FIRE BLANKET
- PERSONNEL GATE
- R — EMERGENCY ESCAPE RESPIRATOR
- PPE = PERSONAL PROTECTIVE EQUIPMENT STORAGE
- COLUMN
- WITHDRAWAL WELL
- ROOF DRAIN
- ST — DRAINAGE LINE
- EVACUATION ROUTE

N

0 60'

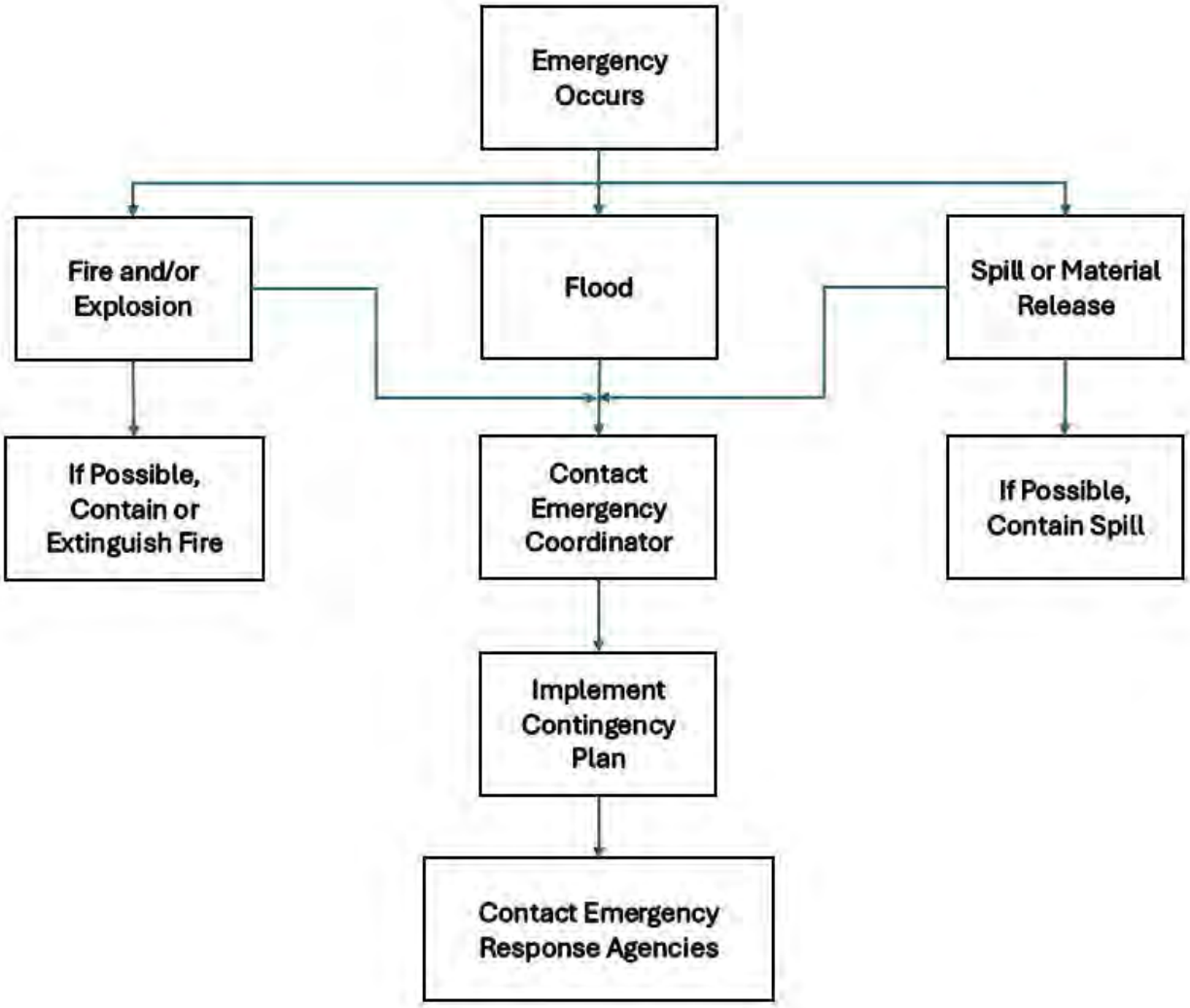
GeoSouth Environmental Solutions
11250 Old St Augustine Rd
Ste 15 PMP 333
Jacksonville, FL 32257
904.328.0585

Scale: 1"=60' | 12/15/25

FIGURE 3

EVACUATION ROUTES, RALLY POINTS, AND EMERGENCY EQUIPMENT LOCATIONS

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



GeoSouth Environmental Solutions 11250 Old St Augustine Rd Ste 15 PMP 333 Jacksonville, FL 32257 904.328.0585	**FIGURE 4** **OVERVIEW OF EMERGENCY PLAN OF ACTION** **PERMA-FIX OF SOUTH GEORGIA, INC.** **1612 JAMES P. RODGERS CIRCLE** **VALDOSTA, GEORGIA 30601**
12/15/2025	

ATTACHMENTS

ATTACHMENT CP-1.
EMERGENCY COORDINATORS
PERMA-FIX OF SOUTH GEORGIA, INC. VALDOSTA, GA

Primary	TBD	C: H:
Alternate	TBD	C:
		H:
Facility phone contact of (229) 244-0474 will be used to reach Emergency Coordinators at the facility during normal working hours.		

ATTACHMENT CP-2A
EMERGENCY PROCEDURES FOR FIRE
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GA

STEP	ACTION
1	Sound alarm using the intercom and by word of mouth, and quickly evaluate the extent of the emergency. The alarm should alert the site contact. If after hours, contact primary or alternate site contact using phone numbers in Attachment CP-1 posted by phone.
2	If the situation allows it, actuate the kill switch to disconnect the power to all process equipment. This should stop the flow of potentially ignitable and/or reactive materials. Lights should remain on inside the process area.
3	Follow the specific instructions of the site contact who will direct any internal efforts to contain, control or extinguish the fire, if the site contact is present.
4	If the primary or alternate site contact is not present, attempt to contain the fire as follows; otherwise, the primary or alternate site contact will conduct evaluation:

If the fire is a...		Then respond by following these steps...
LARGE FIRE (I.E., IT CANNOT BE EXTINGUISHED WITHOUT OUTSIDE ASSISTANCE)	a	Call the Fire Department – 911
	b	The primary or alternate site contact should contact the following as necessary: • Valdosta Police Department 911 • Valdosta Fire Rescue Department (229) 333-1836
	c	Evacuate personnel from the affected area to the designated evacuation assembly area.
	d	Prevent entry into affected area if it would jeopardize the safety of an employee
	e	If the situation allows it, prevent the spread of fire beyond the immediate area using fire extinguishers until outside assistance arrives.
	f	Follow directions given by ranking fire official.
	g	Close appropriate valve on the storm water outfall(s), or use absorbent materials or mechanical means to prevent any contaminated fire-fighting water from exiting the facility, if it is safe to do so.
	h	If hazardous materials are involved in the fire, provide the SDS or chemical information for the materials to the Fire Department.
	i	After the fire is extinguished, the site contact should evaluate the situation and determine whether an emergency response contractor is needed for environmental cleanup.
	j	Collect all contaminated absorbents in containers, and close and label the containers. Contained liquids may be pumped into a tank truck or containers.
	k	Resume operations only after the Fire Department and site contact have made a full inspection and have determined that the area is fit for restarting operations.

			l	Make proper notifications and prepare a written report regarding the incident.

STEP	ACTION		
	If the fire is a…		**Then respond by following these steps…**
	Small isolated **FIRE (I.E., ONE THAT CAN BE EXTINGUISHED WITHOUT OUTSIDE ASSISTANCE)**	a	Attempt to use fire extinguishers to control the fire.
		b	Use dry chemical, foam, or CO_2 fire extinguishers for fighting fires. Do not use water on electrical fire or liquid fires. • Class C extinguishers: For use on electrical fires • Class B extinguishers: For use on flammable liquid fires.
		c	Direct the stream from the extinguisher at the base of the fire from upwind and the sides. Do not stand downgradient of the fire.
		d	If the scope of the incident exceeds the capabilities of the portable fire extinguishers, activate dedicated fire suppression system.
		e	If efforts to extinguish the fire are not immediately effective, the site contact should contact the following as necessary: • Valdosta Police Department 911 • Valdosta Fire Rescue Department (229) 333-1836
		f	After the fire is extinguished, the site contact must conduct an inspection before resuming operations.
		g	Prepare a fire report.
5	Refer to Attachment CP-4 for reporting requirements (if applicable).		

ATTACHMENT CP-2B
EMERGENCY PROCEDURES FOR EXPLOSIONS
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GA

STEP	ACTION
1	Notify the Site contact immediately if an explosion occurs at the facility. Also, provide any information pertaining to injury to employees, if available.
2	The Site contact will notify the appropriate agencies listed in Attachment CP-4.
3	If it is safe to do so, retrieve any injured personnel and arrange for their medical help.
4	If the explosion has resulted in a fire, implement procedures listed in Attachment CP-2A.
5	If the explosion has resulted in a spill, implement procedures listed in Attachment CP-2B.
6	Resume operations only after the Site contact or his designee has made an inspection of the affected area(s) and has determined that the area(s) is fit for restarting operations.
7	Prepare a report on the explosion event.
8	Submit a written report, if applicable, to appropriate agencies listed in Attachment CP-4.

ATTACHMENT CP-3
EMERGENCY PROCEDURES FOR SPILLS AND UNPLANNED RELEASES
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GA

Minor spills may occur during sampling, equipment maintenance, transfer, and treatment operations. In most cases, these spills will occur where adequate ventilation is present to dissipate any harmful vapors. These spills can generally be remediated using pads and absorbent materials.

Major spills may result from overturned containers or ruptures in storage tanks, containers, piping, and hoses. Secondary spill containment has been installed at hazardous waste process and storage areas. The following actions will be taken in the event of a spill:

Step	Action			
1	Communicate the spill event to others.			
2	Assess the extent and magnitude and source of the event.			
3	Shut down processing operations, if necessary.			
4	Assess immediate health and safety concerns. Evacuate area if necessary.			
5	Attempt to remediate the spill/release as follows:			
		If spill is a…	**Then respond by following these steps…**	
		Minor spill *(may occur during sampling, equipment maintenance…)*	a	Remediate using pads and absorbent materials.
			b	Collect all contaminated absorbent and place in closed and labeled container.
		If spill is a…	**Then respond by following these steps…**	
		Major spill (may result from overturned containers or ruptures in storage tanks, containers, piping, and hoses.)	a	Deny entry into any area that would jeopardize the safety of an employee.
			b	Sound alarm. The alarm should alert the site contact. If after hours, contact the primary or alternate site contact using phone number in Attachment CP-1.
			c	Follow the specific instructions of the site contact, including evacuation of the area (if required).
			d	If it is safe to do so, stop the flow of the released material by closing valves, shutting off pumps, or rotating or "overpacking" ruptured containers.
			e	All loading and transfer activities in the area are to be ceased.

Step	Action			
			f	Contain the spill as much as possible using the following equipment: - **Absorbent booms**: Use these in tandem (one placed a few inches behind the other) to help control the flow of the material. - **Use other absorbent materials**: Use a commercial absorbent to soak up spills. - **Empty 55-gallon drums** can be turned on their sides and rolled to create an "instant" dike. - **Use mechanical means**: Ditch and shovels, if applicable.
			g	Close appropriate valve on the storm water outfall(s), or use absorbent materials or mechanical means to prevent the spilled material from exiting the facility, if it is safe to do so and the potential exists for spills to flow outside the facility.
			h	If there is a need for outside help, the primary or alternate site contact will contact the appropriate local authority, agency, or remediation contractor.
			i	Pump free liquids into containers or drums or tanker trucks.
			j	Collect all contaminated absorbent and place it in containers. Close and label containers.
			k	If directed by the Facility Radiation Safety Officer, survey all affected areas and materials for radiation.
			l	Begin equipment and area cleanup.
			m	Arrange for proper management of remediation waste.
			n	Complete a written description of the event while details are still fresh.
			o	Refer to Attachment CP-4 to complete reporting requirements, if applicable.
6	Notify local, state, and/or federal agencies listed in Attachment CP-4, as appropriate.			

ATTACHMENT CP-4.
EMERGENCY NOTIFICATION AND REPORTING INFORMATION
PERMA-FIX OF SOUTH GEORGIA, INC. VALDOSTA, GA

Emergency	Organization/Agency	Emergency Telephone Number
Injury	South Georgia Medical Center	911 or (229) 333-1000
Fire/Explosion	Valdosta Fire Department	911 or (229) 333-1836
	State Fire Marshal	(404) 656-2064
Hazardous Material Spill or Release	Valdosta Fire Department	911 or (229) 333-1836
	Valdosta Police Department	(229) 242-2606
If Spill Reaches Navigable Water	National Response Center	(800) 424-8802 (24-hour number)
Natural Disasters	Lowndes County Emergency Management	911 or (229) 671-2790
	National Weather Service	(770) 486-0830 ext. 677
Potential Flood	U.S. Army Corps of Engineers	(404) 562-5011
All of the Above	Georgia Emergency Management Agency *	(404) 635-7200 (24-hour number)
	American Red Cross Main	(800) 733-2767
	American Red Cross Valdosta	(229) 242-7404
	National Response Center	(800) 424-8802
	Georgia Environmental Protection Division	(800) 241-4113
	Moody Air Force Base	(229) 257-4211

* This agency may also be contacted in any emergency event if necessary.

ATTACHMENT CP-5.
EMERGENCY EQUIPMENT LIST
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GA

Materials/Equipment	Quantity	Location	Description/Capabilities
Standard Industrial Absorbents (Sorb-All, Vermiculite, Etc.)	3 - 55gal Drums	Near Warehouse	Each drum should be accompanied with broom (or shovel) and dustpan.
Absorbent Pigs	Pigs-in Various Lengths	Near Warehouse	Use for spill control in water, most insoluble or slightly soluble organics. Most materials on land. Will float on water so are most helpful in cleaning up materials contained within the boom boundaries or in diked areas where a chemical sheen has formed on water collected within. Also, place around equipment or in areas where leakage or spillage occurs frequently (i.e., pumps, loading/unloading areas).
Flexible (Neoprene) hoses with quick couple fittings	300 ft	Used throughout Facility	Neoprene is resistant to most acids and solvents, but not all. For instance, benzene will degrade Neoprene. For use with portable pumps.
Portable Pumps	3	Used throughout Facility	For removal of liquids from containment areas, tanks, containers or spill areas.
55-Gallon Drums	85	Near Warehouse	Organic solvents containerizing.
Recovery Drums	15	Near Warehouse	For repacking of leaking containers. Oversized to allow a leaking 55-gallon container to be picked up and placed entirely into a recovery drum.
Van-type Trailer	1	Equipment Storage Area	Equipment and personnel transport.
Tractors	1	Equipment Storage Area	Fire and spill control and material transportation.
150 H.P. Steam Generator	1	Boiler House	For equipment and area cleanup.
350 H.P. Steam Generator	1	Boiler House	For equipment and area cleanup.
General Alarm System	1	Throughout Facility	Sounds alarm throughout facility.

ATTACHMENT CP-5.
EMERGENCY EQUIPMENT LIST
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GA

Materials/Equipment	Quantity	Location	Description/Capabilities
Intercom System	1	Telephone Locations	Communicates verbal message throughout facility phone system.
Fire Control Equipment's (Fire Extinguishers & Hydrants)		See Figure G-2	For extinguishing Class A, B, or C Fires.
Telephones	15	Throughout Facility	Provides for verbal communication throughout facility.
Personnel Equipment (gloves, safety shoes, goggles/face shield, protective clothing, SCBA Chemical Cartridges for Organic Vapors and acid gases)	*	Near Warehouse	Provides for adequate protection of personnel working in hazardous waste areas.
Shovels	6	Throughout Facility	For spill cleanup and removal of material.
Fire Blankets	4	Throughout Facility	For fire protection.
Public Address System	1	Throughout Facility	For verbal communication throughout facility.
Emergency Lighting System	8	Office	Portable light source (flashlights).
First Aid Equipment and Supplies	*	Near Warehouse	For treating minor personnel injury.
Decontamination Equipment	Various	Equipment Storage and Decon Area	Decontamination of equipment (steam lines).
Emergency Shower and Eyewash	3	Throughout Facility	Decontamination of personnel.

* Sufficient supply for daily use by facility personnel.

ft - feet

gal - gallons

H.P. - horse power

ATTACHMENT CP-6
CONTINGENCY PLAN REVISIONS – TRANSMITTAL LETTER
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GA

EXAMPLE

Certified Mail
_____
Return Receipt Request

DATE:_____

TO: _____

_____

RE: Contingency Plan Revisions - Perma-Fix of South Georgia, Inc.

Dear _____:

Perma-Fix of South Georgia, Inc. has revised the facility's Contingency Plan document. Our facility is required to supply your organization with a complete copy of the Contingency Plan document, and all subsequent revisions in accordance with federal EPA regulations listed at 40 CFR 264.53/264.54.

Copies of the revised plan is enclosed for insertion within your organization's copy of the Perma-Fix Contingency Plan document. Please make the necessary updates to your copy of the plan and discard all outdated pages.

The regulation also requires Perma-Fix to document a coordination agreement with your department to respond to, or assist in, emergency services in the event of an emergency situation which may arise at our facility. A separate form and envelope are enclosed for you to complete and return to the facility in order to assure Perma-Fix is in compliance with these regulations.

If you have any questions regarding the information received or your organization's role in contingency planning for the Perma-Fix of South Georgia facility, please contact the undersigned at (770) 587-9898, ext. 6007.

Sincerely,

Perma-Fix of South Georgia, Inc.

Kevin Schmuggerow
Vice President, Industrial Business
kevin.schmuggerow@perma-fix.com

ATTACHMENT CP-7
COORDINATION AGREEMENTS / RECEIPT DOCUMENTATION
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GA

EXAMPLE	Certified Mail # _____ Return Receipt Request

ACCEPTANCE

I certify that on this _____ day of _____, I received a copy of the Contingency Plan for Perma-Fix of South Georgia, Inc. at 1612 James P. Rodgers Circle in Valdosta, Georgia 31601. Further, this organization agrees to respond to, or assist in, emergency situations which may arise at the subject facility should the need arise.

REFUSAL

☐ By checking this box, the undersigned organization refuses to enter into an agreement to provide emergency response services to the subject facility. However, we do acknowledge receipt of the Contingency Plan being offered by Perma-Fix of South Georgia, Inc.

Signature:	
Printed Name:	
Title:	
Organization:	

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H. PERSONNEL TRAINING

This section outlines the personnel training program for the PFSG facility in accordance with the requirements of 40 CFR 270.14(b)(12) and 264.16.

H.1 OUTLINE OF TRAINING PROGRAM [40 CFR 270.14(b)(12)]

The following provides an outline of the introductory and continuing training programs that will be conducted by PFSG to prepare personnel to operate and maintain the facility safely.

I. Purpose

PFSG has developed a training program for all plant employees that will provide assurances that performance of job assignments will be conducted in a manner that will minimize the potential for adverse impact to the environment or human health. Facility personnel will complete a program of formal classroom training and on-the-job training that teaches them to perform their duties in a way that will ensure the facility's compliance with regulatory requirements, permit conditions, and corporate policies. Employees will be thoroughly trained in the procedures applicable to their waste management duties, as well as the hazards associated with these duties. Adequate and proper training will reduce the occurrence of personal injuries and site emergencies and will equip personnel to respond to emergency situations, should the need arise.

The objectives of the personnel training program are:

- Thoroughly train all employees in the proper performance of their job assignments.
- Ensure that facility personnel can respond effectively to emergencies by training them in emergency procedures, emergency equipment, and emergency systems.
- Train all personnel in the use of appropriate safety measures and protective equipment.
- Inform employees of the hazard potential posed by waste materials and their treatment.
- Educate personnel on the applicability of compliance with pertinent environmental and occupational health and safety regulations.

Particularly, emergency situations and accidents can be largely eliminated by having a work force trained to perform their jobs properly, take adequate precautions, follow appropriate operating and safety procedures, and use provided safety equipment. The consequences of an emergency also can be minimized through rapid and effective response by thoroughly trained personnel.

II. Training Program [40 CFR 264.16(a)(1)]

A. On-the-Job-Training (OJT)

A common and successful method for personnel training is on-the-job training. It provides everyone with training pertinent to normal daily operations at the facility. A major advantage of this type of training is that it provides "hands on" experience, with supervision for specific equipment and processes used at the facility.

OJT at the facility will provide the employee with information and procedures relating to the correct performance on their duties, the hazards associated with the job, and the personal protection required. OJT will also be used to provide employees with general and specific training in emergency procedures and environmental protection. The training will be based upon job descriptions. Management or equipment representatives will conduct the OJT, and this training will be documented in the employee's personnel file. The training program will be directed by a person trained in hazardous waste management procedures, and will include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed (Exhibit H-1, On-The-Job Training Record Form).

The OJT training record provides space for indicating the job, the specific task for which OJT is being conducted, the date of training, and the signatures of the trainer and employee being trained. The OJT record contains a section for evaluation about the employee's proficiency in the task. The evaluation can be made by the trainer as the result of an operating test (performance and/or written), a verbal test, or other demonstration of understanding and proficiency. Final assignment of the employee will be contingent upon satisfactory completion of OJT. The OJT program will normally be completed within the first six weeks of employment. During this initial six weeks of employment and training, the employee will work under the close supervision of his/her foreman or other trained employees and will not work in an unsupervised position until adequately trained for the job assignment.

OJT training records will be prepared, documented and maintained, as appropriate, for all employees. Training records on current personnel will be kept until closure of the facility. Training records on former employees will be kept for at least three years from the date the employee last worked at the facility. Personnel training records will accompany personnel transferred within the same company.

B. Classroom Training

Employees will receive formal classroom training to augment their previous experience, academic training, and OJT to reinforce the basic procedures and precautions that must be followed in the various process areas of the facility. Classroom training will be conducted and completed for all site personnel as soon as practicable, but in every instance, within six months after the date of employment, assignment to the facility, or assignment to a new position at the facility. New employees must complete Occupational Safety and Health Administration (OSHA)-mandated classroom training prior to any OJT.

The formal classroom training is divided into four sections. The PFSG compliance office is responsible for coordinating the training program.

Section 1 OSHA 24-HOUR HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE (HAZWOPER) AND RCRA INITIAL AND ANNUAL TRAINING

This training will be conducted by a qualified person, group, or organization.

Section 2 ORIENTATION TRAINING

This training will be conducted by a qualified person and will cover the following topics.

- Company structure - chain of command
- Job description - responsibilities
- Evacuation routes - how to exit facility
- Use of phone - use of phone during emergencies
- Emergencies responsibilities - what to do
- Location of emergency equipment - fire extinguishers

Section 3 CONTINUING EDUCATION

Employees will be provided various continuing education classes as needed to keep up to date on new regulations and improvement on equipment.

H.1.1 JOB TITLES AND DUTIES [40 CFR 264.16(D)(1) AND (2)]

Figure H-1 presents an example organization chart that shows a general employee management structure for the facility; personnel names will be added after they are assigned. Job titles and job descriptions are provided in Exhibit H-2 and Exhibit H-3, respectively.

H.1.2 TRAINING CONTENT, FREQUENCY, AND TECHNIQUE [40 CFR 264.16(b), (c), AND (d)(3)]

Along with the written description of the duties associated with each job position, the level of training required by PFSG for employees in each job is also specified in Exhibit H-3. The written job description includes the requisite skill, education, or other qualifications, and duties of employees assigned to each position. OSHA 24-hour HAZWOPER training is completed where required for each employee within six months after the date of employment or assignment to the facility. New employees will not be required to respond to any emergencies at the facility until HAZWOPER training is completed. OSHA 8-hour HAZWOPER refresher training is completed annually. RCRA training is completed initially and annually thereafter. Exhibit H-4 provides an example of HAZWOPER training.

H.1.3 TRAINING DIRECTOR [40 CFR 264.16(a)(2)]

PFSG uses qualified persons/organizations for administering the required OSHA 24-hour HAZWOPER, 8-hour HAZWOPER refresher, and RCRA initial and annual training programs. This assures that the director of these programs will be fully qualified and trained in hazardous waste management.

H.1.4 RELEVANCE OF TRAINING TO JOB POSITION [40 CFR 264.16(a)(1) AND (3)]

While the required RCRA and OSHA 24-hour HAZWOPER training and 8-hour HAZWOPER refresher provide extensive instruction on hazardous waste management procedures, OJT provides instruction to personnel specific to each job position. Such OJT provides instruction on various aspects of each job, including implementation of the Contingency Plan (Section G).

H.1.5 TRAINING FOR EMERGENCY RESPONSE [40 CFR 264.16(a)(3) AND (4)]

During OJT, each employee receives instruction specific to their job description and responsibilities, as described in Exhibit H-3. Additionally, the Contingency Plan is reviewed and training on personal protective equipment is conducted. Training will be conducted to ensure each employee is able to respond effectively to emergencies by familiarizing them with the facility's emergency procedures, emergency equipment, and emergency systems, including:

- Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment
- Key parameters for automatic waste feed cut-off systems
- Communications or alarm systems
- Response to fires or explosions
- Response to ground-water contamination incidents

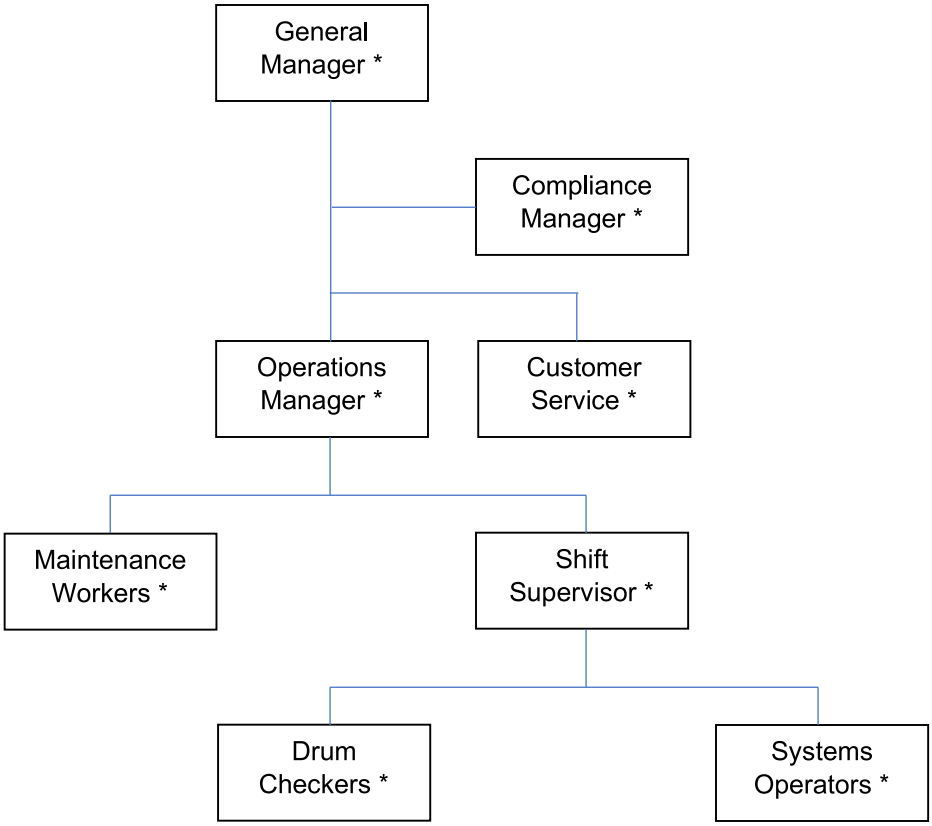
- Shutdown of operations

H.2 IMPLEMENTATION OF TRAINING PROGRAM [40 CFR 264.16(b), (d)(4) AND 264.16(e)]

OJT for each employee will be completed within the first six weeks of employment or transfer to the job assignment, whichever is later. Classroom training is conducted within six months after employment or transfer. Exhibit H-1 provides an example of the written records maintained to document OJT for each employee. Exhibit H-2 lists the Job Facility Titles. Certificates documenting completion of classroom training are issued by the administering organization and retained in each employee file until facility closure, or three years past last date person was employed by PFSG. Exhibit H-5 provides an example of a training certificate.

FIGURE

FIGURE H-1. EXAMPLE ORGANIZATION CHART FOR PFSG



* Position is currently vacant.

EXHIBITS

EXHIBIT H-1

ON THE JOB TRAINING RECORD

EXHIBIT H-1. EXAMPLE: ON-THE-JOB TRAINING RECORD FORM

Employee Name:_____

SSN:_____

Job Title:_____

Date of Training:_____

Department:_____

Trainer:_____

Duration of Training (in hours):_____

OJT Training Description:_____

_____

_____

_____

Trainer's Evaluation:_____

_____

_____

_____

_____

_____

_____

I have been trained by a qualified individual selected by the Management of PSGI and agree to abide by the standards presented in the OJT training referenced in this form.

Employee's Signature:_____

Trainer's Signature:_____

EXHIBIT H-2

JOB FACILITY TITLES

EXHIBIT H-2. FACILITY JOB TITLES

JOB TITLES

General Manager

Compliance Officer

Customer Service

Operations Manager

Maintenance Worker

Shift Supervisor

Systems Operator

Drum Checker

EXHIBIT H-3

JOB DESCRIPTIONS

EXHIBIT H-3. JOB DESCRIPTIONS

JOB DESCRIPTION

POSITION TITLE: **General Manager**

REPORTING TO: **Vice President of Operations**

POSITION RESPONSIBILITIES AND DUTIES:

1) Implement management decisions relating to waste receipts and site policies.

2) Oversee all site operations to ensure compliance with existing permits and regulations.

3) Interface with the assistance general manager regarding solutions to problems and objectives to be attained.

4) Review all safety procedures.

5) Coordinate with the compliance manager on acquiring needed permits. Updating current permits and obtaining disposal approvals for waste streams.

6) Provide direction to office manager, lab manager, and sales coordinator as necessary.

7) Provide an ongoing review of business developments.

8) Take control of all emergency situations upon arrival at the scene.

9) Review all waste profiles.

EXPERIENCE AND QUALIFICATIONS:

1) B.S. Degree in Chemistry, Engineering, Natural Science, or equivalent work experience is desirable

2) Three (3) years of business and technical experience, with special emphasis on operating management is desirable.

3) Alternative formal training and experience that is appropriate will be evaluated in lieu of the above requirements.

TRAINING:

1) OSHA 24-hour HAZWOPER

2) OSHA 8-hour HAZWOPER refresher

3) RCRA

   a) Initial

   b) Annual

EXHIBIT H-3. JOB DESCRIPTIONS

JOB DESCRIPTION

POSITION TITLE: **Operations Manager**

REPORTING TO: **General Manager**

POSITION RESPONSIBILITIES AND DUTIES:

1) Direct the day-to-day production activities of the facility.

2) Hire, discharge, interview, and discipline the following positions after consulting with the general manager:

   Shift Supervisor

   Maintenance Worker

3) Operate the facility in a manner that is in compliance with the permit.

4) Review the scheduling of inbound and outbound material.

5) Ensure at all times the processing center is operated in a manner that guarantees worker safety and protection of the environment.

6) Ensure that spills are contained and cleaned up immediately and utilize the production work force to maintain the cleanliness and orderliness of the facility at all times.

7) Perform such duties and assignments as assigned by the general manager.

EXPERIENCE AND QUALIFICATIONS:

1) B.S. Degree in Chemistry, Engineering, Natural Science, or equivalent work experience is desirable

2) Three (3) years of business and technical experience, with special emphasis on operating management is desirable.

3) Alternative formal training and experience that is appropriate will be evaluated in lieu of the above requirements.

TRAINING:

1) OSHA 24-hour HAZWOPER

2) OSHA 8-hour HAZWOPER refresher

3) RCRA

   a. Initial

   b. Annual

JOB DESCRIPTION

POSITION TITLE: **Shift Supervisor**

REPORTING TO: **Operations Manager**

POSITION RESPONSIBILITIES AND DUTIES:

1) Direct all activities of the processing area.

2) Ensure at all times the processing area is operated in a manner that guarantees worker safety and protection of the environment.

3) Conduct frequent inspections and obtain necessary maintenance support that will ensure proper operation.

4) Perform such duties and assignments as assigned by the assistant general manager.

EXPERIENCE AND QUALIFICATIONS:

1) High school diploma or equivalent.

2) Three (3) years direct or related experience in plant management is desirable.

3) Alternative formal training and experience that is appropriate will be evaluated in lieu of the above requirements.

TRAINING:

1) OSHA 24-hour HAZWOPER

2) OSHA 8-hour HAZWOPER refresher

3) RCRA

   a. Initial

   b. Annual

EXHIBIT H-3. JOB DESCRIPTIONS

JOB DESCRIPTION

POSITION TITLE: **Drum Checker**
Systems Operator

REPORTING TO: **Shift Supervisor**

POSITION RESPONSIBILITIES AND DUTIES:

1) Perform all tasks related to fuel blending and truck loading and unloading.

2) Perform visual inspection of hazardous waste.

3) Check and correct container labels of containers being stocked, processed, or shipped off-site.

4) Perform such duties and assignments as assigned by the shift supervisor.

5) Maintain the facility in a clean and orderly status at all times.

6) Contain and clean up spills that occur during unloading, transfer, or processing of waste.

7) Operate all equipment in a safe and effective manner.

8) Sample incoming, outgoing, and processed waste.

9) Perform daily inventory of all on-site waste.

10) Perform tracking requirements on all processed waste.

11) Perform drum check-in procedures.

EXPERIENCE AND QUALIFICATIONS:

1) High school diploma or equivalent is desirable.

2) Manual dexterity required for general work activities.

TRAINING:

1) OSHA 24-hour HAZWOPER

2) OSHA 8-hour HAZWOPER refresher

3) RCRA

   a. Initial

   b. Annual

EXHIBIT H-3. JOB DESCRIPTIONS

JOB DESCRIPTION

POSITION TITLE: **Maintenance Worker**

REPORTING TO: **Operations Manager**

POSITION RESPONSIBILITIES AND DUTIES:

1) Perform such duties and assignments as directed by the assistant general manager.

2) Order supplies and equipment repair parts.

3) Perform repairs and maintenance on facility equipment.

EXPERIENCE AND QUALIFICATIONS:

1) Demonstrated mechanical abilities.

2) Two (2) years experience in equipment repairs and replacements.

TRAINING:

1) OSHA 24-hour HAZWOPER

3) OSHA 8-hour HAZWOPER refresher

3) RCRA

   a. Initial

   b. Annual

EXHIBIT H-3. JOB DESCRIPTIONS

JOB DESCRIPTION

POSITION TITLE: **Compliance Officer**

REPORTING TO: **General Manager**

POSITION RESPONSIBILITIES AND DUTIES:

1) Audit all site activities to ensure compliance with regulations, permit conditions, and company policy.

2) Implement and enforce site safety program.

3) Act as primary liaison for the site with federal, state, and other agencies.

4) Review and assist in the preparation of all reports and submissions required by federal and state regulations and permit conditions.

5) Responsible for coordinating all training programs.

6) Conduct all daily inspections.

7) Perform such duties and special projects as assigned by the general manager.

EXPERIENCE AND QUALIFICATIONS:

1) Two (2) years experience with a regulatory agency or a waste management firm.

2) Alternative formal training and experience that is appropriate will be evaluated in lieu of the above requirements.

TRAINING:

1) OSHA 24-hour HAZWOPER

2) OSHA 8-hour HAZWOPER refresher

3) RCRA

   a. Initial
   b. Annual

EXHIBIT H-4

OUTLINE OF HAZWOPER TRAINING

EXHIBIT H-4. EXAMPLE: OUTLINE OF HAZWOPER TRAINING

Hazardous Waste Operations and Emergency Response 29 CFR 1910.120 Requirements

OSHA - General Industrial Safety

- Site Specific Procedures Addressing Safety and Health Hazards
- Hazard Communication (29 CFR 1910.1200)
- Personal Protective Equipment (PPE) (29 CFR 1910 Subpart I)
- Respiratory Protection (29 CFR 1910.134)
- Occupation Noise Exposure (29 CFR 1910.95)
- Heat Stress
- General Fire Safety (Use of Fire Extinguishers)
- Confined Space Entry (29 CFR 1910. 146)
- Lockout/Tagout (29 CFR 1910. 147)
- Industrial Hygiene Monitoring
- Job Safety Analysis (JSA)
- Facility Contingency and Fire Prevention Plan
- Laboratory Chemical Hygiene Plan
- Drum Handling/ Pressurized Drums/Grounding and Bonding
- Hand and Portable Power Tools
- Medical Surveillance / Injury and Illness Reporting

HAZWOPER 8-Hour Annual Refresher Agenda

- HAZWOPER Review and Worksheet
- Hazcom/Hazard Assessment Workshop
- Bloodborne Pathogens (BBP)
- RCRA/DOT Hazmat and Security Awareness
- Emergency Response Guidebook Workshop
- Personal Protective Equipment (PPE) and
- Chemical Protective Clothing (CPC) Workshop
- Confined Space (CS) and Lockout/Tagout (LOTO) Overview
- Toxicology NIOSH Chemical Guide 2006 Workshop
- Spill Response / Mitigation / Site Safety Plan Review
- Spill Prevention Countermeasure Control (SPCC) Procedures

EXHIBIT H-5

EXAMPLE OF TRAINING CERTIFICATE

EXHIBIT H-5. EXAMPLE: CLASSROOM TRAINING CERTIFICATES

CERTIFICATE OF COMPLETION

THIS CERTIFIES THAT

JOHN DOE

Has successfully completed OSHA Training Course in
Accordance with Federal OSHA Regulations

DEC 31, 20XX

Jane Doe, Instructor #000

000000000

Certificate Number

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I. CLOSURE, POST-CLOSURE CARE, AND FINANCIAL RESPONSIBILITY

This section addresses the requirements for closure and post-closure planning for the PFSG facility, in accordance with 40 CFR §270.14(b)(13), (14), (15), (16, (17), and (18) and 40 CFR 264 Subparts G and H.

In November 2018, PFSG submitted a Post-Closure Permit Application that included a Post-Closure Care Plan (Section I-2 of the 2018 application) to the GEPD for approval. On February 11, 2020, the GEPD issued Hazardous Waste Facility Permit HW-020(D), authorizing PFSG to conduct post-closure care at six designated HWMUs at this closed facility. The facility is currently under post-closure care for the regulated units that have not yet achieved clean closure, including conducting groundwater monitoring, facility inspections, and a schedule for development of a corrective action program. PFSG has prepared the current permit modification, seeking regulatory approval to reinstate for further use, four structurally intact, but currently closed HWMUs (Waste Bulking and Unloading Area, Drum Storage and Process Area 2, Bulk Storage Tank Farm, and Solidification and Stabilization Area) at this facility. PFSG is also seeking regulatory approval to designate and begin active use of a new HWMU (Drum Storage Area 3). Two additional HWMUs (Drum Sampling and Inspection Pad, and Drum Storage and Process Area 1) have been permanently closed and capped, so these two HWMUs will remain in post-closure care status.

This section thus identifies the steps that would be necessary to partially close the facility at any point during its intended reinstated operating life and/or those required to completely close the facility at the end of its intended reinstated operating life. The plan also describes the conditions and reasons under which partial closure would occur. The post-closure plan addresses activities that would occur after facility closure has been conducted and approved.

PFSG will maintain an on-site copy of the approved closure and post-closure plans and all revisions to the plans until the certification of closure and post-closure completeness has been submitted and accepted by GEPD. PFSG will notify the GEPD at least 45 days prior to the expected start of closure. The projected closure date for the entire facility will be 2075. Upon completion of closure, PFSG will submit to the GEPD a certification by both PFSG and by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan. Post-closure activities will be implemented until such time GEPD agrees that the post-closure requirements have been met. Upon completion of post-closure, PFSG will submit to the GEPD a certification by both PFSG and by an independent registered professional engineer that the post-closure care has been completed in accordance with the specifications in the approved post-closure care plan. If the HWMU(s) at the facility is approved as clean closed by GEPD, the post-closure plan will not be executed.

I.1 CLOSURE PLAN [40 CFR §270.14(b)(13) AND 40 CFR 264.111 AND 264.112]

I.1.1 CLOSURE PERFORMANCE STANDARD [40 CFR §264.111 AND §264.112]

This closure plan is designed to control, minimize, or eliminate (to the extent necessary to protect human health and the environment) the escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground or surface waters, to the atmosphere, or to the surrounding land. Where wastes have been routinely managed and where there is evidence of any spills or leaks, at any parts of the facility, samples will be collected and analyzed to determine the extent and magnitude of contamination in the soil. If soil contamination exists at significant concentrations and depth to warrant ground water investigation, such investigation and required soil and groundwater remediation will be completed. The current Hazardous Waste Facility Permit HW-020(D) stipulates that the groundwater protection standard (GWPS), defined in Chapter 391-5-3-.18 of the Georgia Rules for Safe Drinking Water are applicable for those hazardous constituents monitored in groundwater at this facility. A list of 26 volatile organic compound (VOC) constituents applicable to this facility are provided in Table 1: GWPS in Section III.B.2. of the referenced permit. Note that the pesticide heptachlor is also listed on referenced Table 1 of the current permit, but through this modification application, we are seeking regulatory approval to discontinue heptachlor monitoring, based upon lines of evidence that this is no longer an analyte of concern at this facility.

Preliminary remedial action objectives (RAO) for the same 26 VOCs in soil will be based upon USEPA Residential Soil Regional Screening Levels (RSL) using a target hazard quotient (HQ) of 0.1 from the most recent RSL – Generic Tables, which are updated annually.

The following sections provide details of efforts to be performed at PFSG to satisfy the closure performance standard.

I.1.2 PARTIAL AND FINAL CLOSURE ACTIVITIES [40 CFR 264.112(a) AND 264.112(b)(1) AND (2)]

PFSG procedures for final closure of the facility, including inventory removal, waste removal, cleanup, and decontamination activities, are described in Sections I.1.4, I.1.5, and I.1.6 of this closure plan. Partial closure of any unit at the facility will also be conducted per this closure plan. In the event that future circumstances or decisions force PFSG to discontinue any of its storage activities, applicable portions of Section I.1.6 would be incorporated for the partial closure of the facility.

This closure plan will be amended if any changes in operating plans or facility design would affect the closure plan, or if unexpected events require modification of the approved closure plan during partial/final closure. The amended

closure plan will be submitted to GEPD for approval at least 60 days prior to the proposed change in facility design/operation, or within 60 days after an unexpected event has occurred during conducting partial/final closure.

Any modifications to existing facility structures, instruments, or procedures related to the management of a distinct portion of the facility will result in PFSG updating the partial closure plan and revising the closure plan accordingly.

PFSG expects the operation to consist of temporary storage of 55-gallon drums, or other DOT-approved containers, and bulk liquid wastes, consolidation of wastes for fuel and shipment of generated waste to an approved waste disposal facility. Section I.1.3 of the closure plan describes the maximum inventory of wastes in storage at any given time during the anticipated operating life. PFSG will dispose of its closure wastes in an appropriate commercially operated and legally permitted hazardous waste disposal/treatment facility.

I.1.3 MAXIMUM WASTE INVENTORY [40 CFR 264.112(b)(3)]

The following provides the maximum hazardous waste inventory capacity of the facility as proposed in this Modification.

MAXIMUM WASTE INVENTORY

Hazardous Waste Management Unit (HWMU)	Type Storage	Proposed Hazardous Waste Storage Capacity (gallons)	Total Proposed Hazardous Waste Treatment Capacity (gallons)
HWMU 2: Former Drum Sampling and Inspection Pad (removed 2014)	NA	NA	NA
HWMU 3: Former Drum Storage and Process Area 1 (removed 2014)	NA	NA	NA
HWMU 4A: Bulk Storage Tank Farm	Tank (Bulk Liquid)	80,000	NA
HWMU 4B: Drum Storage Area 3	832 Drums (55-gallon Drums) or Other DOT Approved Container	45,760	NA
HWMU 5: Waste Bulking and Unloading Area (including new Drum Sampling and Inspection Area)	Bulk Container	18,000	18,000
	144 Drums (55-gallon Drums) or Other DOT Approved Container	7,920	NA
HWMU 6: Drum Storage and Process Area 2	744 Drums (55-gallon Drums) or Other DOT Approved Container	40,920	8,250
HWMU 7: Solidification and Stabilization Area	Bulk Container	20,196	20,196

Hazardous Waste Management Unit (HWMU)	Type Storage	Proposed Hazardous Waste Storage Capacity (gallons)	Total Proposed Hazardous Waste Treatment Capacity (gallons)
Total of 1720 55-gallon Drums or other DOT Approved Containers		94,600	8,250
Total Tanks		80,000	0
Total Bulk Containers		38,196	38,196
Grand Total		212,796	46,446

I.1.4 PROCEDURES AND SCHEDULE FOR CLOSURE [40 CFR §264.112(a)(4), (5), AND (6) AND 264.115]

This general closure plan provides a systematic closure for the PFSG facility in its entirety. The plan is outlined below and detailed in Section I.1.6. The date of final closure is anticipated to be in the year 2075.

Should the facility be required to suddenly cease operation prior to the year 2075, each designated operation will be closed in accordance with the procedures developed in this plan. In any event, even for partial closure, the general sequence of activities will include the following:

- Contaminated water bulk inventory transferred to another approved hazardous waste treatment/disposal facility.
- Decontamination of all hazardous waste management units.
- Equipment cleaned and decontaminated.
- Decontamination residues will be analyzed and shipped off-site to a permitted hazardous waste disposal facility.
- Tanks, miscellaneous units, and ancillary equipment dismantled and scraped, as necessary.
- Soil sampled and tested for contamination, if necessary.

Table I-1 presents a general schedule of activities necessary for the closure of the facility and the anticipated duration, based on the receipt date of the final volume of the waste at the facility or containment tank storage unit. Upon partial or final closure of the facility, all equipment and structures that have been in contact with hazardous wastes will have been properly disposed of or decontaminated.

A certification of closure as required under 40 CFR §264.115 will be sent to the Director of GEPD within 60 days of completion of final closure.

I.1.5 TIME ALLOWED FOR CLOSURE [40 CFR §264.113(a) AND (b)]

The Director of GEPD will be notified by PFSG at least 45 days prior to the start of closure. The closure schedule (Table I-1) allows for all hazardous waste to be properly disposed of within the allowed 90 days and all closure activities to be completed within the allowed 180 days from the receipt of the final volume of the waste at the facility or containment tank storage unit.

PFSG does not anticipate a need, at this time, to request any extension of closing time under 40 CFR §264.113 (a) and (b). However, if it is expected that closure activities will take longer than 180 days to complete, PFSG will apply for an extension to the closure period from the GEPD at least 30 days prior to the expiration of the allowable 180-day period.

I.1.6 CLOSURE PROCEDURES [40 CFR 264.112(b)(4) AND (5)]

Waste resulting from closure operations at PFSG will consist of the waste inventory at the facility at the time of closure, equipment, structures, and potentially soils. Waste inventory at the time of closure is assumed to be the maximum storage capacity for the facility, which is provided in Section I.1.3. Equipment consists of four storage tanks, bulk containers, drums and other DOT approved containers. PFSG does not plan to demolish or remove structures at the facility during closure operations but does discuss structure decontamination. This plan also discusses potential post-decontamination recycling or disposal of these structures.

The wastes resulting from the inventory, will be removed from the facility as part of closure activities. Wastes stored or treated in the Drum Storage and Inspection Area (located within the Waste Bulking and Unloading Area), the Drum Storage and Process Area 2, and Drum Storage Area 3 will be removed in their existing drums or other DOT approved container. Wastes stored or treated in Bulk Storage Tank Farm, Waste Bulking and Unloading Area, and Solidification and Stabilization Area will be transferred, if necessary, and removed in bulk containers. A summary of the containers and volumes and the transportation method is provided in the following table.

TRANSPORTATION MODES
FOR WASTE INVENTORY AT CLOSURE

Storage Vessel	Maximum Total Containers	Maximum Total Volume (gallons)	Transportation Mode
Drums and Other DOT Approved Containers	1,720	94,600	55-gallon Drum or Other DOT Approved Container
Tanks	4 (20,000 gallons/tank)	80,000	Bulk Container
Bulk Containers	Variable	38,196	Bulk Container
TOTAL MAXIMUM VOLUME		212,796	

Fuels that have been consolidated will be shipped to energy recovery facilities, residues to permitted facilities for treatment or reuse, and wastewaters to treatment or disposal facilities. Structures will be decontaminated in accordance with methods established in Sections I.1.6.1, I.1.6.3, and I.1.6.4. Wastewaters resulting from the decontamination of structures, along with small amounts of residues, will be shipped to an applicable hazardous/nonhazardous waste treatment or disposal facility. Tanks will be decontaminated in the manner described in Section I.1.6.4, and washings from the decontamination operation will be transported to an applicable hazardous/nonhazardous waste treatment or disposal facility. Tanks that meet the closure performance standard can be re-used. Tanks that do not meet the closure performance standard will be recycled as scrap metal after visually confirming that no hazardous waste residuals are present. Secondary containment areas will be decontaminated in a manner described in Sections I.1.6.3 and I.1.6.4. Washings from the decontamination operation will be transported to wastewater treatment or disposal facilities. Secondary containment structures that do not meet the closure performance standard will be managed as hazardous waste and disposed of at an appropriate waste disposal facility. Ancillary equipment will be decontaminated inside the area where they operate or are installed, before structures in the area are decontaminated. If structures or soils need to be disposed of, they will be managed as residues in accordance with guidelines provided in this plan.

I.1.6.1 INVENTORY REMOVAL AND DISPOSAL OR DECONTAMINATION OF EQUIPMENT, STRUCTURES, AND SOILS [40 CFR §264.114]

Waste removal at the facility will be supervised and performed using qualified personnel. Personnel will, as necessary, be equipped with acid/solvent resistant coveralls (olefin material, coated with heavy polyethylene film), heat protection, neoprene-coated gloves and boots resistant to solvents and acids. Both the wrists and ankles will be taped (electrical tape) to protect against upward and inward splashes. Full face respirators with organic vapor and acid gases filter cartridges that seal directly to the mask will be used, as needed. Absorbent materials and/or spill control pillows on inventory from normal operations will be employed in the event of any spills. Any spill-saturated, spill-control materials will be placed in an appropriate 55-gallon drum. Precautions normally followed, as detailed in Section F (no smoking, spark-proof tools, etc.), will be enforced during closure activities.

Closure operations will begin upon receipt of the final batch of hazardous waste. Inventory is to be disposed of by an appropriate commercially operated and properly permitted hazardous waste disposal facility. Maximum inventory quantities are discussed in Section I.1.3. The next step is closure of the container storage areas and process areas which is discussed in Section I.1.6.3. Following this is the closure of the bulk storage tank farm which is detailed in Section I.1.6.4. The waste bulking and unloading area would be decontaminated next using the same procedure as described for the container facility (Section I.1.6.3). Lastly, ancillary equipment would be decontaminated. Any visible residuals from such equipment will be removed using a scraper. Then the equipment will be steam cleaned or pressure washed. Rinsate will be analyzed to prove proper decontamination. The

decontamination fluids would be drummed or placed in a tanker trailer for treatment or disposal at an applicable hazardous/nonhazardous waste treatment or disposal facility. Hazardous waste tanks, piping, and equipment will be dismantled. After successful decontamination, the tanks, piping, and equipment can be re-used in a non-hazardous waste storage capacity or be recycled as scrap metal after confirming no hazardous water materials are present after cleaning.

An allowance has been made in the closure costs for soil sampling and analysis. It is assumed that 25 soil samples would be obtained throughout the facility for determining whether contamination beneath containment structures exists. Additional samples may be obtained if, at the time of closure, it is suspected that soils are contaminated. Soil samples, as well as decontamination residual samples, will be analyzed to show that clean closure levels have not been exceeded.

If the post-closure care period is continuing at the time of closure of the facility, the post-closure care period requirements will be followed.

I.1.6.2 CLOSURE OF DISPOSAL UNITS

PFSG does not operate disposal units at this facility. Therefore, requirements for disposal units are not applicable.

I.1.6.3 CLOSURE OF CONTAINERS/STORAGE/PROCESSING AREAS

The maximum anticipated number of 55-gallon containers is 1,720 (i.e., 94,600 gallons) and 8 bulk containers (i.e., a total of 38,196) resulting from the waste inventory. It is assumed that 20% of this inventory in 55-gallon drums, or other DOT approved containers, would not be suitable for consolidated fuel; however, all containers would be shipped to a permitted hazardous waste treatment facility. It is assumed that these containers would be bulk loaded for shipment as consolidated fuel.

Following removal of containers, the area will be decontaminated via steam cleaning. The containment walls, floor, loading dock, and ramp will be decontaminated in this manner. Rinsate sampling will be used to verify decontamination. If steam cleaning does not provide a sufficient level of decontamination, sand blasting would be used, as necessary.

Decontamination washings and residues will be collected in the sumps and then pumped to a holding tank. The material will be analyzed and then shipped to an applicable hazardous/nonhazardous waste treatment or disposal facility.

Decontamination of the secondary containment areas will be verified by collecting a final rinse water sample or concrete sample to verify the absence of volatile organics (Method 8240), semi-volatile organics (Method 8270), and RCRA metals (Method 6010). The units shall be considered clean-closed when sampling verifies that either 1) each final rinsate sample exhibits constituent concentrations below PQLs or below two standard deviations of an average (three-sample minimum) background concentration of the rinse water used during final rinse activities; or 2) concrete samples are below PQLs for volatile and semi-volatile organic constituents and below two standard deviations of an average (three-sample minimum) background metal constituent concentration of concrete.

Following final rinsing, the following options, dependent upon rinsate analysis and/or concrete analysis, may be exercised.

1. If the final rinsate or concrete samples meet the clean closure criteria, no end-use restrictions shall be placed on the decontaminated areas, and closure of the areas will be deemed clean closed.
2. If constituents are found in the final rinsate or the concrete samples above the clean closure criteria, but below the risk-based concentrations approved by GEPD, end-use restrictions will be placed on the areas, and closure of the areas will be deemed final.
3. Units that cannot meet the clean closure criteria or the risk-based concentrations approved by GEPD will be removed and disposed of as hazardous waste.

As a means of determining if hazardous constituents have not impacted soils underlying the container secondary containment areas, a subsurface investigation will be conducted. Concrete cores will be removed to provide access to the underlying soil. Cores will be located at areas where there is evidence of spills, deterioration, cracks and gaps, and/or heavily used areas and low spots where liquids may have accumulated. It is assumed that 20 sampling locations will be necessary. Soil will be collected at a depth of 0 to 6 inches below the concrete/soil interface utilizing standard sample collection techniques described in SW-846 (an estimated total of 20 representative soil samples).

In order to verify that the soil underlying these units has not been impacted with hazardous waste or hazardous waste constituents, the soil underlying these units shall be considered clean closed when soil samples exhibit concentrations below PQLs, two standard deviations of an average (three-sample minimum) background constituent concentration, or Georgia soil literature concentration ranges for metals.

As noted above, it is estimated that 20 soil samples will be collected from areas where there is observed evidence of spills, deterioration, cracks and gaps and/or heavily used area and low spots within the container storage and processing areas. These samples will be analyzed for total metals (Method 6010), volatile organics (Method 8240),

and semi-volatile organics (Method 8270). Following receipt of analytical results, the following options may be exercised.

1. If soil results meet the clean closure criteria, no end-use restrictions shall be placed on the units.
2. If soil results exceed the clean closure criteria, additional subsurface investigations will be performed to define the extent and magnitude of constituent contamination.
3. Upon defining the extent and magnitude of constituent contamination, a risk assessment will be performed, or corrective action activities will be conducted.

I.1.6.4 CLOSURE OF TANKS

The Bulk Storage Tank Farm includes four storage tanks with a total capacity of 80,000 gallons. All inventory will be shipped to an off-site permitted treatment facility.

To achieve the clean closure standard, each tank and associated ancillary equipment will be initially emptied of hazardous waste (liquids and solids). Subsequently, each tank and associated ancillary equipment will undergo standard tank cleaning activities consisting of the following:

1. Liquid materials will be drained from the tank through the lowest fitting on the tank.
2. Any solids that may have settled out of the liquid will be removed.
3. A high-pressure wash with detergent will be used to clean the interior of each tank and associated fittings and piping.
4. The tank interior will be visually inspected for cleanliness. The above steps will be repeated, if necessary.

Rinsates generated during tank cleaning operations will be managed as hazardous or nonhazardous waste as appropriate, with the exception of final rinsates that meet the clean closure standard. Rinsate material and sludge will be transported off-site for proper disposal.

In order to verify that the tanks have been properly decontaminated, the tanks shall be considered clean closed when sampling verifies that each final rinsate sample exhibits constituent concentrations below PQLs or below two standard deviations of an average (3-sample minimum) background constituent concentration of rinsate water used during final rinsate activities.

Final rinsate samples will be collected from each tank and will be analyzed for total metals (Method 6010), volatile organics (Method 8240), and semi-volatile organics (Method 8270). Dependent upon final rinsate analysis, the following options may be exercised.

1. If the final rinsate meets the clean closure standard, no end-use restrictions shall be placed on the decontaminated tanks or process equipment and closure of the tank unit will be deemed final.
2. Tanks or process equipment that cannot meet the clean closure standard will be recycled as scrap metal, provided there is no signs of residue present after cleaning.

The secondary containment structure associated with the tanks will also undergo decontamination activities identical to those presented in Section I.1.6.4. It is anticipated that five soil samples will be collected and analyzed from the tank farm secondary containment area.

I.1.6.5 CLOSURE OF WASTE PILES

PFSG does not operate waste piles for hazardous waste storage; therefore, requirements for waste piles are not applicable.

I.1.6.6 CLOSURE OF SURFACE IMPOUNDMENTS

PFSG does not operate surface impoundments for hazardous waste storage; therefore, requirements for surface impoundments are not applicable.

I.1.6.7 CLOSURE OF INCINERATORS

PFSG does not operate incinerators for hazardous waste storage; therefore, requirements for incinerators are not applicable.

I.1.6.8 CLOSURE OF LANDFILLS

PFSG does not operate landfills for hazardous waste storage; therefore, requirements for landfills are not applicable.

I.1.6.9 CLOSURE OF LAND TREATMENT

PFSG does not operate a land treatment facility; therefore, requirements for land treatment units are not applicable.

I.1.6.10 CLOSURE OF MISCELLANEOUS UNITS

PFSG does not operate miscellaneous units (e.g., shredders) at the facility. Therefore, requirements for miscellaneous units not applicable.

I.2 NOTICES REQUIRED FOR DISPOSAL FACILITIES [40 CFR §270.14(b)(14)]

PFSG will put a notation on the deed informing potential purchasers of applicable post-closure restrictions associated with the facility.

I.3 CLOSURE COST ESTIMATE [40 CFR §270.14(b)(15) AND §264.142]

The closure cost information presented is submitted in accordance with the requirements of 40 CFR §270.14(b)(15) and §264.142.

The assumptions made in the cost estimate are detailed in Sections I.1.1 through I.1.6 and the details and calculations are found in Table I-2. The calculations reflect the volumes proposed in this Modification. Unit price quotes are from the closure cost estimates presented in 2022 along with adjustments for inflation using data from the Bureau of Economic Analysis (BEA 2025).

The cost estimate will be kept on file at PFSG. Revisions will be made when changes occur that increase the closure cost. The U.S. Department of Commerce Annual Implicit Price Deflator for Gross Domestic Product will be used to make adjustments related to monetary values (i.e., inflation).

I.4 FINANCIAL ASSURANCE MECHANISM FOR CLOSURE [40 CFR §270.14(b)(15), §264.143(a), AND §264.15(a)(1)]

I.4.1 CLOSURE TRUST FUND

PFSG currently uses a surety bond as its financial assurance mechanism for the facility. On July 10, 2025, updated financial assurance documents were transmitted to the GEPD. Exhibit I-1, Attachment I-6, provides a copy of the Increase Penalty Rider and Continuation Certificate for Surety Bond No. K08112344, provided by Westchester Fire Insurance Company in the amount of $2,263,925, effective July 9, 2025, which covers the cost for existing permitted units.

I.5 POST-CLOSURE PLANS [40 CFR §270.14(b)(13), §264.117, AND §264.118]

A Revised Post-Closure Care Plan has been prepared and is presented in Exhibit I-2.

I.6 POST-CLOSURE COST ESTIMATE [40 CFR §270.14(b)(16) AND §264.144]

The revised post-closure care costs for the facility are provided in Exhibit I-3.

I.7 FINANCIAL ASSURANCE MECHANISM FOR POST-CLOSURE [40 CFR §270.14(b)(16) AND §264.145]

Post-closure performance bond provided in Exhibit I-1, Attachment I-6. The Bond Summary provided by Westchester Fire Insurance Company is in the amount of $2,263,925, which became effective July 9, 2025, and covers the cost for closure of the existing permitted units.

I.8 LIABILITY INSURANCE [40 CFR §270.14(b)(17) AND §264.147]

I.8.1 SUDDEN INSURANCE [40 CFR §264.147(a), §264.151(g), (i), AND (j)]

PFSG has obtained liability insurance for sudden and accidental occurrences in the amount of $1 million for each occurrence with an aggregate of $2 million, exclusive of legal defense costs. An originally signed certificate of liability insurance will be sent to the Director of the GEPD by Certified Mail. The certificate will be worded as required.

I.8.2 NON-SUDDEN INSURANCE [40 CFR §264.147(b) AND (d), §264.151(i), AND (j)]

PFSG is a recycler/storage facility; therefore, no liability insurance for non-sudden accidental occurrences is required.

I.8.3 VARIANCE PROCEDURE AND R.A. ADJUSTMENTS [40 CFR §264.147(c) AND 40 CFR §264.147(d)]

PFSG will not request a reduction in liability amounts from the GEPD.

PFSG will immediately seek an adjustment to the above referenced insurance policy if the GEPD increases the amounts of liability coverage or elects to improve liability coverage requirements for sudden occurrences.

I.9 STATE FINANCIAL MECHANISM [40 CFR §270.14 (b)(18)]

I.9.1 USE OF STATE-REQUIRED MECHANISMS [40 CFR §264.149 (a)(b)]

Not applicable

I.9.2 STATE ASSUMPTION OF RESPONSIBILITY [40 CFR §264.150(a)(b)]

PFSG will not request state assumption of the legal or financial responsibilities attaching to its hazardous waste treatment and storage facilities.

TABLES

TABLE I-1. GENERAL FACILITY CLOSURE SCHEDULE

Activity	Duration (Days)	Cumulative Time (Days)
Final receipt of wastes	0	0
Processing, transfer, and disposal of all waste inventory	60	60
Decontamination and closure of all units	30	90
Decontamination of equipment	20	110
Dismantling and scraping of tanks and piping, etc.	30	140
Soil sampling, testing and removal	40	180
Completion of closure and certification submittal to Director	20	200

TABLE I-2
CALCULATION OF FACILITY CLOSURE COSTS
WORKSHEET A-1: INVENTORY MANAGEMENT

1.	**Recontainerization of Waste**		
	Number of Damaged/leaking containers needing recontainerization	0	containers
	Recontainerization unit cost	$144	per container
	Recontainerization cost subtotal	**$0.00**	
2.	**Off-Site Management of Inventory - Hazardous Waste Contents**		
	Total number of containers (55 gal drums)	1,870	containers
	Container capacity	55	gal/container
	Quantity in containers	102,850	gal
	Container consolidation/recontainerization rate (2 man crew)	25	containers/hour
	Container consolidation/recontainerization unit cost	$29.66	per hour
	Container consolidation/recontainerization time(bulking of containers)	74.80	hours
	Container consolidation/recontainerization cost	$2,218.33	
	Quantity to be managed off-site - bulk storage	182,850	gal***
	Truck capacity - bulk storage	6,000	gal
	Number of loads for bulk storage	31	loads
	Transportation unit cost per load	$2,196.80	
	Transportation Cost	$68,101	
	Off-site management unit cost - bulk storage	$0.37	per gal
	Off-site management cost - bulk storage	$67,784.32	
	*** 102,850 gal (in 1,870 containers) + 80,000 gal in tanks; Any remainig residuals are included within the container amount		
	Off-site management cost subtotal	**$138,103.45**	
3.	**Off-Site Management of Inventory - Hazardous Waste Contaminated Water**		
	Quantity to be managed off-site - bulk storage	26,000	gal
	Truck capacity - bulk storage	5,000	gal
	Number of loads for bulk storage	6	loads
	Transportation cost per load	$3,775.75	
	Transportation Cost	$22,654.50	
	Off-site management unit cost - bulk storage	$0.51	per gal
	Off-site management cost - bulk storage	$13,208.26	
	Off-site management cost subtotal	**$35,862.76**	
4.	**Off-Site Management of Inventory - Bulked Hazardous Waste**		
	Quantity to be managed off-site - bulk containers	38,196	gal**
	Truck capacity - bulk containers	6,000	gal
	Number of loads for bulk containers	7	loads
	Transportation cost per load	$21,969.37	
	Transportation cost	$153,785.61	
	Off-site management of waste per container	$7,153.33	*
	Off-site management of waste	$50,073.31	
	*Bulked waste has an average specific density of 0.50. This figure was calculated based on quoted disposal cost of $500.00 per ton.		
	**20,196 gallons in Solidification/Stabilization area + 18,000 gallons in Waste Bulking and Unloading Area		
	Off-site management cost subtotal	**$203,858.92**	
5.	**Container Loading**		
	Number of containers	1870	containers
	Pallet capacity	4	containers/pallet
	Number of pallets	468	pallets
	Loading unit cost	$6.40	per pallet
	Container Loading Cost	**$2,994.35**	
	INVENTORY MANAGEMENT SUBTOTAL	**$380,819.48**	

TABLE I-2. CALCULATION OF FACILITY CLOSURE COSTS
PERMA-FIX OF SOUTH GEORGIA, INC.

WORKSHEET A-2: TESTING FOR SOIL CONTAMINATION

1. Background Samples and Samples with Potential Contamination			
Number of soil samples to be taken		23	samples
Number of samples requiring coring through concrete/asphalt foundations/pads		23	samples
Thickness of foundation/pad		8	inches
Unit cost for coring through/removing concrete/asphalt foundations/pads		$30.21	per inch
Sample collection time required		1	hour/sample
Transportation time to and from site		2	hours
Contract lab technician unit labor cost		$48.06	per hour
Sample collection time		25	hours
Sampling cost		$6,759.28	
Contract lab fee		$789.48	per sample
Contract lab cost		$18,157.93	
	Sample cost total	**$24,917.20**	
	SOIL TESTING SUBTOTAL	**$24,917.20**	

TABLE I-2. CALCULATION OF FACILITY CLOSURE COSTS
PERMA-FIX OF SOUTH GEORGIA, INC.

WORKSHEET A-3: DECONTAMINATION

1.	**Protective Clothing and Safety Equipment for Facility Personnel**		
	Number of personnel requiring protective clothing and safety equipment for decontamination	2	persons
	Safety equipment and protective clothing unit cost	$109.84	per person
	Safety equipment and protective clothing cost	**$219.68**	
2.	**Equipment Decontamination**		
	Equipment Needing decontamination:		
	- pumps and feed lines		
	- heavy equipment (e.g. fork lifts, dozers, etc.)		
	- other equipment (list) -		
	Number of pumps and lines	5	pumps and lines
	Pumps and lines decontamination cost	$274.60	
	Residual generation rate	25	gal/pump and line
	Residual generated from pump and line decontamination	125	gal
	Heavy equipment decontamination cost	$274.60	
	Total heavy equipment decontamination time	4	hours
	Residual generation rate for heavy equipment decontamination	100	gal/hour
	Residual generated from heavy equipment decontamination	400	gal
	Equipment decontamination cost	**$549.20**	
	Contaminated fluid and/or residues generated	525	gal
3.	**Pad or Foundation Decontamination**		
	Method of pad decontamination -	Steam Wash and Rinse	
	Pad area to be decontaminated	59,000	square feet
	Sump decontamination unit cost	$1.37	per square foot
	Pad decontaminated subtotal	**$81,007.00**	
	Residual generation rate for pad/foundation decontamination	160	gal/day
	Contaminated fluid and/or residues generated(160 gal/dayx12 days)=	1,920	gal
4.	**Sump Decontamination**		
	Method of pad decontamination	Steam Wash and Rinse	
	Volume to be pumped from sump(s)	200	gal
	Time required for pumping	2	hours
	Pumping unit cost	$31.58	per hour
	Pump rental cost, optional	$0.00	per hour
	Pumping cost	$63.16	
	Sump area to be decontaminated	200	square foot
	Sump decontamination unit cost	$1.37	per square foot
	Sump decontamination cost	$274.60	
	Sump decontamination subtotal	**$337.76**	
	Residual generation rate for sump decontamination	2	gal/square foot
	Contaminated fluid and/or residues generated	300	gal

TABLE I-2. CALCULATION OF FACILITY CLOSURE COSTS
PERMA-FIX OF SOUTH GEORGIA, INC.

5. Other Items Needing Decontamination			
List items - Tanks, Process System Equipment			
Method of decontamination for other items -		Steam Wash & Rinse	
Time required for decontamination of other items		40	hours
Decontamination unit cost		$14.83	per hour
Decontamination of other items subtotal		**$593.14**	
Residual generation rate for decontamination of other items		20	gal/hour
Contaminated fluid and/or residues generated		800	gal
Past experience in decontaminating tanks			
6. Testing for Success of Decontamination			
Number of Samples		27	samples
Sample collection time		0.25	hours/samples
Technician unit labor cost		$48.06	per hour
Sample collection time		27.25	hours
Sampling cost		$1,309.50	
Cost to test each sample		$789.48	per sample
Testing cost		$21,315.83	
Testing for success of decontamination cost		**$22,625.32**	
7. Treated Residue Discharge to Sewer			
Volume of liquid discharge		0	gal
Sewer discharge unit cost		$2.06	per 1,000 gal
Sewer discharge cost		**$0.00**	
8. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residues			
Off-site management method -			
Quantity to be managed off-site		3,845	gal
Truck capacity		5,000	gal/truck
Number of loads		1	loads
Transportation cost per load		$3,775.75	
	Transportation cost	$3,775.75	
Off-site management unit cost		$0.51	per gal
	Off-site management cost	$1,953.30	
Contaminated fluid and residue disposal subtotal		**$5,729.05**	
FACILITY DECONTAMINATION SUBTOTAL		**$111,061.15**	

TABLE I-2. CALCULATION OF FACILITY CLOSURE COSTS
PERMA-FIX OF SOUTH GEORGIA, INC.

WORKSHEET A-4: TANKS, PIPING, AND PROCESS EQUIPMENT REMOVAL

1.	Protective Clothing and Safety Equipment for Facility Personnel		
	Number of personnel requiring protective clothing and safety equipment for decontamination	2	persons
	Safety equipment and protective clothing unit cost	$109.84	per person
	Safety equipment and protective clothing cost	**$219.68**	
2.	Tank, Piping, and Process Equipment Demolition		
	Number of tanks to be demolished	4	tanks*
	Tank demolition time	10	hour/tank
	Piping and process equipment demolition time	40	hours
	Demolition unit cost for 2 men and equipment	$61.79	per hour
	* Tank numbers TBD.		
	Demolition Cost	**$2,471.40**	
3.	Off-Site Management of Material from Demolition		
	Quantity of material from each tank	10,530	pounds
	Total quantity of material from tank demolition	57,915	tons
	Total quantity of material from demolition of piping and process equipment	10	tons
	Total quantity of material from demolition	67,915	tons
	Truck capacity	25	tons
	Number of loads	3	loads
	One-way distance	200	miles
	Transportation unit cost	$0	per mile
	Transportation cost	$0	
	Off-site management unit cost	$0	per ton
	Off-site management unit cost	$0	
	Off-site management cost subtotal	$0	
	Non-hazardous scrap metal may be sold; no credit is claimed for in this estimate.		
	The scrap metal dealer picks up the scrap metal at PFSG at no cost.		
	TANKS, PIPING, AND PROCESS EQUIPMENT REMOVAL SUBTOTAL	**$2,691.08**	

TABLE I-2. CALCULATION OF FACILITY CLOSURE COSTS
PERMA-FIX OF SOUTH GEORGIA, INC.

WORKSHEET A-5: CERTIFICATION OF FINAL CLOSURE			
1. Independent Registered Professional Engineer			
Initial review of closure plan		8	hours
Inspection frequency		2	inspections/week
Inspection time required		2	hours/inspection
Number of weeks of closure		24	weeks
Inspection time required		96	hours
Prepare final document		4	hours
Total professional engineer time required		108	hours
Professional engineer unit labor cost		$137.30	per hour
	Professional engineer cost	**$14,828.40**	
2. Clerical			
Clerical time required		4	hours/week
Clerical unit labor cost		$41.19	per hour
	Clerical cost	**$3,954.24**	
CERTIFICATION OF FINAL CLOSURE SUBTOTAL		**$18,782.64**	

TABLE I-2. CALCULATION OF FACILITY CLOSURE COSTS
PERMA-FIX OF SOUTH GEORGIA, INC.

SUMMARY OF CLOSURE COSTS

TABLE I-2CALCULATION OF FACILITY CLOSURE COSTSWORKSHEET A-1: INVEN	**$380,819.48**
WORKSHEET A-2: TESTING FOR SOIL CONTAMINATION	**$24,917.20**
WORKSHEET A-3: DECONTAMINATION	**$111,061.15**
WORKSHEET A-4: TANKS, PIPING, AND PROCESS EQUIPMENT REMOVAL	**$2,691.08**
WORKSHEET A-5: CERTIFICATION OF FINAL CLOSURE	**$18,782.64**
Subtotal	$538,271.55
Contingency and Administration (15%)	$80,740.73
Total Cost of Closure	**$619,012.28**

EXHIBITS

EXHIBIT I-1

POST-CLOSURE CARE BOND

CONFIDENTIAL INFORMATION – ON FILE WITH GEPD

EXHIBIT I-2

POST-CLOSURE CARE PLAN

POST-CLOSURE CARE PLAN

PERMA-FIX OF SOUTH GEORGIA, INC.

1612 JAMES P. RODGERS CIRCLE

VALDOSTA, GA 31601

EPA ID No. GAD093380814

GDNR HW Facility Permit No. HW-020(D)

Updated April 4, 2025

Revised November 20, 2025

PREPARED FOR:

Perma-Fix Environmental Services, Inc.
8302 Dunwoody Place, Suite 250, Atlanta, GA 30350

PREPARED BY:

GeoSouth Environmental Solutions, LLC
11250 Old St. Augustine Rd., Suite 15 PMB 333, Jacksonville, FL 32257

Project: PFSG-025-002

Certification and Signatories
40 CFR 260.10

Pursuant to 40 CFR 260.10, I certify that I am a Qualified Groundwater Scientist who has received a Baccalaureate or Post-Graduate Degree in the Natural Sciences or Engineering and have sufficient training and experience in groundwater hydrology and related fields as demonstrated by state registration and completion of accredited university courses that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by myself or by a subordinate working under my direction.

I also hereby certify that this "Post-Closure Care Plan" was prepared under the direction of a Georgia Registered Professional Geologist.

William C. Kelly

Digitally signed by William C. Kelly
DN: cn=William C. Kelly, c=US, o=GeoSouth Environmental Solutions, LLC, ou=President, email=wkelly@geosouthes.com
Date: 2025.11.20 17:25:58 -05'00'

11/20/2025

William C. Kelly, PG
Principal Hydrogeologist
Georgia Professional Geologist No. 1568
Qualified Groundwater Scientist

Date

Certification and Signatories
40 CFR 270.11

The signatory to this Post-Closure Care Plan in accordance with 40 CFR 270.11(a) and (b) is:

Kevin Schmuggerow
Vice President, Industrial Business
Perma-Fix Environmental Services, Inc.
8302 Dunwoody Place, Suite 250
Atlanta, GA 30350

By my signature below, I, Kevin Schmuggerow, designate the following individual as authorized representative in accordance with 40 CFR 270.11(b)(1) and (d)(l):

William C. Kelly, Georgia Registered Professional Geologist, and Principal Hydrogeologist of GeoSouth Environmental Solutions, LLC.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kevin Schmuggerow Digitally signed by Kevin Schmuggerow
Date: 2025.11.20 16:54:27 -05'00'

Kevin Schmuggerow
Vice President, Industrial Business

Date

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1.0 INTRODUCTION

This document presents a Post-Closure Care Plan (PCCP) to address constituents of concern (COCs), composed of chlorinated and aromatic volatile organic compounds (VOCs) in soil and groundwater, at the Perma-Fix of South Georgia, Inc. (PFSG) Facility (facility), at 1612 James P. Rodgers Circle, Valdosta, Georgia (Figure 1). This PCCP will be used as the basis for the final design and installation of a remedial measures system to address subsurface impacts to soil and groundwater at the facility. The PCCP meets the requirements of Georgia Hazardous Waste Facility Permit No. HW-020(D) issued for the PFSG facility on February 23, 2023, and the applicable requirements of 40 Code of Federal Regulations (CFR) 264.118.

Based on the data collected at the site to date, the primary area of soil VOC impacts appears to be located beneath the following Solid Waste Management Units (SWMU): SWMU IC (Cooling Pond); SWMU ID (Parking Area); SWMU IE (Area East of Former Drum Sampling and Inspection Pad [DSIP]); SWMU 3 (Drum Storage Process Area 1 [DSPA1]); SWMU 4 (Bulk Storage Tank Farm [BSTF]); SWMU 5 (Waste Bulking & Unloading Area [WBUA]); SWMU 6 (Solvent Recovery Area [SRA]); and SWMU 7 (Equipment Storage and Decon Area). SWMUs 3 through 7 correspond to Hazardous Waste Management Units 2 through 7 (HWMUs 3-7), as shown on Figure 2.

The purpose of remedial action, conducted as part of a Resources Conservation and Recovery Act (RCRA) Corrective Action, is to mitigate potential threats to human health and the environment. To meet this general objective, the specific objectives of the proposed remedial measures are: (1) to treat the impacted soils at the site that exceed remedial action objectives (RAOs), currently based on United States Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs) for Residential settings using a target hazard quotient (HQ) of 0.1 from the most recent RSL - Generic Tables (updated semi-annually in May and November of each calendar year), pending the results of a formal risk assessment (RA); (2) to reduce on-site and off-site COC concentrations in groundwater to levels that meet RAOs, currently based on the Groundwater Protection Standards (GWPS) in Hazardous Waste Facility Permit HW-020(D) that are derived from USEPA Maximum Contaminant Levels (MCLs), as presented in List of Drinking Water Contaminants and MCLs: National Primary Drinking Water Standards (USEPA, 2019), or a more recent version if available, pending the results of a formal RA, if conducted; (3) to protect off-site receptors by significantly reducing VOC mass in soil and groundwater; (4) to monitor the extent and movement of dissolved phase COCs in groundwater; and (5) to track the performance of the soil and groundwater remediation systems and make adjustments, as necessary, in order to expedite achievement of RAOs.

This updated PCCP is being submitted based on meetings and communications between PFSG and the State of Georgia Department of Natural Resources, Environmental Protection Division (GEPD). This PCCP specifically presents a remedial strategy for both soil and groundwater media in the impacted SWMUs (and corresponding HWMUs) listed above using combined groundwater air sparging (AS) and soil vapor extraction (SVE) technologies. The proposed AS/SVE system layout is protective of human health and the environment.

This PCCP provides a description of the site background, RAOs, current soil and groundwater conditions, proposed AS/SVE soil and groundwater remedial measures, planned soil and groundwater performance monitoring and confirmatory sampling programs, and an estimated schedule for implementing the remedial measures. This PCCP is consistent with, and fulfills, the general recommendations and requirements described in detail in the facility permit and in the following two USEPA Interim Remedial Measures regulatory agency guidance documents:

USEPA RCRA Corrective Action Interim Measures Guidance - Interim Final, EPA/530-SW-88-029, OSWER Directive 9902.4, June 1, 1988

USEPA RCRA Corrective Action Plan-Final, EC-G-2002- 100, OSWER Directive 9902.3-2A, May 1994.

As stated above, this PCCP provides a soil and groundwater remediation strategy that includes treatment of subsurface VOC impacts beneath on-site SWMUs IC and IE, SWMUs 3 through 7 (HWMUs 3-7).

This PCCP is subdivided into the following major sections:
Facility setting, operational history, and summary of previous investigations (Section 1);
Identification of COCs and development of preliminary soil and groundwater RAOs (Section 2);
Site conceptual model and current site conditions (Section 3);
Remedial measures screening (Section 4);
Remedial measures plan (Section 5);
Remedial measures performance monitoring and verification (Section 6); and
Financial assurance (Section 7) and references (Section 8).

The PCCP presented herein is based on field and analytical data collected at the site from 1996 through the fourth quarter (4Q) 2024 groundwater monitoring event conducted in December 2024.

1.1. Facility Location

The PFSG facility is located in Valdosta, Georgia at latitude 30°47'48" and longitude 83° 15'52" as shown on Figure 1. The facility occupies approximately 3.5 acres in the Azalea City Industrial Park at 1612 James P. Rodgers Circle, Valdosta, Georgia. Surrounding land use is mostly industrial. Some limited commercial and residential use areas are located more than a quarter-mile from the facility. The facility is bound by the Valdosta Southern Railroad to the west and north, by Ryder Truck Maintenance to the east, and by Georgia Petroleum, Inc. to the south. Designated areas for Solid Waste Management and Hazardous Waste Management are identified on Figure 2. The site layout and location of all monitor wells is illustrated in Figure 3.

1.2. Facility Description

The facility is a treatment, storage, and disposal (TSD) facility that operates under Permit HW-020 (D) but is not currently active. On August 14, 2013, a fire in the south-central portion of the property damaged containers, roofing, and secondary containment structures resulting in the decision by PFSG to suspend waste processing activities and temporarily close the facility. During 2023, PFSG received authorization from the GEPD to resume 10-day transfer facility operations. PFSG is currently engaged in municipal permitting efforts to resume these approved transfer operations.

Prior to August 2013, PFSG accepted wastes that were listed or exhibited hazard characteristics of ignitability, toxicity, and corrosivity as described in 40 CFR 261 Subpart C. There are seven SWMUs identified at the facility that are permitted by the GEPD. Historically, liquid wastes received at the facility were either incorporated into hazardous waste fuels or recycled through solvent recovery units. These fuels were then shipped to facilities operating industrial furnaces, and recycled solvents were sold commercially for off-site use. Wastes, both liquid and solid, that could not be treated or recycled at the facility, were shipped off-site to an alternate waste treatment facility.

The PFSG facility is surrounded by a concrete block wall and chain link security fence topped with barbed wire. The facility entrance is secured with an electrically operated gate, and access is monitored by remote

television cameras. A roof covers the operational portion of the facility and directs rainfall away from the waste management and storage areas. The ground outside of the roofline is sloped to direct rainfall runoff away from the areas where waste storage and processing is performed.

Eight-inch-thick reinforced concrete pavement covers the vehicle traffic areas located to the north, east, and south of the operational portion of the facility. The western portion of the facility is also predominantly covered with concrete pavement. The extreme northern portion of the facility is covered with crushed limestone and gravel.

An enclosed general storage warehouse is located to the north of the former operational portion of the facility. The warehouse building currently houses PFSG's administrative offices, and formerly housed the laboratory and personnel support facilities. The warehouse also includes a former maintenance shop, a caged area for the storage of supplies, and an area where spill response and control supplies are staged. The area between the warehouse and the northern property boundary currently contains a paved employee parking area and a large gravel parking lot used for the storage of empty transportation equipment.

A concrete block wall or chain-link fence topped by three strands of barbed wire surrounds the PFSG facility. Overall access to the facility is provided by the main gate. The gate is an electronically operated by a numeric code or by a remote control. There are two other personnel gates on the south and northwest boundaries of the facility. These gates are used for emergency exits only and are normally kept closed and secured.

1.2.1. Topography, Drainage and Surface Water Bodies

Topographic elevations at the facility and surrounding area are reported on the U.S. Geological Survey Valdosta, Georgia Quadrangle map shown on Figure 1. Surface water bodies located within a one-mile radius of the site include: Mud Creek located approximately 900 feet (ft) to the south, Langdales Pond located approximately 2,300 ft north, an unnamed pond 4,600 ft to the east, and a stormwater drainage ditch along the western property boundary located within the Valdosta Southern Railway right-of-way.

Surface elevations range from approximately 186 ft mean sea level (MSL) to 192 ft MSL. Drainage across the eastern portion of the facility is directed southwest via a drainage swale to a stormwater outfall located in the southwestern corner of the property. An additional outfall drains water from the facility along the west central property boundary. Both outfalls drain to the stormwater drainage ditch, which also receives a portion of the drainage from the Azalea City Industrial Park. A stormwater drainage ditch parallels the western property boundary of PSFG along the Valdosta Southern Railway right-of-way. This drainage ditch receives stormwater from the PSFG outfalls and from portions of the Azalea City Industrial Park. The stormwater drainage ditch flows south towards Mud Creek, but terminates approximately 100 feet north of the creek, which flows from west to east. Figure 2 shows the location of the two outfalls and the drainage ditch in relation to the facility and Mud Creek.

There are no wells within a 1,000-foot radius of the facility. The facility has one groundwater extraction well located within a building adjacent to the existing boiler house, but this well is no longer in operation with the closure of the facility. The well was formerly used to supply makeup water for the boiler and cooling water for the condensers on the solvent recovery units.

1.3. Remediation of Solid Waste Management Units and Corresponding Hazardous Waste Management Units

Seven SWMUs (SWMUs 1 through 7) have been identified in conjunction with a RCRA Facility

Assessment conducted in May 1995. The facility permit and subsequent permit renewals have historically referenced six Hazardous Waste Management Units, which are named based on the designated facility operation but not numbered. The boundaries of six HWMUs coincide with the boundaries of SWMU 2 through 7. Figure 2 has been included to provide a cross-reference for the SWMUs and the corresponding HWMUs.

SWMU 1 accounts for miscellaneous former solid waste management areas and was designated primarily due to hazardous waste traffic across the site (as opposed to hazardous waste storage). As such, there is no corresponding HWMU for this unit. Remediation at the site as described in this PCCP will be performed on the HWMUs. Furthermore, due to the proximity of adjacent SWMU 1 to the other HWMUs and due to the intermingling of the soil VOC sources at each HWMU and SWMU 1 into a single, comingled groundwater VOC plume, remediation of SWMU 1 will also be addressed through this PCCP. SWMU 1 is further divided into six subunits that are designated as SWMU 1A through 1F. The following subsections describe each of the SWMUs/HWMUs.

1.3.1. SWMU 1 - Miscellaneous Solid Waste Management Area

SWMU 1 was designated by the GEPD to delineate six major subunits (SWMUs 1A through 1F). This SWMU has been designated primarily due to hazardous waste traffic across the site (as opposed to hazardous waste storage) and historic area uses. The subunits of SWMU 1 are discussed in the following sections.

1.3.1.1. SWMU 1A - Stormwater Discharge Area

A stormwater discharge outfall is located in the extreme southwest corner of the facility and has been in use since PFSG commenced ownership of the facility in 1999. Stormwater runoff exits the facility through this outfall and is directed toward the Valdosta Southern Railroad property located to the west of the facility. During a GEPD inspection conducted on June 30, 1989, a discharge of material was noted near the storm drain. GEPD analysis of the sample collected near the storm drain reportedly indicated elevated levels of inorganic constituents. The area is bordered by a low concrete block wall on the south and west and has a drainage grate that directs collected water into the drainage ditch west of the facility. Otherwise, the area consists of soil and vegetation and is an area of about 1,740 square feet (ft^2). Water from firefighting efforts in 2011 and 2013 came in contact with soil in this SWMU.

1.3.1.2. SWMU 1B - Area West of Tank Farm

Compliance inspections were conducted by GEPD on June 19, 1986, and September 2, 1982. The inspection reports noted drums stored in the area to the west of the Tank Farm. The drums were reported by Ramsey Chemical, the facility owner and operator in the 1980s, to be empty and awaiting reclamation. However, an inspection of the drums noted that the drums contained hazardous waste that had apparently leaked onto the ground surface.

Inspection reports did not detail the nature of the waste stored in the area. The area is currently covered in concrete and was not used for waste management activities under PFSG ownership since 1999. It is an area of approximately 8,260 ft^2.

1.3.1.3. SWMU 1C- Cooling Pond

Ramsey Chemical utilized a cooling pond for the storage of coolant water used to operate the distillation units. The pond was an unlined 6,750-gallon (gal) aeration basin. Ramsey Chemical discontinued use of the cooling pond and installed a cooling tower in April of 1987. After closing of the cooling pond, soil

samples were collected for analysis of purgeable hydrocarbons by EPA Method 601, purgeable aromatic hydrocarbons by EPA Method 602, semi-volatile organic compounds by EPA Method 610, and the eight RCRA metals using Extraction Procedure Toxicity methodology.

Analytical results reportedly indicated barium was detected at 0.06 milligrams per liter (mg/L). Other target analytes were reportedly below laboratory detection limits for the methods listed above. The pond was filled with clean fill brought from an off-site source, and the cooling tower was put into operation. The area is currently covered in grass and vegetation and was not used for waste management activities under PFSG ownership since 1999. It is an area of approximately 3,610 ft ^{2}.

1.3.1.4. SWMU 1D - Parking Area

The northern portion of the property is now used as a gravel parking lot, but in the past was used as a parking area for tanker trailers and van trailers. These transport containers were used to transport hazardous waste and were stored in this area until needed. Although hazardous wastes have not been stored in this area, the storage of the transport trailers presents a potential concern for this area. The approximate area is 27,670 ft^2.

1.3.1.5. SWMU 1E - Area East of Drum Sampling and Inspection Pad

Prior facility operations included the storage of drums of hazardous waste outside of permitted units. Drums were stored in the area east of the current Drum Sampling and Inspection Pad. In the 1980s, the area was a gravel surface. Previous owners were required under consent orders to examine soil contamination.

The area is currently covered in concrete and was not used for waste management activities under Perma-Fix ownership since 1999. It is an area of approximately 9,090 ft^2.

1.3.1.6. SWMU 1F - Paved Areas Not Associated with SWMUs 1A through 1E

Pursuant to discussions with GEPD, all paved areas not associated with SWMUs 1A through 1E or process-related SWMUs 2 through 7 are herein designated as SWMU 1F.

1.3.1.7. SWMU 2 – Former Drum Storage Pad (HWMU 2 - Drum Sampling and Inspection Pad [DSIP])

This area formerly consisted of an 8-inch concrete slab over vapor barrier with an 8-inch (in) curb constructed around its perimeter. The area was approximately 47.42 ft by 67 ft (2,893 ft^2). It was covered by a roof to shelter hazardous waste containers from sunlight and to limit accumulation of precipitation.

Drums of hazardous waste were delivered to the pad via a loading dock located at the southeast corner of the storage area. Containers were off-loaded and staged on the pad for inspection and sampling of containers and waste. Containers (drums) were stored on pallets, four drums to a pallet and two layers high (maximum height). Waste treatment processes were not conducted on this pad.

PFSG operated the unit from 1999 to 2013. Prior to PFSG ownership, the unit was operated for similar purposes by previous owners beginning in 1987.

As a result of the GEPD compliance inspection of Ramsey Chemical on March 24, 1987, Ramsey Chemical was cited for treating hazardous waste in the drum storage area. Solvents were being poured onto a crater-shaped pile of Pozzalime, a calcium-magnesium oxide. The reaction between the Pozzalime and the solvent resulted in rapid boiling, smoke and gas emissions. Due to cracks in the pad that existed at the time and

lack of a complete containment wall, there is a possibility that soils beneath the area were impacted by the solvent treatments conducted in the past. The GEPD's March 24, 1987, inspection resulted in the filing of Consent Order EPD-HW-367.

The DSIP was demolished in January 2014, after the August 2013 fire at the facility. The unit was subject to RCRA partial closure, including removal of demolished concrete and visibly impacted soils. The area is currently covered in plastic sheeting and topped with clean fill and vegetative cover above the sheeting.

1.3.2. SWMU 3 – Former Drum Storage and Process Area 1 (HWMU 3 - Drum Storage and Process Area [DSPA 1])

This area was located immediately adjacent to the DSIP. This unit formerly consisted of an 8-inch-thick reinforced concrete slab surrounded with integrally constructed 38-inch high, 6-inch wide, reinforced, cast-in-place concrete walls. This unit measured approximately 80 ft by 150 feet (10,030 ft^2). The entire area was covered by a roof to shield the area from sun and prevent the accumulation of precipitation. An elevated loading dock, used by semi-trailers, was located along the eastern portion of the unit. The area was constructed in 1988.

According to the 1995 RFA, there had been no reported spills in this area; however, due to the nature of the operations conducted in this unit, GEPD has indicated that it is a SWMU of concern. When the facility operated as Ramsey Chemical, this unit did not exist as a process area. At that time, it was covered with a base of gravel and cracked asphalt.

Under Perma-Fix ownership, the area was used for the storage of hazardous wastes suitable for fuel blending, and segregation of incompatible wastes in smaller storage cells separated by concrete curbing. The area was used for fuel blending, container consolidation, solids removal and loose-pack consolidation.

The Drum Storage and Process Area was demolished in January 2014, after the August 2013 fire at the facility. The unit was subject to RCRA partial closure, including removal of demolished concrete and visibly impacted soils. The area is currently covered in plastic sheeting, with clean fill and vegetative cover above the sheeting. At the time of the emergency response to the 2013 fire, there was damage to the concrete and liquid was observed seeping from under the concrete pad of the area.

Pursuant to discussions with GEPD, the horizontal extent of SWMU 3 has been expanded to include the Loading Dock and the Small Unnamed Area to the immediate north of the Loading Dock along the eastern edge of the former boundary of SWMU 3. These sub-units of SWMU 3 are shown in Figure 2.

1.3.3. SWMU 4 - Bulk Storage Tank Farm (BSTF) (HWMU 4- Bulk Storage Tank Farm [BSTF])

This unit was permitted for the storage of hazardous waste in tanks. Investigation of the Bulk Storage Tank Farm unit was conducted by HSA Environmental, Inc. Data resulting from the Tank Farm Assessment were reported by HSA Environmental to GEPD in the "Tank Farm Contamination Assessment Report" dated December 12, 1995.

This unit consisted of a concrete slab surrounded by a 38-inch high, 8-inch-wide reinforced solid concrete block wall. The area is covered by a roof to prevent the accumulation of precipitation. The Tank Farm at one point contained six hazardous waste storage tanks with a combined storage capacity of 90,000 gallons, and four non-hazardous waste product tanks with a combined capacity of 47,475 gallons. All hazardous waste tanks and associated piping, although unaffected by the fire and maintaining their integrity post-fire,

were removed in response to the 2013 fire. The area was subsequently subjected to RCRA closure. This area of 7,507 ft^2 comprised the permitted Bulk Storage Tank Farm HWMU (2,947 ft^2) and Drum Storage Area 3 (4,560 ft^2) that was constructed but not permitted.

During GEPD inspections conducted on August 15, 1986 and December 20, 1988, spills and/or leaking tanks within the Tank Farm area were noted. As a result, CCGI conducted an investigation of the integrity of the floor slab of the Tank Farm area, which was reported to GEPD in a document entitled "Contamination Assessment Plan for the Tank Farm Containment Area" dated September 6, 1991. This document revealed that the Tank Farm was underlain by two separate concrete slabs that were separated by approximately one to two inches. This separation was filled with a material that was reportedly old "still bottom" sludge discharged while the facility operated as Ramsey Chemical. Additionally, the second slab is underlain by a layer of similar material. Analytical data collected for the September 6, 1991, report revealed that soil beneath the Tank Farm area has been impacted. Additionally, in 1988, CCGI reported that upon replacing several sections of the floor slab, the existing containment wall around the Tank Farm was noted to have numerous cracks and had begun to lean away from the Tank Farm. The interior of the wall was noted to be filled with sand and not tied to the existing floor slab or footing. Also, it was noted that while operating as Ramsey Chemical, the Tank Farm floor slab had been expanded without tying to the existing slab.

On April 21, 1990, Tank Number 209 was discovered to be leaking. This release resulted in the filing of consent Order EPD-HW-606. On June 2, 1993, Tank Number 207 overflowed due to failure of the high-level indicator. Due to past management practices and based upon reported leaks within this unit, an investigation of soil and groundwater quality beneath the unit was required. Between July 2001 and January 2003, 103 cubic yards (cy) of concrete and 31 cy of soil were removed in the northern portion of the Bulk Storage Tank Farm. All visually impacted soil was removed, resulting in the removal of the top foot of soil. Because of this excavation, most of the northern portion of SWMU 4 (referred to as Drum Storage Area 3) was not covered by concrete. However, new reinforced concrete was placed to cover the portion of Drum Storage and Process Area 3 in 2010.

1.3.4. SWMU 5 - Waste Bulking & Unloading Area (WBUA) (HWMU 5 - Waste Bulking & Unloading Area [WBUA])

This unit was used to park trailers for unloading waste and loading blended fuel or reclaimed solvents. This unit is reportedly underlain by an 8- to 10-inch-thick reinforced concrete slab. This unit is surrounded on three sides by a 38-inch high, 8-inch wide, reinforced, solid concrete wall. The east side of the unit is open to allow access to semi-trailers. A 6-inch concrete roll over berm separates this unit from the vehicle traffic areas. The traffic area is sloped away from the berm to prevent rainfall runoff from entering the unit. This unit measures 86 feet by 47 feet and is covered with a roof to shade the area from sun and minimize the accumulation of rainfall. The floor slab of this unit is designed to slope to a collection sump located in the southwest corner of the unit. The total area of the unit is 4,048 ft^2.

This unit can simultaneously accommodate two 5,000-gallon bulk liquid tank trailers, which were loaded and unloaded using portable pumps, filters and flexible hoses. Incoming trailers were parked in this area until their contents could be tested and transferred to an appropriate on-site storage tank. While operating as Ramsey Chemical, this area was also used for loading and unloading of wastes; however, at that time, the unit was underlain by gravel and weathered asphalt. GEPD interpreted that these past operations may have presented a potential route of entry for wastes into the subsurface. This area was subject to RCRA closure in February 2016.

1.3.5. SWMU 6 - Solvent Recovery Area (SRA) (HWMU 6- Drum Storage & Process Area 2 [DSPA 2])

This unit contained the solvent distillation unit and pot still and is underlain by an 8- to 10-inch thick, reinforced concrete slab. The unit is surrounded on three sides by a 38-inch high, 8-inch-wide reinforced solid concrete wall. The total area of the unit is 6,880 ft^2. The north side of the unit is open to allow access by trailers. A 6-inch concrete roll over berm separates this unit from the vehicular traffic area located to the north. The traffic area is sloped away from the unit to prevent rainfall runoff from entering the unit. The slab of the unit is sloped away from the unit to flow toward a collection sump located in the southwest corner. The area is covered by a roof to shade the area from sunlight and minimize the accumulation of precipitation. Under past operating procedures, this area was part of the hazardous waste unloading area. During a GEPD inspection conducted on May 11-12, 1983, a surface spill was noted in this area.

Distillation units were installed in this area prior to 1987. Operation of the distillation units was discontinued in the mid-1990s. The area was also the location for Drum Process and Storage Area 2, which was subject to RCRA closure in February 2016.

1.3.6. SWMU 7 - Equipment Storage and Decon Area (HWMU 7- Solidification and Stabilization Area [SSA])

This area was used to store equipment and was proposed for use as a decontamination area in CCGI's Hazardous Waste Facility Permit. The unit consists of an 8- to 10-inch-thick reinforced concrete slab surrounded on three sides by an 8-inch wide reinforced, solid concrete wall of varying height. The west side of the unit is open to allow access to equipment. The total area of the unit is 1,020 ft^2. The slab of this unit is steeply sloped to the east to facilitate collection of any decontamination residues. The unit is covered with a roof to shade the area from sunlight and minimize the collection of rainfall.

The facility formerly used this area for parking tanker trailers containing hazardous waste. During that time, the base of the unit consisted of gravel and asphalt. According to the RFA, this unit contained roll-off boxes containing potentially hazardous waste during GEPD's Visual Site Inspection conducted on July 22, 1994.

The area was permitted by PFSG as the Waste Stabilization and Solidification Area and was used for waste stabilization and solidification in containers. It was subject to RCRA closure in February 2016.

1.4. Summary of Previous Investigations

Various soil and groundwater investigations have been conducted at the PFSG site between 1996 and February 2024. These include several RCRA Facility Investigations (RFI) (1996-2004), two aquifer pumping tests (1996 and 2006), an in-situ chemical oxidation (ISCO) pilot test (2004-2005), a multiphase extraction (MPX), and AS/SVE pilot test (2006), an AS/SVE pilot test (2023), and additional soil and groundwater delineation investigations conducted between 2006 and January 2020. The initial RFI investigation was completed in 1996 with additional investigations performed in 2002, 2003, 2004, and 2005.

Below is a summary of the important findings from each of the investigations. Some historic investigations were conducted to address specific SWMUs contamination and are described in terms of the SWMU nomenclature. Please refer to Figure 2 for a cross-reference of SWMU and HWMU identifications.

1.4.1. 1996 RCRA Facility Investigation

In 1996, the initial RCRA Facility Investigation (RFI) was completed by HSA Environmental, on behalf of CCGI. Sixteen monitoring wells (MW-5S, MW-6S, MW-7S, MW-8S, MW-9S, MW-10S, MW-11S, MW-12S, MW-5D, MW-6D, MW-7D, MW-8D, MW-9D, MW-11D, and MW-12D) were installed from March 20, 1996 through March 29, 1996, and two additional wells (MW-I3S and MW- 13D) were installed on March 7, 1997. The RFI report presented the historical operational information and the details of the soil and groundwater investigation. HSA Environmental characterized soil conditions through the collection of soil samples and analytical testing for VOCs and physical and chemical properties. The investigation also included short-term pumping tests to determine saturated zone properties beneath the facility. The methodologies employed and results of the RFI are presented below.

1.4.1.1. Analytical Results

Soil samples were collected for laboratory analysis and field screening from designated monitoring well boreholes and from thirteen soil borings installed within or adjacent to each of the SWMUs. Samples were collected at several discrete depths from each boring. Samples were submitted to Environmental Conservation Laboratories (ENCO) for the analysis of VOCs using USEPA Method 8240 and semi-volatile organic compounds (SVOC) using USEPA Method 8270.

Four of the soil borings contained VOCs at levels above the preliminary RAOs for this facility (Table 4 and Figure 4). No SVOCs were detected at levels above RAOs. Soil samples collected from soil borings B-7, and B-15, within SWMU 4 (Bulk Storage Tank Farm), boring B- 17 in SWMU 7 (Equipment Storage and Decontamination Area), and boring B-2 1 in SWMU 6 (Solvent Recovery Area) exceeded the current RAOs.

All four of these borings contained measurable concentrations of methylene chloride; however, RAO exceedances for individual COCs vary by soil boring location. All other soil borings within the other SWMUs contained constituent concentrations less than the RAOs.

1.4.1.2. Soil Physical and Chemical Properties Results

Undisturbed soil samples were also collected for geotechnical evaluation using a Shelby tube sampler in accordance with ASTM Method from shallow well borings MW-5S, MW-6S, MW-7S, and MW-8S and from deep well borings MW-6D, MW-9D, and MW-I0D. Sample collection from the MW-11D well boring was also attempted; however, the sample consisted primarily of quartz sand, and was not retained in the sampler. A summary of the geotechnical properties of these soil samples collected during the 1996 RFI is included in Table 9.

The shallow soils at the facility were determined to be primarily clayey sand and sand-clay mixtures, although the shallow sample collected from boring MW-8S at 9-11 ft below ground surface (bgs) was classified as a sand with a little silt. In the case of the shallow soils at the facility, the percent fines ranged from 10-31%. Conversely, 69% to 90% of the soil was comprised of sand. The samples collected from the deep well borings were predominately clay and clayey sand. Those samples that were predominately clay (MW-9D and MW-10D) were 64% and 66% fines, respectively. This indicates that sand sized particles comprised approximately 35% of the basal clay unit beneath the site.

The MW-8S sample had the lowest percentage of fine-grained materials (10%) and the lowest moisture content percentage (8.8%). Overall moisture content in the shallow samples ranged from 8.8-14.2%. The deep samples were collected below the top of the water table, but also support the contention that moisture

content in clays is higher than in sands. The moisture percentages in samples collected from MW-9D and MW-10D, both classified as clay, were 42.8% and 43.2%, respectively. However, the moisture percentage in the sample collected from MW-6D, classified as clayey sand, was only 25.4%.

The vertical flow rate of the subsurface materials is one characteristic that can be used to identify the rate at which contaminants will migrate. In the case of the shallow soil samples, the vertical flow rates determined from the Shelby tube samples were indicative of clayey sand and/or silty sand, which may impede the vertical migration of COCs to the water table to some extent. The vertical flow rates calculated for the deep samples were not significantly different than the shallower samples, except for the sample collected from MW-9D. The calculated vertical flow rate of $4x10^{-4}$ ft/day (10^{-7} cm/sec) is indicative of a clay unit that could potentially limit downward flow.

1.4.1.3. July 1996 - Aquifer Pumping Tests

Four constant discharge groundwater pumping and recovery tests were performed at the facility from July 22-25, 1996. Testing was performed to calculate the transmissivity (*T*) and hydraulic conductivity (*K*) of the shallow and deep portions of the near-surface unconfined saturated zone (as differentiated by wells with shallow and deep designations). Groundwater was pumped from monitoring wells MW-5S, MW-5D, MW-12S, and MW-12D. A 6-hour pumping test was performed at MW-5S and 8-hour pumping tests were performed on MW-5D and MW-12D. At MW-12S, groundwater was pumped for 24 hours. Recovery data were recorded until water levels reached pre-pumping levels. These wells, in addition to wells MW-2S, MW-2D, MW-4S, MW-4D, MW-6S, and MW-6D, were used as observation wells. The aquifer testing results are summarized in Table 11.

1.4.2. 2000 RFI Addendum

The RFI Phase I Addendum reported on additional site investigations conducted in December 2000 and January 2001. Six additional monitoring wells (MW- 13DD, MW- 15, MW-16, TW-1, TW-2, and TW-3) were installed at the site in an effort to expand the horizontal and vertical delineation of groundwater constituents. Groundwater samples were collected from the new monitoring wells and analyzed for VOCs and SVOCs. In addition, upstream and downstream surface water samples were collected from Mud Creek, a downgradient surface water body assumed to be a groundwater discharge area.

1.4.3. 2002 RCRA Facility Investigation Phase II

The RFI Phase II reported on additional site investigations conducted in March through October of 2002. To confirm earlier sampling results, a limited number of monitoring wells were sampled prior to the installation of new wells. Six additional monitoring wells (MW-13D3, MW-17, MW-18, MW-19, MW-20, and MW-21) were installed to delineate the horizontal and vertical extent of groundwater constituents. Groundwater samples were collected from all site monitoring wells and analyzed for VOCs. In addition, groundwater samples collected from monitoring wells on the property were analyzed for SVOCs. Natural gamma geophysical logs were completed in 20 of the site monitoring wells, generally the deepest well in each cluster, to assist with correlation.

Analytical data from the newly installed monitoring wells indicated that vertical delineation of the COCs was complete. Vertically, the plume extended no deeper than the top of the screened interval of MW-I3D3 at 124 ft. Laterally, the plume extended at least to the locations of MW-20 and MW-21. Side-gradient to the direction of groundwater flow, the plume was delineated by MW-17, MW-18, and MW-19 (the detection in MW-18 was considered erroneous because of the very low concentration (equal to the quantitation limit) and the fact that only degradation products are found at this distance from the facility property). The

downgradient extent could not be completed because access to the property south of Mud Creek was refused; however, it was assumed to be unlikely that the plume extends south of Mud Creek.

1.4.4. 2003 Phase III RCRA Facility Investigation

The GEPD reviewed the RFI Phase II investigation report and issued a Notice of Deficiency (NOD) dated January 22, 2003. PFSG responded to the NOD (MCES, February 27, 2003). After review of this response, GEPD issued a letter dated March 7, 2003, requiring completion of an RFI Phase III Work Plan detailing the additional site investigation work to be completed. The RFI Phase III entailed additional site investigations conducted in April 2003. One additional monitoring well (MW-22) was installed. Groundwater samples were collected from wells MW-18 and MW-22 and analyzed for VOCs. Three sediment samples were collected from Mud Creek and analyzed for VOCs. The groundwater samples collected from MW-18 and MW-22, including the duplicate sample from MW-22, were below laboratory detection limits for all VOCs analyzed. The samples collected from the bed of Mud Creek were below laboratory method detection limits for all VOCs analyzed with one exception. Acetone was detected in the mid-stream location at a concentration of 0.130 milligrams per kilogram of dry soil (mg/kg). The duplicate sample collected from this location also contained acetone, at a concentration of 0.089 mg/kg.

1.4.5. 2004 RCRA Facility Investigation Phase IV

The RFI Phase IV investigation consisted of a Geoprobe® groundwater screening conducted in March 2004. Samples were collected from a total of 31 Geoprobe locations (Figure 17). Multiple samples were collected in most locations, either from different vertical intervals or samples collected from different time periods during purging. According to the groundwater screening, there did not appear to be a source of the groundwater impacts located north of the facility or on the Ryder Truck property.

Eight additional monitoring wells (MW-23, MW-24S, MW-24D MW-25, MW-26, MW-27, MW-28, and MW-29) were installed at the site to complete the horizontal and vertical delineation of groundwater impacts. Groundwater samples were then collected from all monitoring wells and analyzed for VOCs. Sample results also indicate that the groundwater plume is stable.

In addition, several surface water and sediment samples were collected from Mud Creek. Two constituents were detected in the shallow soil sample collected adjacent to Mud Creek: 1,1-dichloroethene (1,1-DCE) at 0.014 mg/kg and 2-butanone (MEK) at 0.0072 mg/kg. The shallow groundwater sample collected adjacent to Mud Creek was below laboratory method detection limits for all VOCs. The surface water sample from Mud Creek was also below laboratory method detection limits for all VOCs.

A series of monitored natural attenuation (MNA) parameters were also collected during the installation of the monitoring wells MW-14S, MW-14D, MW-16, MW-21, MW-23, MW-24D, MW-23, and MW-29. Parameters such as pH, temperature, conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), alkalinity, percent clay, and the cation exchange capacity were measured in addition to nitrate, nitrate, chloride, sulfate, total iron, dissolved iron, total organic carbon, dissolved methane, dissolved ethane, and hydrogen sulfide. These data were collected to assess the potential for MNA as an effective remedial option. The results of the MNA testing suggest that MNA is supported at some off-site locations. The MNA score, as computed by the method prescribed by the USEPA guidance (USEPA 1998, pp. 27-32, 45 and Appendices B3 and C3.3) ranges from 0 to 33, with the high located at MW-14S, and the low located at MW-14D.

1.4.6. 2004 and 2005 ISCO Pilot Test

A pilot-scale test of ISCO was conducted in 2004 and 2005 to evaluate the oxidation reaction rate, percent of target compound destruction, breakdown products produced, quantity of reagents required, and the zone of influence of the reaction. The pilot-scale test was conducted in an approximately 50x60 foot area of SWMU 4 and 6. This area had some of the highest VOC concentrations at the facility and was suspected as a source.

Geo-Cleanse International, Inc. conducted two treatment programs at the facility in December 2004 and May 2005. The treatment involved the simultaneous injection of 4,590 gallons of 50% hydrogen peroxide with 17,266 gallons of site-specific catalyst, creating a 10.5% peroxide solution. Two groundwater sampling events were conducted upon the completion of each treatment program. Daily groundwater sampling and analysis was conducted to monitor the treatment progress. Mill Creek Environmental conducted groundwater sampling events at 7-days and 30-days post-treatment for each injection event.

After the first injection was completed, the groundwater analytical data displayed an initial decrease (December 2004) in contaminant concentrations followed by an increase over the next two sampling events (January 2005 and February 2005) and then another decrease (April 2005) prior to the beginning of the second injection event. The increase of contaminant mass in the January and February 2005 sampling events can be attributed to thermal desorption. The groundwater temperature was elevated and caused increased volatilization, which in turn increased the analytical results. As the groundwater temperature cooled down in April, the VOCs also decreased. The two groundwater sampling events conducted after the completion of the second hydrogen peroxide injection showed a similar trend to the one described above. The results show an upward trend of contaminant concentrations over the two June 2005 events. These results were attributed to thermal effects and may show a decrease in contaminant concentrations as the groundwater temperature decreased.

1.4.7. June and July 2006 Soil and Groundwater Investigation

A field soil and groundwater investigation was conducted at the PFSG site in June and July 2006. The investigation consisted of: (1) soil boring drilling, groundwater monitoring well construction, and soil and groundwater sampling (June 12 - July 25, 2006) to characterize soil and groundwater conditions; and (2) remedial pilot testing (July 11-14, 2006) to evaluate soil and groundwater remedial alternatives and provide remedial design information.

The field soil and groundwater investigation included drilling 30 soil borings to depths ranging from 25-35 ft bgs and collecting three soil samples from specified soil borings for analysis of VOCs, SVOCs, and lead in select samples. Five additional soil borings, one shallow soil boring and four shallow hand auger borings, were also drilled and sampled for a total of 35 soil borings. Groundwater wells were constructed within the initial soil borings drilled at the facility. The wells were completed as one of the following: a temporary monitoring well, permanent monitoring well, pilot test well, or for combined purposes. Fifteen of the soil borings were converted into temporary groundwater monitoring wells and four borings were converted into permanent groundwater monitoring wells. One was converted into an MPX pilot test well, one was converted into an AS injection pilot test well, four were converted into SVE and MPX monitoring wells, and four were converted into AS monitoring wells. The groundwater samples were analyzed for VOCs.

Upon completion of the monitoring and pilot testing wells, field remediation pilot tests were completed at the site. The tests consisted of an AS pilot test, a SVE pilot test, a combined AS and SVE (AS/SVE) pilot

test, and a MPX pilot test. The testing procedures and results for are discussed in detail in the AS/SVE and MPX Pilot Test Reports provided in Appendices E and F, respectively.

The results from the June and July 2006 field investigation are discussed in detail in Sections 3.2 through 3.6 of this PCCP under the "Site Conceptual Model and Current Site Conditions," Tables 5 and 10 through 13, and Figures 5, 7, 9, 11, 13, and 15.

1.4.8. 2014 Soil Sampling as Part of Partial Closure of SWMU 3, SWMU 4, and SWMU 5

Following the August 2013 fire, soil sampling was conducted as part of the closure activities of SWMU 2 (Former Drum Storage Pad), SWMU 3 (Former Drum Storage and Process Area 1), and SWMU 4 (Bulk Storage Tank Farm). The investigation was completed in January and March 2014 and consisted of the collection of 23 soil samples from the shallow soils in these SWMUs along with four samples collected from the ditch located along the western boundary of the PFSG facility. The 23 soil samples were collected at depths ranging from 0.5-2.5 ft bgs at SWMUs 2E, 3 4, 5, 6, 7, and 8. The four samples collected along the ditch were collected at depth ranging from 0.5-1.0 ft bgs. The samples were submitted to Advanced Environmental Laboratories (AEL) for analysis of VOCs, SVOCs, and eight RCRA metals. The analytical results from this sampling event are summarized in Section 3.2, Table 6, and Figures 5, 7, 9, 11, 13, and 15.

1.4.9. September 2015 SWMU 5 Sub-Slab Soil Investigation

In September 2015, a sub-slab soil investigation was conducted as part of additional partial closure-related investigations at SWMU 5 (Bulk Storage Tank Farm). Ten soil samples were collected from five locations within SWMU 5. Two samples were collected at each location from depths of 1.5 and 11-14 ft bgs. The samples were submitted to AEL for analyses of VOCs, SVOCs, and eight RCRA metals. Results of these samples are summarized in in Section 3.2, Table 7, and Figures 6, 8, 10, 12, 14, and 16.

1.4.10. 2016 Investigation of SWMU 3, SWMU 4, SWMU 6, and SWMU 7

Following the August 2013 fire and 2014 and 2015 facility closure activities, additional soil testing was completed at SWMU 2 (Former Drum Sampling and Inspection Pad), SWMU 3 (Former Drum Storage Process Area 1), SWMU 5 (Waste Bulking and Unloading Area), and SWMU 7 (Solvent Recovery Area). The soil sampling was conducted in February 2016. Two samples were collected from a total of 20 locations at depths of 0.5-1.5 and 11-15 ft bgs. The samples were submitted to AEL for analyses of VOCs, SVOCs, and eight RCRA metals. Results of these samples are summarized in Section 3.2, Table 8, and Figures 6, 8, 10, 12, 14, and 16.

1.4.11. 2023 AS/SVE Pilot Test

A supplemental AS/SVE pilot test was conducted by Trihydro Corporation in 2023 that included installation and testing of a deeper AS well and an expanded list of VOC test analytes to reconfirm the effective radius of influence of AS/SVE wells installed within the upper shallow aquifer and to confirm the maximum VOC concentrations for treatability design calculations. The pilot-scale test was conducted in SWMU 6. The results are discussed in Appendix B.

2.0 SOIL AND GROUNDWATER REMEDIAL ACTION OBJECTIVES

Analytical data obtained from borings and monitoring wells completed at the site have identified environmental impacts in soil and groundwater from chlorinated and aromatic VOCs. The overall goal of any corrective action remedy is to reduce the concentrations of GEPD-recognized hazardous constituents with groundwater protection standards, or chemicals of concern (COCs), in impacted soil and groundwater to eliminate any health risks to existing or future receptors. Previous subsurface investigations conducted at the PFSG facility have identified a chlorinated and aromatic VOC plume in the groundwater beneath the facility as well as soil impacts at the various SWMUs/HWMUs. Twenty-six VOCs in groundwater, 17 of which have Georgia groundwater protection standards (GWPS) or concentration limits based upon USEPA MCLs, were identified as hazardous constituents by GEPD in Table I of the Hazardous Waste Facility Permit HW-020(D). For the purposes of this PCCP, the 26 VOC constituents are considered the preliminary chemicals of concern (COCs). The soil and groundwater remedial measures described in this PCCP are designed to address the 26 VOCs, and any other potential COCs detected during future soil and groundwater sampling events based upon point of compliance (POC) well sampling as described in the permit. The COCs (hazardous constituents) are listed in Table 1 of this PCCP and will be remediated until they meet the remedial action objectives (RAOs) for both soil and groundwater.

Preliminary soil and groundwater RAOs for the constituents listed in Table 1 are described in this section to provide a benchmark for evaluating the soil and groundwater analytical data, trends at the site, and remediation goals. Preliminary soil RAOs will be based on the USEPA Residential Soil Regional Screening Levels (RSLs) using a target hazard quotient (HQ) of 0. 1 from the most recent RSL - Generic Tables, which are updated annually. The current most recent soil RSLs are from November 2024, and these are the values used in this PCCP for Residential Soil at an HQ of 0.1. Preliminary groundwater RAOs for the facility will be the established USEPA maximum contaminant level (MCL) for all compounds with an MCL, in accordance with Section III.B. of the Georgia Hazardous Waste Facility Permit No. HW-020(D) issued for the Perma-Fix of South Georgia facility on February 11, 2020, and revised on February 13, 2023.

This PCCP addresses only remediation of impacted SWMUs IC, southeastern portion of IF, and 3 through 7. Additional investigation and delineation of soil and groundwater impacts at SWMU 1D will be completed following the implementation of the soil and groundwater remedial measures described in this PCCP. The soil and groundwater impacts identified in this area are not addressed by the corrective action program presented in this PCCP.

2.1. Remedial Action Objectives

2.1.1. Soil

Unless a formal RA is conducted and alternate RAOs are established, the analytical results of soil samples for the 26 VOC COCs listed in Table 1 of this PCCP will be compared against the USEPA Residential RSLs from the most recent (November 2024 or later) RSL - Generic Tables using a target hazard quotient of 0.1. Currently, all identified COCs have an associated RSL; however, if future COCs are identified that do not have an established RSL, the constituent's preliminary soil RAO will be background, or, alternatively, may be established through a site-specific risk assessment following applicable GEPD guidance.

2.1.2. Groundwater

Unless a formal RA is conducted and alternate RAOs are established, the analytical results of groundwater samples for the 26 VOC COCs listed in Table 1 will be compared to the groundwater protection standards

(GWPS) in Hazardous Waste Facility Permit HW-020(D) that are based on the USEPA MCLs. For COCs without a GWPS or MCL, the background concentration as determined by Permit Condition III.D.6 shall be used as the preliminary groundwater RAO.

2.2. Site-Specific Risk Assessment

As part of the PCCP, additional soil and groundwater samples will be collected during the soil boring drilling and treatment well construction activities for the planned AS/SVE system, as well as from the POC well sampling event and the routine groundwater monitoring event conducted in the same time-frame as the AS/SVE well installation. Currently, the proposed RAOs for the facility will be the preliminary USEPA Residential RSLs for soil (HQ=0.1) and the GWPS (MCLs) for groundwater (or background if no GWPS/MCL is available). However, PFSG may choose to conduct a risk assessment to determine alternate RAOs in the future. Data used will include the results of soil samples collected during the AS/SVE system installation, other analytical data from soil and groundwater sampling events, as well as historical data.

If an RA is performed, it will be prepared in accordance with the GEPD document titled "Guidance for Selecting Media Remediation Levels at RCRA Solid Waste Management Units" and all other applicable GEPD-approved guidance documents for both human health and ecological receptors, as needed. Furthermore, should PFSG choose to conduct a formal risk assessment, at the time of risk assessment development PFSG will contact GEPD for the current list of approved risk assessment guidance documents. The results of the RA will be used to determine alternate soil and groundwater RAOs for the site.

3.0 SITE CONCEPTUAL MODEL AND CURRENT SITE CONDITIONS

The following section presents a site conceptual model and description of current site conditions for both the soil and groundwater environmental media at the facility. The evaluation of current conditions for soil is based upon the soil analytical data collected at the site in the field investigations conducted in June and July of 2006 and the most recent soil investigations conducted in January-March 2014, September 2015, and February 2016. The groundwater current conditions assessment is based upon data collected from the December 2024 groundwater monitoring event presented in the tables and figures. Table 2 provides a listing of the groundwater monitoring wells at the site, their construction details, and the December 2024 water level monitoring data.

A conceptual model of the site stratigraphy, hydrogeology, and contaminant transport (developed by Cameron-Cole) is presented along with a summary of the results from historical soil physical properties testing, soil and groundwater sampling, and the AS/SVE pilot tests. Two cross-sections have been prepared based on the lithological data collected from the soil boring logs (Figure 17). The two cross-sections extend from the northern portion of the site toward the southern portion of the site, and these cross-sections include TVOC concentrations collected during the January 2020 groundwater sampling event. The field data presented in this section serves as the basis for the AS/SVE remedial measure proposed herein. A summary of the comprehensive groundwater sample analytical results from February 2003 through December 2024 is presented in Section E, Exhibit E-1 of the 2025 permit modification application.

3.1. Site Stratigraphy

The site conceptual model and two hydrogeological cross-sections were created for the PFSG facility based on all available data collected historically from 1996 through January 2020. This includes 68 soil boring logs and/or soil boring/well construction logs, recent groundwater elevations (Table 2), soil physical properties testing (2006), aquifer pump tests (1996), AS/SVE pilot test (2006), and all groundwater analytical results. The soil boring/well construction logs from old wells MW-1S, MW-2S, MW-3, MW-4S, MW- 1DR, MW-2DR, MW-4D, MW-14D, and MP-8 could not be located.

Four logs indicated very limited areas of fill near ground surface as follows.

- MW-11D - the top six inches were identified as limestone and gravel fill material;
- MW-13DD - one foot of clay with some sand, firm homogeneous, moist to dry (compact fill) was located below the concrete base;
- MW- 15 - Two intervals identified fill material one at 2.5 ft below ground surface (bgs) which identified as debris and another at 5 to 10 ft bgs identified as clay chunks (fill); and
- MW- 16 - The upper section from ground surface to 10 ft bgs was noted to contain some form of fill material.

Figure 17 depicts two hydrogeologic cross-sections running north-south across the site through the areas of impact in the shallow and deep zones. The shallow geology of the site is typical of the near shore depositional environments of the Miocene in this part of the Georgia Coastal Plain. The entire site is underlain by a yellowish red, silty fine sand in the vadose zone, with a few clayey sand interbeds. This unit extends to approximately 10-15 ft bgs. At the base of the vadose zone, the entire site is underlain by a brownish yellow, clayey fine sand layer that ranges from 5-10 ft thick. The unconfined water table occurs in this unit with the depth to groundwater ranging from approximately 14-21.5 ft below top of casing

(BTOC). This clayey sand layer reaches ground surface at the southern end of the facility and disappears within 200 ft of the southern property boundary.

Beneath this clayey sand is a reddish yellow to white medium to coarse grained sand. This sand layer increases in thickness to become the dominant formation in the subsurface between the southern portion of the facility and Mud Creek. This clean sand layer and the clayey sand layer above probably represent the Miccosukee Formation, as described by McConnell and Hacke (1993). The Miccosukee Formation varies from 25-33 ft in thickness and contains the Unnamed Pliocene Age Aquifer. Beneath the PFSG facility, at a depth of approximately 40 ft bgs this sand layer becomes increasingly more clayey, culminating in the dominant dark yellowish orange sandy clay observed during the installation of the deep wells. This sandy clay formation likely represents the Coosawatchie Formation, the uppermost of the Hawthorne Group Sediments. The deepest wells at the facility (MW 13D3, MW 23) penetrated a marl and limestone bedrock layer beneath the sandy clay layer at a depth of 80 ft bgs. The limestone formation most likely represents the Parachula Formation, another of the Hawthorn Group sediments. This lower confining unit is the regional upper confining unit for the Floridan Aquifer and is at least 60 ft thick as represented at monitoring well MW 13D3.

The upper water-bearing unit consists of the water saturated, interbedded sands, clayey sands, and clays extending from the water table to the top of the marl and limestone layer encountered at approximately 75 ft bgs. This upper water-bearing unit consists of a shallow zone (approximately 15-40 ft bgs) and a deep zone (approximately 40-75 ft bgs) to differentiate the shallower deposits of clayey sand and medium coarse sand from the deeper, finer grained, clay rich deposits overlying the marl and limestone. This differentiation is also in accordance with the shallow and deep designations of the wells constructed at the facility, which are separated at the approximate 35-ft BTOC level, with wells less wells than 35 ft deep referred to as "shallow" and wells greater than 35 ft deep referred to as "deep" wells.

3.2. Soil Analytical Results

The following sub-sections discuss the results of the soil sample chemical analyses conducted within the unsaturated zone sands above the groundwater table described above, based on the 2006 and 2014 through 2016 soil investigations. The soil investigation results, along with the RAOs, are presented in Tables 4 through 8 and Figures 5 through 16 and are pertinent to the discussion below. These maps show the current extent of soil impacts at the facility and are the basis for the soil remediation approach presented in this PCCP.

Based on the data collected at the site to date, the primary areas of soil impacts are located beneath the central and southern portions of the facility and associated with the following SWMUs: SWMU 1C (Cooling Pond), SWMU 1E (Area East of Former Drum Inspection and Sampling Pad), SWMU 3 (Drum Storage and Process Area 1 [DSPA 1], Loading Dock, and Small Unnamed Area), SWMU 4 (Bulk Storage Tank Farm [BSTF]), SWMU 5 (Waste Bulking & Unloading Area [WBUA]), SWMU 6 (Solvent Recovery Area [SRA]), and SWMU 7 (Equipment Storage and Decon Area).

Soil isoconcentration maps for TVOCs are presented in Figures 5 and 6. Soil isoconcentration maps for the COCs tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), 1,1,1-trichloroethane (1,1,1-TCA), and methylene chloride are presented in Figures 7 through 16. These maps display the analytical results at three different depths bgs: 0-2.5 ft, 4-9 ft, and 10-15 ft. Note that the isoconcentration plumes for these figures have been contoured to both the current and historical soil borings that exceed current RAOs (soil residential RSLs) as defined in Table 1.

3.2.1. SWMU 1C - Cooling Pond

Groundwater monitoring wells MW-10S and MW-10D are located on the eastern edge of SWMU 1C. At the time of well installation in March 1996, soil samples were collected from the 1-3 feet (ft), 5-7 ft, 10-12 ft, and 12-14 ft intervals in the boreholes of both completed wells. These samples were submitted to an analytical laboratory for analysis of VOCs and SVOCs. Only two VOCs were detected: ethylbenzene and toluene. Ethylbenzene was detected at a concentration of 0.006 mg/kg in the sample collected from MW-10S at the 1-3 ft interval. This is below the RAO of 5.8 mg/kg for ethylbenzene. Ethylbenzene was not detected in the samples from other intervals or any of the samples collected from MW-10D. Toluene was detected at a concentration of 0.008 mg/kg in the sample collected from MW- 10S at the 1-3 ft interval. This is below the RAO of 4,900 mg/kg for toluene. Toluene was not detected in the samples from other intervals or any of the samples collected from MW-10D. Methylene chloride, a common laboratory contaminant, was detected in all samples at concentrations below the RAO of 57 mg/kg in all intervals in both boreholes at concentrations ranging from 0.091 mg/kg to 0.169 mg/kg. One SVOC, benzylbutyl phthalate, was detected at the 1-3 ft interval in borehole MW- 10D at a concentration of 0.427 mg/kg, well below the RAO of 290 mg/kg for this compound. No other SVOCs were detected. The analytical data for soil samples collected from these two sample locations is included on Table 4.

3.2.2. SWMU 1E - Area East of Former Drum Inspection and Sampling Pad

In June 1997, four soil samples were collected from soil boring SS-14 collected in the Area East of Drum Inspection and Sampling Pad. No soil samples within this SWMU exceeded the RAOs for VOCs or SVOCs. Multiple COCs were detected at concentrations below the RAOs (Table 4).

Four soil samples were collected within SWMU 1E in March 2014. Samples were taken from shallow (0.5-1 ft bgs) depths, and one duplicate sample was taken at SS-16 between 0.5-1 ft bgs (Table 6 and Figures 5, 7, 9, 11, and 13). Most of the soil borings detected VOCs below the RAOs. Soil samples SS- 16 and SS-16 DUP had VOC detections above the RAOs for ethylbenzene. The SVOC bis(2-ethylhexyl) phthalate was detected above the RAO in SS-16 and SS-16 DUP. No other SVOC in SWMU 1E was detected above the RAOs. This SWMU, because of its elevated soil concentrations that exceed RAOs, will be addressed by the proposed AS/SVE remedial measure presented in Section 5 of this PCCP.

3.2.3. SWMU 2 - Former Drum Storage Pad (HWMU 2 - Drum Sampling and Inspection Pad [DSIP])

Two soil samples (SS-10 and SS-11) were collected in this SWMU during the soil investigation in February 2014 (Table 6 and Figures 6, 8, 10, 12, 14, and 16). There were no detections of VOCs and SVOCs above the RAO in SWMU 2. Prior to February 2014, soil samples were never collected in SWMU 2.

All soil samples from borings within 100 ft of SWMU 2 that have been completed in the past 10+ years (SS-1, SS-2, SS-4, SS-5, SS-9, SS-10, SS-13, MW-5S, MW-5D, MW-6S, MW-6D, MW-12D) have been below RAO values for VOCs, SVOCs, and metals (Table 4). In addition, the four closest wells to the SWMU (MW-2S, MW-2D, MW-5S, MW-5D) do not currently have any groundwater COC exceedances above USEPA MCLs. The historical groundwater data collected at MW-2S and MW-2D show that these wells have never had detections of COCs above MCLs.

Because there were no detections of VOCs and SVOCs in SWMU 2 in February 2014, all of the soil borings within 100 ft of the SWMU have never exceeded the RAOs, and the four closest monitoring wells have never exceeded MCLs, this SWMU may be considered clean according to the soil and groundwater RAOs. Therefore, this SWMU requires no further action for the soil media.

3.2.4. SWMU 3 - Drum Storage and Process Area (HWMU 3 - Drum Storage and Process Area 1 [DSPA 1])

Twelve soil samples, three each from the two soil borings completed in the June 2006 soil investigation (MW- 100, MW-101), and three each from the two soil borings completed in the March 1996 soil investigation (B-5, B- 12), were collected within the Drum Storage and Process Area. The two historical soil borings and three of the six soil samples collected in June 2006 detected no VOCs, SVOCs, or lead above the RAOs (Table 5). However, at MW-100, chloroform and TCE were detected at concentrations above the RAOs at 1-2 ft bgs (0.44 mg/kg and 5.99 mg/kg, respectively), and VC was detected at a concentration above the RAO at 11-12 ft (0.176 mg/kg). In addition, at a depth of 6-7 ft in MW- 101, vinyl chloride exceeded the RAO at a concentration of 0.145 mg/kg.

Fourteen soil samples were collected within the Drum Storage and Process Area, SS-1 through SS-9, SS-12, SS-13, and SS-17 through SS-20, during January through March 2014. The majority of the 14 soil samples detected no VOCs or SVOCs above the RAOs (Table 6). The constituents exceeding the RAOs in SWMU 4 were chloroform and PCE. No SVOCs were detected above the RAOs. It is likely that the source of these elevated soil concentrations is the tanks at the southern end of the Bulk Storage Tank Farm (SWMU 4). The portions of this SWMU containing soil concentrations exceeding RAOs will be addressed by the proposed remedial measures presented in Section 5 of this PCCP. The area surrounding MW- 100 and MW-101 will be addressed concurrently with the Bulk Storage Tank Farm by the proposed remedial measures.

3.2.5. SWMU 4 - Bulk Storage Tank Farm (BSTF) (HWMU 4- Bulk Storage Tank Farm [BSTF])

During the 1996 and 2006 field investigations, 51 soil samples were collected within the Bulk Storage Tank Farm. Three samples were collected from each of ten soil borings completed in the June 2006 soil investigation (B-100, B-101, B-102, B-104, B-105, MW-102, MPX-1, AS1-1, ASM-3, and SVE-4) and three samples were collected from each of the seven soil borings completed in the March 1996 soil investigation (B-7, B-8, B-9, B- 10, B-11, B-15, and B-16). The majority of the soil borings detected VOCs above the RAOs, with chloroform, methylene chloride, TCE, and PCE as the primary constituents. One SVOC was detected above the RAO in MW- 102 at a depth of 10-11 ft (n-nitrosodimethylamine, 0.418 mg/kg).

Figure 5 shows a discrete source area with a maximum TVOC concentration of 361 mg/kg at B-15 at a depth of 1-2 ft. At 5-7 ft (Figure 5), the TVOC source area, with COCs exceeding RAOs, decreases in areal extent. A separate source area is also present at this depth in the northeast corner in B-105 with a TVOC concentration of 701 mg/kg. This separate source area is centered on the southern corner of the Equipment Storage and Decontamination Area (SWMU 7). At 10-12 ft (Figure 5), these two separate source areas unite with a maximum TVOC concentration of 418 mg/kg in B-105.

Ten soil samples were collected within the Bulk Storage Tank Farm in September 2015, as shown in Figures 6, 8, 10, 12, 14, and 16. Samples were taken from shallow (0-2.5 ft bgs) and deep (10-15 ft bgs) depths at each location. The majority of the soil borings detected VOCs below the RAOs (Table 7). Only soil samples Bulk Storage Tank Farm-1-1' and Bulk Storage Tank Farm-2-1.5' in the shallow zone had VOC detections above the RAOs, with chloroform, 1,2-dichloroethane (1,2-DCA), ethylbenzene, TCE, and PCE as the primary constituents. No SVOCs were detected above the RAOs.

Eleven soil samples were collected within the Bulk Storage Tank Farm in February 2016. The locations are presented on Figures 6, 8, 10, 12, 14, and 16. Samples were collected from shallow (0-2.5 ft bgs),

medium (4-9 ft bgs), and deep (10-15 ft bgs) depths. One duplicate sample was taken at DSA3-2 between 13-14 ft bgs. Only soil samples DSA3-2(1.5) (Dup 1), DSA3-4(1.5), and DSA3-5(1.5) at the shallow depth had VOC detections above the RAOs, with TCE and vinyl chloride as the primary constituents (Table 8). No SVOCs were detected above the RAOs.

Figure 5 shows a discrete source area with a maximum TVOC concentration of 1,020 mg/kg in September 2015 sample for SWMU 5 sample Bulk Storage Tank Farm-2-1.5 at a depth of 2-2.5 ft bgs. This SWMU, because of its elevated soil concentrations that exceed RAOs, will be addressed by the proposed AS/SVE remedial measure presented in Section 5 of this work plan.

3.2.6. SWMU 5 - Waste Bulking & Unloading Area (WBUA) (HWMU 5 - Waste Bulking & Unloading Area [WBUA])

Nine soil samples, three each from the three soil borings completed in March 1996, were collected in the Waste Bulking and Unloading Area. No soil samples within this SWMU exceeded the RAOs for VOCs or SVOCs. Multiple COCs were detected at concentrations below the RAOs (Table 4).

Eleven soil samples were collected within the Waste Bulking and Unloading Area in February 2016. Samples were collected from shallow (0-2.5 ft bgs), medium (4-9 ft bgs), and deep (10-15 ft bgs) depths, with one duplicate sample taken at WBUA-1(0.5) (Dup 4), WBUA-3(0.5), WBUA-4(0.5), WBUA-5(0.5) at the shallow depth, and WBUA-3(15) and WBUA-4(13) at the deep depth, had VOC detections above the RAOs for TCE. Soil Samples WBUA-3(0.5) and WBUA-4(0.5) at shallow depth, had VOC detections above the RAOs for PCE. No SVOCs were detected above the RAOs. This SWMU, because of its elevated soil concentrations that exceed RAOs, will be addressed by the proposed AS/SVE remedial measure presented in Section 5 of this work plan.

3.2.7. SWMU 6 - Solvent Recovery Area (SRA) (HWMU 6- Drum Storage & Process Area 2 [DSPA 2])

A total of 30 soil samples were collected from the Solvent Recovery Area in 2006. Three samples were collected from each of six soil borings (B-107, B- 108, B-111, B-112, B-113, and B-114) and one from four hand auger borings (HA-1, HA-2, HA-3, and HA-4) completed in the June 2006 soil investigation. In addition, three soil samples were collected from B-20 and B-21 and two were collected from MW-8S during the March 1996 soil investigation. Most of the soil borings detected VOCs above RAOs, with twelve constituents detected at concentrations exceeding the RAOs. No soil sample exceeded RAOs for SVOCs or lead. The constituents exceeding the RAOs in SWMU 7 were chloroform, methylene chloride, 1,1,1-TCA, 1,1-DCA, 1,2-DCA, PCE, TCE, VC, benzene, toluene, and ethylbenzene.

Figure 5 shows two source areas with maximum TVOC concentrations approaching 1,000 mg/kg at a depth of 1-2 ft bgs in 2006. The primary source areas appear to be the Equipment Storage and Decontamination Area and the pot still recovery unit in the Solvent Recovery Area. As depth increases (Figure 5), the soil concentrations below the pot still recovery unit decreases, while the concentrations beneath the southern corner of the Equipment Storage and Decontamination Area increase to a TVOC concentration of 28,000 mg/kg in B-108 at a depth of 10-12 ft. Figures 7 through 16 illustrate these trends with depth for PCE, TCE, 1,1-DCE, 1,1,1-TCA, and methylene chloride.

Seventeen soil samples were collected within the Solvent Recovery Area in February 2016. Samples were collected from shallow (0-2.5 ft bgs), medium (4-9 ft bgs) and deep (10-15 ft bgs) depths. One duplicate sample was taken at SRA/DSPA2-4(1) (Dup 2) between 0-2 ft bgs. Most of the soil borings detected VOCs

below the RAOs. The constituents exceeding the RAOs in SRA/DSPA2 were PCE, TCE, and ethylbenzene. No SVOCs were detected above the RAOs. According to the multiple soil investigations performed at the facility, the area around B-108 is a primary source area of the groundwater VOC plume. Because of the VOC exceedances within the Solvent Recovery Area, the corrective action remedial system will address the soils and groundwater beneath this SWMU.

3.2.8. SWMU 7 - Equipment Storage & Decon Area (HWMU 7- Solidification and Stabilization Area [SSA])

Fifteen soil samples, three each from the four soil borings completed in July 2006 (B-103, B-106, B-109, B-110), and three each from the two soil borings completed in March 1996 (B-17, MW-9S), were collected in and around the Equipment Storage and Decontamination Area. All soil borings but one (MW-9S) contained elevated VOCs with COCs above the RAOs, as defined in Table 1. No soil sample exceeded the RAOs for SVOCs or lead.

Five COCs were detected at elevated concentrations: chloroform, methylene chloride, TCE, VC, and benzene. Analytical results at B-109 (1-2 ft and 5-7 ft) and B-106 (10-12 ft) for PCE were below laboratory detection limits; however, the laboratory detection limits for these samples were above RAOs and were plotted on Figure 7.

Five soil samples were collected within the Solvent Recovery Area in February 2016. Samples were taken from shallow (0-2.5 ft bgs) and deep (10-15 ft bgs) depths. One duplicate sample was collected at SSA-1(13) (Dup 3) between 12-14 ft bgs. Most of the soil borings detected VOCs below the RAOs. Vinyl chloride exceeded RAOs in SSA- 1(13) (Dup 3) and SSA-2(13). No SVOCs were detected above the RAOs.

According to the soil VOC isoconcentration maps presented in Figures 5 through 16, the primary source area in SWMU 7 is at the southeastern end, between the soil borings B-108, and B-21, near SSA-2(13). As depth increases, the areal extent of the impacted soil increases, with increasing TVOC concentrations north of SWMU 7 in B-103 and B-106. This SWMU, along with SWMUs IC, IE, and 3 through 6, will be addressed by the AS/SVE remedial measure.

3.3. Site Conceptual Model

The hydrogeologic and chemical data collected at the site was used (by Cameron-Cole) to develop a site conceptual model (CSM) for this facility. This conceptual model provides a framework for understanding how the subsurface impacts resulting from on-site operations originated and evolved through time. The chlorinated and non-chlorinated constituents released from the SWMUs at the site have resulted in subsurface impacts in the form of: (1) soil contamination; (2) soil vapor contamination; (3) residual contaminants as dense non-aqueous-phase liquid (DNAPL) in the saturated zone and sorbed constituents in the unsaturated (vadose) zone and in the saturated zone; and (4) dissolved-phase contamination in groundwater. The CSM includes a hydrogeologic and chemical transport conceptualization of the migration of the primary COCs through the unsaturated and saturated zones and is presented in the sections below.

The hydrogeologic cross-sections presented in Figure 17 illustrate the principal hydrologic units and horizontal and vertical extent of COC impacts in the shallow and deep saturated zones underlying the site. A CSM of the site stratigraphy, hydrogeology, and contaminant transport is presented along with the results from the soil physical properties testing, soil and groundwater sampling, and the AS/SVE and MPX pilot tests. The following sections present: (1) the site conceptual groundwater flow and transport model; and

(2) the results obtained from the field investigation conducted between June 12 and July 25, 2006, and based on the quarterly groundwater monitoring events conducted through January 2020.

3.3.1. Conceptual Groundwater Flow and Fate and Transport Model

As stated previously, releases to soil and groundwater have impacted eight SWMU areas, seven of which are addressed by this PCCP. The seven SWMUs to be addressed by the proposed AS/SVE remedial measures system include: SWMU IC (Cooling Pond), SWMU 1E (Area East of Former Drum Storage Pad), SWMU 3 (Former Drum Storage and Process Area 1 [DSPA 1], Unloading Dock, and Small Unnamed Area), SWMU 4 (Bulk Storage Tank Farm [BSTF]), SWMU 5 (Waste Bulking and Unloading Area [WBUA]), SWMU 6 (Solvent Recovery Area [SRA]), and SWMU 7 (Equipment Storage & Decon Area). As stated previously, SWMUs 2 through 7 correspond to HWMUs 2 through 7, as shown in the key provided on Figure 2. These SWMUs/HWMUs have been impacted by the vertical drainage of COCs from historic releases from tanks, surface impoundments, and storage areas. As the COCs moved downward through the vadose zone, they were subject to physical and chemical processes that included volatilization, entrapment of part or all of the NAPL as residual phase (immobile) COCs, and dissolution of chlorinated and non-chlorinated constituents into soil pore water.

Because the releases at the site were sufficiently large to exceed the residual retention capacity of the vadose zone soils, the COCs eventually encountered the capillary fringe above the water table and then the water table itself, where the density of the chlorinated COCs caused it to displace pore water until some form of fluid equilibrium was achieved. The COCs sorbed in the unsaturated and saturated zones beneath the site provide a continuing, pervasive source of soil vapor and groundwater contamination beneath the site and immediately downgradient. COCs adsorbed to soil in the unsaturated zone continue to act as a source of soil vapor contamination and groundwater contamination at the site.

Groundwater flow in the region of the PFSG facility is conceptualized as a single-layer system consisting of clayey, silty sand and fine- to medium-grained sand, dominated by horizontal flow, underlain by a limestone unit. The upper water-bearing unit has been separated into two zones, designated as “shallow” and “deep,” during the site investigation to assist in delineating contaminants detected in the groundwater. Groundwater monitoring wells were installed in both of these zones. Groundwater flow in the region is to the south-southeast. Similarly, the direction of the groundwater movement at the site is to the south-southeast and is generally consistent with the local topography that has a gradient to the south ending with Mud Creek. Mud Creek flows towards the east and is considered a gaining stream with water entering from groundwater.

The groundwater gradient at the site is relatively flat with steeper gradients considerably north of the site and toward Mud Creek located south and southeast of the site. The depth to groundwater generally ranges from 2 to 20 ft bgs at and downgradient of the site. Groundwater gradients range from approximately 0.005 feet/feet (ft/ft) on-site to approximately 0.01 ft/ft north and south of the facility. The predominant influences on the groundwater flow are topography and Mud Creek.

The COCs at the site are transported as organic solutes in the aqueous-phase. Due to the presence of three COCs (1,1,1 -TCA, PCE, and toluene) at concentrations in excess of 1% of the solubility during December 2024, there may be the potential for residual DNAPL to be present in the shallow zone beneath the facility. All three COCs exceeded the 1% of the solubility in well MW-10S; therefore, there is the potential for DNAPL in the upgradient area that includes SWMUs 1C, 6, and 7. DNAPL has not been observed in any of the monitoring wells; however, potential residual DNAPL may provide a continuing source to the

aqueous-phase VOC plume in the upper water-bearing unit. As the COCs move through the sand unit, both horizontally and vertically, they are attenuated by biological degradation, matrix sorption, and hydrodynamic dispersion. The horizontal transport of these dissolved constituents is by advective-dispersive flow, with diffusion playing a negligible role in the transport process.

The distribution of COCs and orientation of the plume is controlled mostly by the regional hydraulic gradient, although Mud Creek and preferential flow paths in the coarser-grained portions of the sand unit may influence solute transport to a limited extent. The current shape of the TVOC plume suggests that the plume is moving in a south-southeastern direction and seems to be dominated by the regional groundwater flow direction. The TCE and PCE plumes in groundwater generally mimic the shape and extent of the TVOC plume, though at a lower concentration.

Based on the groundwater monitoring reports, the plume generally appears to be stable or depleting in most areas and the off-site migration has been relatively slow given the high hydraulic conductivity of the sand unit. The slow transport in a relatively conductive water-bearing unit can be attributed to the shallow hydraulic gradient (which limits the rate of advective transport), retardation caused by a high fraction of organic carbon, and the relatively high attenuation rate of the VOCs through dispersion, sorption, and natural biodegradation, including aerobic or cometabolic degradation and reductive dechlorination processes.

3.3.2. Upper Water-Bearing Unit Testing Results

The pumping test results for the upper water-bearing unit, obtained in July 1996 and in July 2006, are presented below. The two sets of data have been compared to evaluate the precision of the analyses and develop representative aquifer properties for the computer modeling and assessment of remedial alternatives (see Sections 4.4 and 4.5 and the Groundwater Modeling Report in Appendix A). The computed data have also been compared to the soil physical properties results from laboratory tests to develop representative vadose and saturated zone properties.

3.3.2.1. 1996 Pumping Test

Hydraulic conductivity and storativity values were computed from the pumping tests conducted in July 1996. Within the shallow zone of the upper water-bearing unit, the calculated hydraulic conductivity ranged from 0.561 cm/sec to 1.14 cm/sec, with an average of 0.848 cm/sec. Within the deep zone of the upper water-bearing unit, the calculated hydraulic conductivity ranged from 0.0849 cm/sec to 0.739 cm/sec, with an average of 0.3 12 cm/sec. These horizontal hydraulic conductivity values are consistent with values for a medium to coarse clean sand (Freeze and Cherry, Table 2.2, p. 29, 1979). Although the calculation of storativity was performed, the tests were not run for a sufficient period of time to calculate the aquifer specific yield.

3.3.2.2. 2006 MPX Pilot Test

Table 12 displays the pumping test results from the MPX pilot test performed in July 2006. The aquifer pumping test results obtained during the MPX pumping test is discussed in detail in Appendix B. The MPX pumping was performed within well MPX-1 and water levels were measured in wells SVE-1, SVE-2, SVE-3, and SVE-4.

Hydraulic conductivity values were computed from the pumping tests conducted in July 2006. Within the shallow zone of the upper water-bearing unit, the hydraulic conductivity calculated by Theis curve-fitting ranged from 3.75×10^{-3} cm/sec to 1.39×10^{2} cm/sec, with an average of 9.30×10^{-3} cm/sec. The Cooper-Jacob

Distance-Drawdown computation estimated the hydraulic conductivity as $8.28x10^{-3}$ cm/sec. These horizontal hydraulic conductivity values are consistent with values for a silty fine to medium sand (Freeze and Cherry, Table 2.2, p. 29, 1979).

The range in hydraulic conductivity values estimated from the July 2006 pumping test data is generally lower than the hydraulic conductivity values estimated for the July 1996 data. The average 2006 hydraulic conductivity of the shallow zone in the upper water-bearing unit ($9.30x10^{-3}$ cm/sec) is approximately two orders of magnitude lower than the hydraulic conductivities as determined from the 1996 data (0.848 cm/sec). This difference is primarily due to lithologic variation and the method of pumping from the well. The water pumped from MW-12S and MW-5S during the 1996 pumping test was pumped by a submersible pump at a depth of approximately 20 ft bgs. The water pumped from MPX-1 during the 2006 pump test was pumped from the water table, at a depth of 15.5 ft bgs. These two depths are in slightly different lithologies; the 1996 pump test was performed primarily within the medium to coarse sand unit, and the 2006 pump test was performed primarily within the clayey fine sand unit (uppermost portion of the shallow zone of the upper water-bearing unit).

The range in hydraulic conductivity values estimated from the July 2006 pumping test data is also generally higher than the hydraulic conductivity values measured by the laboratory physical properties data. The average 2006 hydraulic conductivity of the clayey fine sand lithologic unit ($9.30x10^{-3}$ cm/sec) is approximately three orders of magnitude higher than the average hydraulic conductivity in the clayey fine sand unit as determined from the physical properties testing ($2.03x\ 10^{6}$ cm/sec), and approximately two to three orders of magnitude higher than the average hydraulic conductivity in the medium to coarse sand unit as determined from the physical properties testing ($4.74x\ 10^{5}$ cm/sec).

The difference in measured hydraulic conductivities is primarily due to the scale of testing. Laboratory-derived hydraulic conductivities are typically one to three orders of magnitude lower than field-derived values obtained from long-term pumping tests (Fetter, 1993; Bedient et al., 1999). This is due to the scale-dependency of hydraulic conductivity measurements, which increase in proportion to the volume of aquifer sampled or evaluated (i.e., pumping tests yield larger values than slug tests, which, in turn, produce larger values than laboratory tests). A pumping test averages the vertical heterogeneity within the screened interval, allowing the pumping test to obtain water from any higher conductivity zones within the test interval. In addition, since an MPX pumping test places an artificially high vacuum on the formation, the overall efficiency of the recovery well is increased for a fixed drawdown, thus increasing the apparent saturated hydraulic conductivity.

3.4. Site Hydrogeology

As stated previously, the principal hydrostratigraphic unit of interest beneath the facility is the upper water-bearing unit, which has been further broken down into shallow and deep zones corresponding to both the site stratigraphy and “shallow” and “deep" well designations. The top of the groundwater surface in the upper water-bearing unit is typically encountered at depths of approximately 1-2 ft bgs in the vicinity of Mud Creek at MW-21 to 15-18 ft bgs in MW-28 just north of the facility. The groundwater at the site is unconfined. Groundwater-level measurements in December 2024 are summarized in Table 2 and a potentiometric surface map for December 2024 is provided on Figure 18.

3.4.1. Unsaturated Zone and Upper Water-Bearing Unit Properties

The physical properties of the unconsolidated sediments comprising the unsaturated and saturated zones beneath the facility have been characterized through extensive field testing. These tests have included

laboratory testing, field slug testing, aquifer pumping testing, and field remediation pilot testing. The results from the previous soil and groundwater investigations are described below.

Soil samples collected during March 1996 and July 2006 Field Investigations were submitted to geotechnical laboratories for physical and chemical analysis. The March 1996 samples were analyzed for moisture content, porosity, soil classification, density, infiltration, vertical flow rate, cation exchange, organic content and soil sorption capacity. The July 2006 samples were submitted for analysis of lithology, permeability, bulk density, porosity, moisture content, and total organic carbon content. The results are summarized on Table 10.

Soil permeability analysis conducted on samples collected in July 2006 (Table 10) ranged from 2.03×10^{-6} cm/s in the shallow zone to 4.74×10^{-5} cm/s in the deep zone. Pumping tests were performed on wells MW-5S, MW-5D, MW- 12S, and MW- 12D in July 1996 and on well MPX-1 in July 2006. Analytical analysis of pumping test data from 1996 reported a range of hydraulic conductivity from 5.61×10^{-1} cm/s to 1.14 cm/s with an average value of 8.48×10^{-1} cm/s in the shallow zone of the upper water-bearing unit. Hydraulic conductivities in the deep zone of the upper water-bearing unit ranged from 8.5×10^{-2} cm/s to 7.4×10^{-1} cm/s with an average hydraulic conductivity of 3.12×10^{-1} cm/s. The 2006 pumping tests results were also analyzed using analytical techniques, and estimated shallow hydraulic conductivities ranged from 3.75×10^{-3} cm/s to 1.39×10^{-2} cm/s with an average of 9.3×10^{-3} cm/s. Tables 11 and 12 summarize the pumping test results from 1996 and 2006, respectively.

Laboratory hydraulic conductivity tests provide useful local-scale information for preliminary determination of *k* values but are of limited usefulness compared to a calibrated regional-scale flow model due to the well-established scale dependency of hydraulic conductivity data (Fetter, 1993; Bedient et al., 1999). The laboratory-derived *K* values exhibit the greatest difference from numerically-derived values due to the scale-dependency of hydraulic conductivity measurements. Hydraulic conductivity values generally increase in proportion to the volume of aquifer sampled or evaluated (i.e., pumping tests yield larger values than slug tests, which, in turn, produce larger values than laboratory tests). Like laboratory permeability tests, aquifer slug tests and single-well pumping tests provide hydraulic properties only near the well. These tests, while useful, sample only a relatively small aquifer volume and, therefore, generally provide estimates of *K* that are typically within only one to three orders of magnitude of those derived from regional-scale flow model calibrations. Consequently, data from such tests can only be used to constrain *K* values to within reasonable limits and cannot be assumed to represent the hydraulic conductivity of large-scale hydrostratigraphic units.

3.5. Groundwater Flow

The most recent depth-to-groundwater measurements and calculated groundwater elevations collected in December 2024 are presented in Table 2. The groundwater elevations were used to generate potentiometric surface maps and to assess horizontal and vertical hydraulic gradients and groundwater flow in both the shallow and deep zones.

Groundwater flow in the upper water-bearing unit beneath the PFSG facility is conceptualized as a single layer system consisting of clayey, silty sand and fine to medium grained sand, dominated by horizontal flow, underlain by a limestone unit. As stated previously, the upper water-bearing unit has been separated into two zones, designated as “shallow” and “deep,” with groundwater monitoring wells installed in both zones. Regional groundwater flow is towards the south-southeast. Similarly, the direction of the groundwater movement under the facility is to the south-southeast and is generally consistent with the local

topography that slopes towards the south to the intersection with Mud Creek. Mud Creek flows towards the east and is considered a gaining stream with water entering from groundwater. The most recent groundwater potentiometric surface maps from December 2024 for the facility are presented on Figure 18.

3.5.1. Shallow Zone

Groundwater elevations have historically fluctuated with seasonal precipitation, indicating that vertical recharge is directly associated with an increase or decrease in rainfall events. Table 2 provides a comparison of recent groundwater elevation data for the shallow and deep zones. The fluctuations in the groundwater table generally correspond to precipitation events, indicating that ground water elevations increase and decrease in response to seasonal precipitation.

A potentiometric surface map created from the shallow zone groundwater level measurements obtained in December 2024 is presented in Figure 18. As is common when groundwater is encountered at a relatively shallow depth and precipitation is sufficient, the natural (i.e., non-pumping) potentiometric surface generally mimics the surface topography. The direction of the groundwater movement is generally consistent with the local topography and is to the south-southeast toward Mud Creek, which flows east gaining water from groundwater. The groundwater flow direction is consistent with historic observations.

The overall average hydraulic gradient across the monitored domain in December 2024 was 0.001 feet of head per linear foot (ft/ft).

Perma-Fix has previously investigated the hydraulic connections between groundwater, the drainage ditch located along the western boundary of the facility, and Mud Creek. The drainage ditch receives stormwater from the PFSG outfalls and from portions of the Azalea City Industrial Park. It has been determined to be an ephemeral stream that flows in response to precipitation events and does not discharge to Mud Creek. Instead, the drainage ditch terminates approximately 100 feet north of the creek. PFSG agrees that there is a hydraulic connection of the groundwater table to Mud Creek, and that during high water table events, groundwater will discharge to Mud Creek.

3.5.2. Deep Zone

Because of the similar lithology and hydraulic connection between the shallow and deep zones, the deep zone groundwater flow direction (Figure 18) to the south-southeast and hydraulic gradient are very similar to the direction and gradient of the shallow zone. Historically when comparing groundwater elevations (Table 2) to precipitation events, the local rainfall data has not appeared to have as strong an influence on groundwater elevations in the deeper zone as in the shallow zone.

The overall average hydraulic gradient in the deep zone across the area was 0.011 ft/ft in December 2024.

3.5.3. Groundwater Flow Velocities

General groundwater flow directions for the upper water-bearing unit can be inferred from the potentiometric surface elevation contours depicted of the shallow and deep zones in Figure 18. The contour maps show that higher groundwater elevations are present in the northern area and lower elevations near Mud Creek. The predominant groundwater flow direction in both the shallow and deep zones is south-southeast.

Groundwater flow velocity estimates for December 2024 were calculated at various areas of the PFSG facility using the following equation (Fetter, 1994), which is based on Darcy's law:

$$V_{s,h} = \frac{K_h i_h}{n_e}$$

Where:

$V_{s,h}$ = Horizontal seepage velocity of the groundwater in units of feet per year (ft/yr),
K_h = Horizontal hydraulic conductivity (ft/day or ft/yr),
i_h = Horizontal hydraulic gradient (ft/ft); and
n_e = Effective porosity of the sand in the shallow and deep zones.

The effective porosity was based on soil physical property data in the shallow zone obtained in 2006. The values used for horizontal hydraulic conductivity were based on soil physical property testing and pumping tests conducted in 1996 and 2006 and a quantitative calibrated MODFLOW numerical groundwater flow model executed by Trihydro Corporation for the site in 2022.

Using this approach and hydraulic gradient estimates across the facility from north to south in the shallow zone, groundwater velocities during December 204 were estimated to range from 553 ft/yr beneath the facility, to 784 ft/yr south of the site. For the deep zone, the velocities were calculated range from 48 ft/yr beneath the facility, to 231 ft/yr south of the site.

Since the effective porosity was constant for the flow velocity calculations and the hydraulic conductivity was within the same order of magnitude for all areas, the differences in the estimated groundwater flow velocities at the facility are the result of variations in the hydraulic gradients. Figure 18 presents the computed groundwater flow velocities for the shallow and deep zones.

3.5.4. Vertical Hydraulic Gradient

The data from a set of four nested wells, referred to as the MW-13 well cluster (13S, 13D, 13DD, and 13D3), presents groundwater data at four different elevations within the shallow zone. Although the shallow zone is hydraulically connected throughout the depth of the unit, groundwater elevations vary with depth. Data indicates at each change in well depth there is a corresponding change in groundwater elevation. During December 2024 the groundwater elevations in the MW-13 well cluster continued to show that as depth increases the groundwater elevation decreases. The shallowest well, MW-13S which terminates at a depth of 23.89 ft BTOC, had an observed groundwater elevation of 175.85 ft MSL. The deepest well in the cluster, MW-13D3 terminating at 138.38 ft BTOC near the base of the unit, had an observed groundwater elevation of 103.41 ft MSL. This pattern suggests the shallow zone may be contributing groundwater to the deep zone, but the 35 ft contrast in potentiometric elevations also suggests that the interbedded layers of clay and marl are also serving to limit the vertical hydraulic communication across these strata.

Given that the MW-13 well cluster suggests there may be a contribution of groundwater from the shallow zone to the deep zone, the vertical groundwater gradients between 14 well pairs screened in both the shallow and deep zones were calculated to evaluate the potential for vertical migration. The December 2024 data show seven well pairs with downward vertical gradients and seven well pairs with zero to upward vertical gradients, showing a overall downward gradient of -0.006 ft/ft.

3.6. Groundwater VOC Analytical Results and VOC Trends Analysis

Groundwater samples were collected from 41 wells during the most recent sampling event in December 2024 and submitted to Eurofins for VOC analysis. The detected VOCs are divided into groups of

chlorinated and non-chlorinated solvents, and aromatic hydrocarbons, all measured by USEPA Method 8260D. Exhibit E-1 of the permit modification application includes a table that contains a comprehensive summary of all groundwater analytical results for all wells sampled from February 2003 through December 2024 and includes wells that have historically had no detections of any constituents.

As stated previously, the site is primarily impacted by chlorinated solvents, particularly PCE, TCE, and their daughter products, although petroleum hydrocarbons are detected at elevated levels as well. The December 2024 analytical results were compared to their respective Groundwater Protection Standards (GWPS) and groundwater RSLs for those constituents without a GWPS. Chlorinated and non-chlorinated VOCs with concentrations exceeding the GWPS included the following constituents: 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), 1,2,4-trimethylbenzene, 1,2-dichloroethane (1,2-DCA), 2-Butanone, 4-isopropyltoluene, acetone, chloroethane, chloroform, cis-1,2-dichloroethene (cis-1,2-DCE), methylene chloride (MC), PCE, TCE, and vinyl chloride (VC). Two aromatic VOCs (benzene and toluene) were reported as having concentrations in excess of the GWPS during the December 2024 groundwater monitoring event.

Dissolved-phase VOC concentrations that are at least 1% of their respective solubilities indicate a weak presence of residual dense non-aqueous phase liquids (DNAPL) trapped in the soil as globules. Dissolved-phase VOC concentrations that are at least 10% of their respective solubilities indicates a strong presence of residual DNAPL. Table 1 presents the 1% and 10% of the solubilities of each COC, and whether these solubility thresholds are exceeded at the facility in the shallow or deep zone for December 2024. Exceedances of the 1% solubility threshold are shaded in yellow and the 10% solubility threshold exceedances are shaded in green. There were no exceedances of 10% solubility and exceedances of the 1% solubility threshold were only detected in one monitoring well (MW-10S). This well is located in the southeastern portion of the site. Three COCs that exceeded 1% solubilities in shallow zone well MW-10S were 1,1,1- TCA, PCE, and toluene.

3.6.1. Shallow Zone Groundwater VOC Results

A total VOC plume comprised of several COCs is present in groundwater over a large portion of the facility and extends downgradient to the south and southeast onto adjacent properties. Figures 19, 20, and 21 present the historical interpreted distribution of the total VOC (TVOC) plume in the shallow zone of the upper water-bearing unit in July 2006, March 2010, and June 2016, respectively. The contours of the TVOC plumes continue to follow the general extents of the plume delineated by the 1994 Geoprobe data providing data along the outside of the property boundary (Cameron-Cole, 2006).

Fluctuations in TVOC concentrations in wells over time have not resulted in a significant change to the overall footprint of the TVOC plume. The size and shape of the plume is fairly consistent between July 2006 and December 2024. In addition, the TVOC concentrations in wells on-site, and the resulting plume concentrations near the source areas have decreased considerably since 2006 and can be seen in the plume maps from 2006, 2010, 2016, and 2024.

Since 2006, the TVOC plume and individual COC concentrations in most wells continue to reflect a stable phase within the standard VOC plume life-cycle. In this stable phase, the residual source present and mass flux of contaminants is balanced with the assimilative capacity of aquifer from natural attenuation, which is why the changes in the overall size and shape of the plume in the past decade have been insignificant.

The length of the TVOC plume in December 2024 was approximately 825 ft from the upgradient plume boundary near MW-11S to the downgradient plume boundary north of Mud Creek. The width of the TVOC plume is approximately 282 ft measured just downgradient of the southern boundary of the facility. The TVOC plume concentrations continue to be above, but generally within the same order of magnitude, as the individual GWPS along the property boundary, with the exception of wells located along the southeast corner of the property. Shallow zone wells MW- 1S and MW-13S located in the southeast corner of the property continue to exhibit concentrations of VOCs above the GWPS.

As indicated by Figures 19 through 29, the data continues to suggest the presence of three separate source areas within the facility. The first and primary source for the plume is contained within the vadose zone soils and saturated shallow zone underlying the areas of the Bulk Storage Tank Farm (SWMU 4), Solvent Recovery Area (SWMU 6), Decontamination and Equipment Storage (SMWU 7), and the Cooling Tower (SWMU IC), which is consistent with the findings of the soil investigation in July 2006 (Cameron-Cole, 2006). The elevated concentrations of VOCs in well MW-11S and MW-11D indicate a second, smaller source in the northern area of the facility. Elevated VOC concentrations are also encountered along the fence line near the MW-13 well cluster.

Previous historical results have shown low-level detections of VOCs migrating onto the site from upgradient sources. Since the issuance of Permit HW-020(D), groundwater monitoring well MW-3 is the facility designated background groundwater monitoring well. This well has shown only limited detections of aromatic hydrocarbons during 2008 and 2009. Recent data shows a detection of benzene in well MW-3 in 2019, but no VOCs were detected in 2024, suggesting that at present there are minimal to negligible concentrations of VOCs migrating onto the site from upgradient sources.

DNAPL may be present in the shallow zone beneath the Solvent Recovery Area and the Equipment Storage and Decontamination Area in shallow monitoring well MW-10S. To evaluate potential NAPL areas, dissolved-phase VOC concentrations were compared to the 1% and 10% of the solubilities of each COC. Data collected during the December 2024 annual groundwater monitoring event show that MW-10S exceeded the 1% solubility for 1,1,1-TCA, PCE, and toluene. No other wells contained constituents at concentrations in excess of the 1% solubility and no wells contained analyte concentrations in excess of 10% solubility.

3.6.1.1. Individual Constituents of Concern in Shallow Zone Groundwater

Figures 24 through 30 present the groundwater isoconcentration maps for the principal chemicals of concern PCE, TCE, 1,1-DCE, 1,1,1-TCA, MC, VC, as well as for total aromatic hydrocarbons. The distribution of the chlorinated COCs generally mimics the total VOC plume in the shallow zone of the upper water-bearing unit, albeit at lower concentrations. Thus, the plume maps for individual COCs generally mimic the TVOCs plume map but to a lesser overall extent and at lower concentrations. The lowest contours on each map represent the GWPS for each COC. During 2024, the highest concentrations of chlorinated COCs occur at MW-10S.

The high natural biodegradation rate of MC (half-life: one month to four months, Howard et al., 1991) has prevented this constituent from traveling far from its source areas during past sampling events. The primary source area in the Solvent Recovery Area (SWMU 6) does not typically produce a plume that extends beyond SWMU-5 boundaries. The MC plume (Figure 28) for December 2024 is consistent with historical observations.

The total aromatic hydrocarbon VOCs plume shown in Figure 30 generally resembles the shape of the chlorinated COC plumes presented in Figures 23 through 29, though to a lesser extent. The elevated concentrations (depicted as greater than 10 µg/L) of total aromatic hydrocarbons in the shallow zone are encountered within the central portion of the facility extending south and southeast off-site to Georgia Petroleum Inc. property. The presence of aromatic hydrocarbons, which are efficient electron donors, creates a favorable environment for biodegradation of the chlorinated compounds. This may, in part, explain the high observed biodegradation rate of MC.

3.6.2. Deep Zone Groundwater VOC Results

Figures 19 through 23 present the historical interpreted distribution of the TVOC plume in the deep zone of the upper water-bearing unit in July 2006, March 2010, June 2016, December 2022, and December 2024, respectively. Since July 2006, the TVOC plume and individual COC concentrations have reached a generally stable phase, though localized increases and decreases are evident. The plume contours follow the general extents of the plume delineated by the 1994 Geoprobe data providing data along the outside of the property boundary (Cameron-Cole, 2006).

As indicated by the plume size and shape over time, there appear to be two separate sources within the deep zone of the upper water-bearing unit at the PFSG site. The primary source for the plume is within SWMU 1C located just upgradient of the MW-13 well cluster. There is also a smaller separate source in the vicinity of paired well cluster MW-11S and MW-11D located on the upgradient and north side of the facility. Variations in the concentrations of VOCs in the deep zone are most likely related to fluctuating groundwater elevations, along with a potential off-site source contributing to the TVOC concentrations observed in well MW-29.

Horizontally, the TVOC plume in December 2024 in the deep zone extended from approximately 50 feet north of MW-11D southward to around 75 ft north of MW-14D. Concentrations of TVOCs in the deep zone are generally significantly lower than those in the shallow zone. Excluding wells MW-11D, 13D and 13DD, the deep zone concentrations are several orders of magnitude lower than the concentrations in the shallow zone. Lower concentrations are observed in the deep zone despite the downward hydraulic gradient, indicating that significant attenuation of VOCs (due to diffusion, vertical dispersion, sorption, and biodegradation) is occurring as the groundwater migrates downward.

The horizontal extent of PCE, TCE, and the other chlorinated COC plumes in deep zone groundwater encompasses a smaller area than in the shallow zone (Figures 24-29). The highest concentrations of individual COCs occur at the MW-13 well cluster, slightly downgradient of the PCE hotspot in the shallow zone at MW-10S. In December 2024, the concentrations were below the 1% solubility concentration for all constituents in all deep wells. The extent of the PCE, TCE, and other chlorinated COC plumes in the deep zone are much smaller than the extents of these same plumes in the shallow zone, reinforcing the observation that the VOCs degrade through natural attenuation processes as the groundwater migrates to deeper zones within the upper water-bearing unit.

Figures 28 and 30, respectively, present the interpreted distribution of the MC and total aromatic hydrocarbon plumes in the deep zone. As evident from the figures, the high degradation rate of MC and aromatic hydrocarbons from natural biodegradation prevents the contaminants from migrating to deeper areas at elevated levels within the upper water-bearing unit, with the exception of well cluster MW-13D. No off-site deep wells contained detectable concentrations of vinyl chloride during 2024 (Figure 29).

3.6.2.1. VOCs in Surface Waters

Historically, the TVOC plume in the shallow zone was inferred to have approached, but not intercepted Mud Creek (Figure 20). Concentrations above 15 µg/L of TVOCs have been detected in the surface waters of Mud Creek. Perma-Fix first collected samples from Mud Creek as part of the 2003 Phase III RCRA Facility Investigation. Results showed limited detections of VOCs that included 1,1-DCA, PCE, 1,1-DCE, and toluene at low concentrations and acetone at a concentration of 0.130 mg/L. There were no detections in samples collected as part of the 2006 RFI investigation. Samples collected in December 2007 showed a concentration of 1,1-DCE of 0.012 mg/L. Sampling conducted in Mud Creek since 2008 has indicated no detections of COCs. During first quarter 2016, additional samples were collected from three locations along the drainage ditch located along the western boundary and three locations along Mud Creek. The results of all samples were non-detect and demonstrated no impact to the surface waters as a result of the PFSG plume. The surface water sample analytical results collected from Mud Creek to date have indicated that the leading edge of the VOC plume in the shallow zone has had no measurable impact upon Mud Creek since 2008.

3.6.3. VOC Trends Analysis

The historical trends of the major COCs versus time for 27 key impacted wells are presented in Exhibit E-1 of the permit modification application. The majority of wells showed stable or slightly decreasing TVOC and individual COC concentrations. The key exceptions to these generally stable trends are slight recent fluctuations in shallow well MW-7S and a slightly upward trend in deep well MW-13DD.

Well MW-13DD is located in the southeast corner of the site and is screened in the deep zone. 1,1-DCE has been increasing over time, while PCE and TCE stabilized through 2024. It is expected that the concentration for 1,1-DCA will similarly begin to decrease as the rate of natural degradation overcomes the concentrations migrating from upgradient sources.

The trends in the majority of wells over the past several years reinforce the idea that the plume is largely stable with an equilibrium established between source area loading and natural attenuation, which is why concentrations are both increasing and decreasing in certain wells simultaneously within the plume while the overall plume is not diminishing in horizontal extent (i.e., it is in a steady-state, non-depleting, and non-expanding condition of overall stability).

3.6.4. Groundwater pH Analysis

Field parameters are collected at each groundwater sample location during sample collection and have historically shown slightly acidic pH values. Review of the December 2024 monitoring event data shows that the pH values of wells located on- and off-site in both the shallow and deep zones are generally acidic. The pH values range from 4.20 in deep zone well MW-24D to 8.91 in off-site deep zone well MW-23 with an overall average of all well pH data of 5.30. The range of pH values are consistent with those historically observed across the facility.

Comparison of data from upgradient and downgradient wells, located both inside and outside the TVOC plumes, indicates that the groundwater pH is acidic. The December 2024 results indicated only three wells (deep well MW-13DD, MW-13D3, and MW-23) with pH values above 7.00 and continue to illustrate that lower pH is not confined to either the shallow or deep zones, nor to any particular area associated with the facility or TVOC plume.

4.0 EVALUATION OF REMEDIAL ALTERNATIVES

To address soil impacts, potential residual DNAPL, and dissolved COCs in groundwater, several candidate remedial alternatives were evaluated. This section describes:

- Facility and site considerations relative to implementation and operation of remedial alternatives;
- Screening of remedial technologies based on effectiveness, implementability, and relative cost;
- Evaluation of remedial systems based on retained remedial technologies; and
- Selection of recommended remedial system.

4.1. Facility and Site Considerations

Facility and site considerations are features that can impact the implementation of potential remedial alternatives. Features such as buildings and utilities, site access, site topography and hydrogeology, and site activities are listed below.

- The topography of the site is flat with no significant slope limitations within the property boundary. The slope increases to the south of the facility between the facility boundary and Mud Creek. There is a drainage ditch adjacent to elevated railroad tracks with a steep incline on both sides located along the western and northern property boundaries. Active portions of the remedial activities will be located within the confined area of the facility boundaries to avoid interference with operations on neighboring properties and specifically with railroad access and safety requirements.
- The site is predominantly paved with occasional gravel, grass, and dirt-covered surfaces. Most of the property is covered by concrete up to one-foot thick, with temporary and permanent structures occupying the majority of the site. Remedial activities will be adapted to accommodate remaining structures and any areas that remain active at the facility, if any.
- Access by heavy equipment is possible within SWMUs 1C, 1E, 2, 3, 4, 5, 6, and 7.
- The principal surface water feature in the area of the site is Mud Creek, which runs west to east approximately 600 ft to the south of the facility.
- Water, sewer, and electricity are all currently present at the site. Water and sewer services are provided by the City of Valdosta. Underground pipes are present in the eastern portion of the facility for water and sewer utilities. Electricity is provided via overhead power lines running into the facility. Remedial activities will avoid disruption of these utilities.

4.2. Screening of Remedial Alternatives

Remedial technologies were screened based on the criteria of effectiveness, implementability, and relative cost. Published studies and guidance documents, previous remediation efforts conducted at the site, previous pilot-scale test results, and the groundwater flow and solute transport model constructed for the site were evaluated to aid in this screening.

Alternatives were identified for remediation of unsaturated soil (vadose and smear zones) and groundwater. A total of nine remedial technologies were identified and evaluated[1]. Some of these technologies are potentially effective in more than one media and are listed under multiple media.

[1] USEPA guidance documents "Stabilization Technologies for RCRA Corrective Actions" (1991) and "Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action" (2004), and "Practical Techniques for Groundwater and Soil Remediation", Nyer, Evan K, CRC Press were referenced.

Vadose (Unsaturated) Zone

- Excavation (with off-site disposal or on-site aboveground SVE treatment)
- ISBRs and/or In-Situ Bio-Enhancement
- Multiphase Extraction
- Soil Vapor Extraction

Groundwater

- Groundwater Recovery Trench
- In-Situ Chemical Oxidation
- Groundwater Recovery Wells
- Monitored Natural Attenuation
- ISBRs and/or In-Situ Bio-Enhancement
- Air Sparging and/or Soil Vapor Extraction

Each of these technologies is evaluated below. A screening-level analysis of each of the soil and groundwater remedial technologies is presented in Tables 14 and 15.

4.2.1. Vadose Zone

The CSM indicates that the bulk of COC contamination has resulted from releases at, or in close proximity to, the following SWMUs, excluding SWMU 1D (Parking Area) which is not addressed by this PCCP: SWMU 1C (Cooling Pond); SWMU 1E (Area East of Drum Inspection and Sampling Pad); SWMU 3 (Drum Storage and Process Area 1 [DSPA 1], Loading Dock, and Small Unnamed Area); SWMU 4 (Bulk Storage Tank Farm [BSTF]); SWMU 5 (Waste Bulking and Unloading Area [WBUA]); SWMU 6 (Solvent Recovery Area [SRA]); and SWMU 7 (Equipment Storage & Decon Area). These SWMUs correspond to HWMUs 3 through 7. Of these source areas, the Solvent Recovery Area (SWMU 6) and Equipment Storage and Decontamination Area (SWMU 7) contain the highest concentrations of COCs in soil. Groundwater elevations at the site are approximately 15 ft bgs in these SWMUs. The COC concentration trends indicate that SWMUs 6 and 7 (HWMUs 6 and 7) are also the primary sources of dissolved constituents in groundwater compared to the other SWMUs at the site.

Four technologies are examined for remediation of the vadose zone: excavation of impacted soils (with off-site disposal or on-site aboveground SVE treatment), ISBRs, MPX wells, and SVE. Excavation trenches, ISBRs, and MPX wells are applicable to various media, including the vadose zone. A screening-level summary of the advantages and limitations of the evaluated technologies is presented in Table 14.

4.2.1.1. Excavation

Excavation of impacted soils is a very effective option for the physical removal of most of the unsaturated source area soils. Once the soil is excavated, it may either be treated ex-situ on-site or disposed of off-site. Based on an estimated average vadose zone thickness beneath the Bulk Storage Tank Farm of 15 ft, a volume of approximately 670 cubic yards would need to be excavated to address the areas with VOC soil concentrations of 100 mg/kg or greater in this SWMU. Based on an estimated average vadose zone thickness beneath the Solvent Recovery Area and the Equipment Storage and Decontamination Area of 15 ft, an estimated volume of 3,100 cubic yards would require excavation to address the areas with COC soil concentrations of 100 mg/kg or greater in these SWMUs. A total estimated excavation volume of

approximately 3,770 cubic yards would be required if all impacted soils beneath these three SWMUs were removed. The actual volume of soil to be removed is subject to water level fluctuations.

The cost to perform an excavation remedy includes soil removal, verification sampling, waste profiling, hauling, disposal, and purchase and importing of clean soil. The cost to remove, decontaminate, and dispose of the concrete pads must also be considered, as well as the loss of opportunity or replacement cost to use these pads for ongoing operations. If the excavated soil is treated on-site through aboveground SVE treatment, the costs are still very high for the excavation option. As shown in Table 14, the costs for excavation with off-site disposal or on-site aboveground treatment are very high relative to non-excavation options. Therefore, an excavation remedy is not further considered. However, if it is determined that a "hotspot" soil removal is beneficial, this may be considered to augment a selected remedy if it does not disrupt facility operations.

4.2.1.2. Multiphase Extraction

The application of vacuum-enhanced recovery with groundwater recovery wells represents a form of MPX, a technology that combines groundwater recovery with vapor extraction. In the typical application, a vacuum is applied to a wellhead by a vacuum pump, which pulls the subsurface vapors into a vapor treatment system. Groundwater is pumped simultaneously from the well by a total fluids pump or a discrete groundwater pump. Application of a vacuum to a wellhead can increase the driving force at the extraction well and, hence, the groundwater extraction rate and removal of COCs. Vacuum extraction increases the rate of contaminant mass removal by recovering significant amounts of vapor phase COCs such as MC, TCE, PCE, and VC.

MPX wells are designed to simultaneously extract groundwater and soil vapor. Three common configurations for MPX wells are: (1) total fluids pump with a low vacuum applied at the wellhead, (2) separate groundwater and separate-phase pumps with low vacuum applied at the wellhead, and (3) high vacuum "stinger" tube that lifts any one or a combination of phases. Applicable to the vadose zone, the application of either a high or low vacuum at the well can induce soil vapor movement. Soil vapor flow can volatilize and remove constituents as well as increase oxygen in the vadose zone, which can increase in-situ bioremediation. The MPX pilot test conducted in July 2006 indicated a pneumatic radius of influence (ROI) of 37 ft and high vapor removal rates of 150 pounds per day (lbs/day) from the upper water-bearing unit. Extracted total fluids are then separated (liquid vs vapor) and then treated as required. Treated vapor final effluent is discharged to the atmosphere.

MPX wells are anticipated to be more effective in removing COC mass from the source area than recovery wells alone (i.e., without vapor extraction) for several reasons. First, the combined technology would provide a greater zone of influence than groundwater extraction alone because groundwater extraction rates can generally be increased to some extent due the water table rise associated with the applied vacuum. Second, the technology will provide significant COC mass removal (both chlorinated and aromatic constituents) in the capillary fringe and unsaturated zone directly above the water table, thereby ensuring that the impacted soils do not continue to provide an ongoing source of COCs to the saturated zone. Third, because the use of MPX wells is a combined application, it is capable of simultaneously mitigating groundwater concentrations, providing hydraulic control, and addressing residual DNAPL in the smear zone and saturated zone with a single technology.

Because MPX using vacuum-enhanced vertical wells has significant advantages over groundwater extraction wells and trenches in terms of hydraulic containment and mass removal, MPX wells are

considered a prime candidate for addressing the source zone in groundwater. This source zone includes the smear zone, saturated zone above the water table, and potential residual (non-pooled) DNAPL entrapped in the smear zone and saturated zone. The principal limitation of an MPX approach is the cost associated with groundwater treatment, which is moderate compared to several other alternatives.

Pilot tests to determine site–specific design parameters for AS/SVE and MPX were performed in June 2006. To compare the relative effectiveness of the SVE and MPX systems in removing VOCs from the vadose zone, mass removal rates were computed based on the Summa canister TVOC concentrations and the air flow rates of the respective pilot tests. A mass removal rate of 975 pound per day (lb/day) was measured during the SVE pilot test, and a mass removal rate of 150 lb/day was measured during the MPX pilot test. The lower airflow rate, along with the point sink removal of vapor at the water table in MPX-1, reduced the mass removal rate of the MPX vapor extraction. The SVE pilot test removed VOCs at a rate 6.5 times higher than the MPX test. This factor of 6.5 reflects the relative time required for the removal of the VOCs within the vadose zone by MPX versus SVE. Vapor removal by MPX will require approximately 6.5 times longer to remove source VOCs than SVE. Due to the significantly higher mass removal rate demonstrated by SVE over MPX, the MPX remediation of the source area will not be retained for further consideration.

Upon independent review of the AS/SVE pilot test results, it was noted that the AS/SVE pilot test was performed using an AS well that did not fully penetrate the upper shallow aquifer (interval above the clay) and may thus not achieve an effective radius of influence (ROI) within the treatment area. In addition, air testing was performed using USEPA Method 14 analyses, which offers a limited number of VOC analytes. To confirm optimal potential for AS/SVE application, a second AS/SVE pilot test was performed in 2023, where the AS well was advanced to the top of the clay layer and air analyses were performed using USEPA Method 15 analyses to confirm the most effective ROI for the AS technology and to provide an expanded list of analytes deemed critical for vapor treatment design. Copies of the three pilot tests are included in the Remedial Design Report (Appendix C).

4.2.1.3. ISBRs and/or In-Situ Bio-Enhancement

Enhanced bioremediation using ISBR technology is an effective option for remediation of COCs in the soil. ISBRs are small, immobilized microbial generators that break down organic constituents in the subsurface. The ISBR system will consist of a series of vertical wells filled with a proprietary device containing degrading bacteria specific to the identified COCs. Proliferation of the bacterial colonies within the support matrix will be promoted by introducing a water/nutrient mixture and air into the well. Once established, the bacterial colonies will migrate horizontally and vertically through the impacted soil, metabolizing the target COCs. Colonies will continue to expand their range until the concentration of carbon sources (i.e. COCs), nutrients, and/or oxygen decrease below that required for continuing growth.

An advantage of the use of ISBRs is the microbial population can address the full range of chlorinated target compounds at the site, as well as the presence of the aromatic hydrocarbons, in both the saturated and unsaturated zone. Furthermore, the installation and operation costs associated with the ISBR technology are moderate relative to other evaluated alternatives. The disadvantages of ISBRs are that they cannot remediate DNAPL or elevated VOC concentrations in highly impacted soil source areas in a reasonable time frame and the technology is slow compared to stripping technologies like SVE or AS/SVE for highly-impacted sites like the PFSG site. However, ISBRs are well-suited to remediating soil at lower concentrations. Based on favorable effectiveness, implementability, and cost factors, the ISBR technology has been retained for further evaluations as a secondary soil and a secondary groundwater remediation

alternative to address off-site dissolved-phase contamination, and, at a later date, potentially impacts associated with SWMU 1D (Parking Area) where concentrations in soil and groundwater are lower.

4.2.1.4. Soil Vapor Extraction

In addition to the MPX system that captures total fluids (liquid and vapor), a SVE system can be used independently to address vadose zone contamination and to capture VOC vapors released from the underlying shallow aquifer via AS groundwater treatment. In the typical application, a blower is used to extract vapors from the vadose zone and to strip sorbed COCs from impacted soils, pulling them into the vapor phase where the vapors can be captured and removed from the subsurface via a vacuum airstream. A typical SVE well schematic is shown on Figure 32. SVE is a very effective remedial option for the removal of VOCs. The impermeable cover provided by the concrete pads at the Solvent Recovery Area and the Equipment Storage and Decontamination Area provide a favorable environment to trap VOC vapors in the vadose zone, thus enhancing the effectiveness of vapor extraction wells. If vapor extraction is performed around the concrete pads, an impermeable liner material will have to be installed along the perimeters of the pads, to prevent the vacuum from short-circuiting and pulling in ambient air.

The homogeneity of the silty fine sand in the vadose zone and high soil permeability to airflow (intrinsic permeability) of this unit produces a setting that is ideally suited for the application of SVE for addressing vadose zone contamination in the source area. SVE provides for very short treatment times under optimal conditions, produces little site disturbance, and is a highly economical solution. In addition, when combined with AS, the technology is capable of simultaneously addressing the vadose zone, smear zone above the water table, saturated zone, and DNAPL as isolated residual globules. The principal limitation to effectiveness of an SVE approach is the low intrinsic permeability of the clayey sand soils near the water table and the potential for short-circuiting around the concrete pads. The highly favorable conditions of the soil within the vadose zone at the site, along with the favorable results from the 2006 pilot test, make this technology the overall most effective, implementable, and cost-effective of the soil remediation alternatives. Therefore, SVE has been selected for final soil treatment design application.

4.2.2. Groundwater Remediation Technologies

Seven technologies are examined for remediation of the vadose zone: groundwater recovery trenches, ISCO, MNA, groundwater recovery wells, ISBRs and/or in-situ bio-enhancement, MPX wells, and AS/SVE. Excavation trenches, ISBRs, and MPX wells are applicable to various media, including the vadose zone. A summary of each of these technologies is presented in Table 15.

4.2.2.1. Groundwater Recovery Trench

An open excavation extended into the saturated zone, performed to remove contaminated soils, could subsequently be used as an excavation trench for the collection and recovery of impacted groundwater. The definition of a recovery trench is not limited to a specific geometry, but rather an open excavation into which one or more pumps are placed. A recovery trench operates similar to recovery wells but provides a greater recovery rate due to the larger volume of a trench compared to a well. A trench is also effective in DNAPL recovery, since the flux towards a trench is greater than towards a well due to the interception of preferential flow paths. The implementation of this technology is subject to excavation limitations, and the treatment of captured groundwater may be prohibitively expensive for the limited treatment this technology would provide to this site. A trench would also have limited effectiveness in treating the deeper portions of the upper water-bearing unit. Therefore, the use of groundwater recovery trenches will not be considered for further evaluation at the facility.

4.2.2.2. In-Situ Chemical Oxidation

ISCO is a remedial technology that involves the introduction of chemical oxidants into the subsurface to chemically destroy contaminants by oxidation. In-situ reactive technologies such as chemical oxidation (ISCO) and reactive walls have had documented success in treating dissolved VOC contamination at a wide variety of sites. A key limitation of these technologies is their inability to treat potential DNAPL and to address residual contaminants trapped in the capillary fringe above the water table.

Chemical oxidation requires the addition of an oxidant into the groundwater. Non-halogenated hydrocarbons (i.e. BTEX) are candidates for oxidation. Rebound effects in these applications typically result from the delivery of an insufficient volume of oxidant. Reactive walls, such as iron reactants, are typically used to create a reducing environment. Halogenated hydrocarbons (i.e. TCE) typically degrade in reducing environments. These technologies are very sensitive to subsurface heterogeneities. Due to the co-mingling of halogenated and non-halogenated hydrocarbons, along with chlorinated organic compounds in the groundwater plume, in-situ reactive technologies is likely not effective. Mill Creek Environmental Services (Mill Creek, 2004) performed an ISCO pilot test in 2004 with the results demonstrating that ISCO was ineffective. The injection of hydrogen peroxide caused thermal desorption of the VOCs and volatilization through uncontrolled increasing temperatures within the subsurface environment. Due to these unfavorable pilot test results, ISCO application will not be considered further.

4.2.2.3. Groundwater Recovery Wells

To accomplish the objective of controlling the migration of COC-impacted groundwater, the use of groundwater recovery wells was considered. Under this scenario, vertical wells would be installed downgradient of the principal source area at SWMUs 6 and 7 (HWMUs 6 and 7) to remove dissolved constituents. The intent of pumping from recovery wells would be to create a zone of hydraulic influence (cone of depression) which could control and recover dissolved and non-aqueous phase contaminants in the source area. Groundwater extraction from recovery wells could be accomplished using submersible pumps for water table depression and liquid capture. However, total fluid recovery could potentially include DNAPL (not historically observed) that would be highly undesirable to become blended and potentially emulsified in the total fluid effluent stream.

Groundwater extraction via recovery wells would be effective for removal of the dissolved constituent concentrations and control of plume migration if the wells are properly places within and downgradient of the source area. The local hydrogeology is favorable for the use of groundwater recovery wells. The saturated hydraulic conductivity is relatively high and there do not appear to be strong preferential flow paths that would limit the effectiveness of a pump-and-treat approach. Although comparatively long treatment times would be expected (based on site data and similar remediation systems), the control of plume migration would mitigate any exposure pathways from groundwater migration off-site. In addition, the use of recovery wells is implementable at the site with no significant physical obstructions that would limit its application.

The principal limitation of groundwater recovery wells as the sole technology for remediation at the facility is in their inability to remediate the vadose zone above the water table where residual DNAPL and elevated VOCs are typically retained. This smear zone is the result of dissolution and sorption of VOCs and entrapment of residual DNAPL due to the clayey sand layer, which effectively traps contaminants in the capillary fringe above the water table, providing a continuing source of contaminants to the groundwater. Because some of the source area is known to contain contaminants within the vadose zone, multiphase recovery wells would provide more complete removal of COCs in this smear zone through the use of

vacuum-enhanced vapor removal in conjunction with groundwater pumping. If the residual sorbed VOCs are not adequately treated, this material would continue to provide a source of dissolved constituents to the saturated zone for an extended period of time. Consequently, based on the limited effectiveness of recovery wells to remove sorbed VOCs in the smear zone above the water table and DNAPL, this technology was eliminated from the preliminary screening as a potential remedial technology.

4.2.2.4. Monitored Natural Attenuation

Monitored Natural Attenuation (MNA) is the process whereby a groundwater plume is monitored to assess the effects of natural fate and transport processes in reducing chemical concentrations and plume extent with time. MNA consists of a groundwater monitoring protocol[2] and does not require any engineered systems. In general, natural attenuation processes are documented by demonstrating that constituent compounds are being degraded, breakdown or daughter products are being produced, electron acceptors are being oxidized to form the corresponding products, and a plume is shrinking or remaining at least remaining at steady-state. At present there is sufficient data to suggest the VOC plume in groundwater is generally at steady-state.

MNA had previously been proposed for a viable remedial alternative for the remediation of off-site groundwater. However, even combined with other remediation that treats the source area and provides perimeter control of the on-site COC plume, this remedial alternative will not remediate the off-site groundwater in a reasonable time-frame. Therefore, MNA will not be considered further as a remedial option at the site.

4.2.2.5. ISBRs and/or In-Situ Bio-Enhancement

Enhanced bioremediation using ISBR technology previously discussed is an effective option for remediation of COCs in the groundwater. The use of ISBRs as a perimeter control measure would not hydraulically contain the COC plume on-site, but would establish a treatment zone in which the aqueous-phase COCs would be degraded as the groundwater migrates through the treatment zone of the ISBR array.

When ISBRs are inserted into the contaminated subsurface areas, the microbial population can address the full range of chlorinated target compounds at the site, including the aromatic hydrocarbons. ISBRs installed along the southeastern perimeter would be used for perimeter control, while ISBRs installed on the Georgia Petroleum, Inc. facility to the south would address the off-site COC plume, should off-site remediation be necessary. ISBRs are also ideally suited for placement in localized areas to address "hotspots," like the one found at SWMU 1D (Northern Portion of Facility) in the vicinity of the MW-11 well cluster (not addressed in this PCCP), due to their relatively simple design and ease in installation. The disadvantages of ISBRs are that they cannot remediate DNAPL or elevated VOC concentrations in highly impacted groundwater source areas in a reasonable time frame and the technology is slow compared to stripping technologies like AS/SVE for highly-impacted sites like the PFSG site. However, ISBRs are well-suited to remediating groundwater at lower concentrations in a reasonable time-frame.

Implementation of ISBRs in the locations listed above would not interfere with facility operations. Furthermore, the installation and operation costs associated with the ISBR technology are moderate relative to other evaluated alternatives. Based on favorable effectiveness, implementability, and cost factors, ISBRs

[2] Sampling protocols for MNA are detailed by the United States Environmental Protection Agency (USEPA, 1998).

are retained for further consideration as a secondary groundwater remediation alternative to address "hotspots" following implementation of the primary groundwater remedial technology.

4.2.2.6. Air Sparging and/or Soil Vapor Extraction

In order to treat the groundwater in-situ, without the costly extraction and ex-situ treatment and disposal of impacted groundwater, the COCs may be stripped out of the groundwater into a vapor phase. The vapor phase COCs, may then be extracted and treated, without the extraction of groundwater. This process may be achieved through the combination of AS and SVE.

AS is a technology where air is injected into the saturated portion of the source zone. Figure 32 shows a typical air sparge well schematic. VOCs in the aquifer partition into the injected air and become part of the vapor phase. The contaminant-saturated vapor migrates to the vadose zone where it can be removed by an SVE system. Injected air flows through the saturated material and removes contaminants by stripping VOCs from the dissolved-phase. Nonvolatile dissolved compounds, or dissolved compounds with low volatility (acetone, MEK) will not easily transfer from groundwater to soil vapor. However, AS also adds oxygen to the groundwater, thus promoting in-situ aerobic biodegradation. This technology is most effective in soil with moderate to high hydraulic conductivity and intrinsic permeability, such as the soil at the PFSG site (Tables 9 and 10).

AS and SVE are very effective remedial options for removal of chlorinated VOCs. Costs to implement an AS/SVE remedy are low compared to the other in-situ alternatives, and the cost of vapor extraction is much lower than the cost associated with the extraction of impacted groundwater. The impermeable cover of the concrete pads at the Solvent Recovery Area and the Equipment Storage and Decontamination Area provides a favorable environment to trap VOC vapors in the vadose zone, thus enhancing the effectiveness of vapor extraction wells. Similarly, AS points placed in the saturated zone beneath and adjacent to the impacted SWMUs could vaporize VOCs into the vadose zone, where they could be removed by an SVE system.

The principal limitation on the effectiveness of an AS/SVE approach is the limited hydraulic control associated with the technology and the potential for limited air bubble formation and movement in lower conductivity interbeds, which can short circuit the process in selected areas. An additional concern with AS/SVE is the possibility of changing the groundwater geochemistry through oxygenation associated with air sparging, thereby impeding the natural reductive dechlorination processes currently taking place in the downgradient portions of the VOC plume. However, the results of the pilot tests indicate that any available oxygen in groundwater is quickly consumed through natural geochemical and microbiological processes. During the AS/SVE 2006 pilot test, dissolved oxygen (DO) concentrations decreased to nearly anaerobic conditions within 24 hours of testing. All locations measured for DO decreased to an average of 42% of the maximum DO concentrations within 24 hours of ceasing air sparging. The biological and chemical oxygen demand within the source area is significant enough to reduce the DO concentrations in a short time period. As the COCs and groundwater travel downgradient outside the influence of the AS system, DO concentrations will rapidly drop and anaerobic reductive conditions will become the predominant degradation process.

Based on the above evaluation, AS/SVE is retained as a remedial alternative for addressing groundwater contamination and potential residual DNAPL at the site. The benefits of in-situ AS/SVE treatment and the relatively inexpensive vapor extraction outweigh the potential limitations, resulting in AS/SVE as a prime candidate for the remediation of the groundwater at the site.

4.3. Selection of Remedial Strategy

Screening results indicate that three technologies would be effective at addressing vadose zone and groundwater VOC impacts and are, at the same time, implementable and cost effective. These technologies include AS/SVE, ISBRs, and MPX. However, the results of the pilot tests and screening analysis indicate that AS combined with SVE is the optimal remedial technology to address the impacted soil and groundwater at the site, given site hydrogeologic and chemical conditions. The 2006 pilot test results indicated that SVE removed VOCs at a higher rate than MPX, and ISBRs are unable to achieve cleanup in soil or groundwater in a reasonable time frame given the elevated concentrations of COCs. Consequently, the technology is suitable only as a secondary remedial technology for "hotspot" remediation. Therefore, AS combined with SVE is the most appropriate overall remedial technology for the site and superior to either MPX or ISBRs for both soil and groundwater media.

The selected remedy will consist of an AS/SVE system within the primary on-site source areas and along the site perimeter to provide perimeter control along the southern boundary of the site. An advantage of this integrated system is that both AS/SVE technologies are flexible; therefore, adjustments can be made to target areas as additional data is collected throughout the remediation period. The proposed layout of the remedial system is depicted on Figure 32 and is further described in Section 5.

This remedial strategy targets the shallow zone COC plume. Based upon hydraulic gradients and the mass of COCs in the deep zone, it is anticipated that targeting the shallow zone will indirectly have positive effects on the deep zone and lead, ultimately to the attainment of groundwater RAOs site-wide in both zones.

Additional remedies may be applied to any residual COC impacts that remain above the approved GWPS in the shallow or deep zones that were not mitigated by the AS/SVE system. Groundwater data from the deep-interval wells generally demonstrate elevated DO and positive ORP values. Therefore, the formation exhibits an oxidative bias and as such, reductive dichlorination technologies would likely be ineffective in treating the COCs in the deeper groundwater interval. Under this scenario, it is anticipated that in situ chemical oxidation (ISCO) using potassium/sodium permanganate, or a similar oxidant, may be a candidate technology to utilize at targeted locations to address these VOCs in areas such as MW-13DD, or the other monitoring wells that continue to show residual impacts. ISCO is an ideal remedy to address any residual concentrations as it is a proven technology and has been successful in remediation of sites contaminated with chlorinated solvents. Potassium/sodium permanganate is a stable compound once injected into the subsurface and remains viable until it comes into contact with organic material. It will react with natural organic material and the targeted chlorinated VOCs to form innocuous byproducts of water, chloride, carbon dioxide, and manganese dioxide. One benefit to potassium/sodium permanganate is the flexibility in delivery mechanisms, and ability to target small areas and depths. Delivery can be accomplished using push-probe technology, passive delivery through existing wells by gravity draining and hydrostatic pressure from a container, or as a solute impregnated into a wax or insoluble matrix that is placed in the subsurface. Regardless of the method of delivery, it will disperse downgradient with groundwater flow and react with residual organics in the groundwater.

ISCO would be used as the final supplemental remedial technology to reduce remaining COC concentrations to levels below the final selected GWPS. ISCO has the benefit of significantly reducing chemical concentrations without the risk of deeper penetration and cross-contamination of COCs, through the installation of application wells once shallow-zone COC concentrations are significantly reduced. Prior

to implementing any ISCO technology as a soil or groundwater chemical-reduction, polishing, or hot-spot removal step, a work plan will be submitted to and approved by the GEPD.

4.4. Remedial Simulation Methodology in Support of AS/SVE

With AS/SVE as the selected remedy, solute transport modeling was conducted (by Cameron-Cole) to simulate the effects of AS/SVE remediation in the impacted SWMUs (1C, 1E, 3, 4, 5, 6, and 7). As stated previously, SWMU 1D (Northern Portion of Site) is not addressed by this PCCP and will be addressed following implementation of the remedial measures in the central and southern portions of the site. The three remedial targets addressed in the evaluation were: (1) the source area in the vadose zone; (2) the source area in groundwater; and (3) the groundwater plume along the perimeter of the facility property. The calibrated groundwater model was used to develop a conceptual model of source area and plume reductions with the operation of (AS/SVE) relative to the groundwater RAOs, to assess remedial performance in terms of estimated cleanup time, and to provide a preliminary wellfield design for the selected remedy.

The computer modeling simulations used PCE as the representative COC for the input parameters. Based on the January 2020 data, PCE was detected in 28 wells, 1,1-DCE was detected in samples from 23 wells, and TCE was detected in samples from 21 wells. The highest concentration of chlorinated and non-chlorinated VOCs was 120,000 micrograms per liter (µg/L) was associated with 1,1,1 TCA; however, this constituent was only detected in samples from 15 wells. PCE had the second highest concentration at 10,800 µg/L. The areal extent of the PCE plume (Figure 24) best matches the areal extent of the TVOC plume (Figure 23) and provides a better overall match when evaluating cleanup scenarios. Because PCE was the most prevalent and had the most representative footprint compared to the TVOC plume, it is considered the most representative COC to simulate the movement and persistence of the full suite of site COCs in groundwater. Consequently, the transport parameters of PCE were applied to the VOC plume simulated in the MODFLOW/MT3DMS groundwater flow and solute transport model constructed for the site to simulate remedial alternatives and to develop an effectiveness evaluation program.

The United States Geological Survey's (USGS) Modular Three-Dimensional Finite-Difference Groundwater Flow Model (MODFLOW-2005) was selected as the groundwater flow code for the hydrogeologic analysis. MODFLOW (McDonald and Harbaugh, 1988; Harbaugh and McDonald, 1996; Harbaugh et al., 2000 [2005 Version]) is a well-documented algorithm that is available in the public domain and used extensively in the environmental industry to characterize and assess groundwater flow. The solute transport models MT3DMS (Zheng, 1990; Zheng and Wang, 1999) was selected as the computer code to simulate TVOCs transport subject to PCE transport parameters. MT3DMS is compatible with MODFLOW and is included in the Waterloo Hydrologic Visual MODFLOW software package, which was used as the pre- and post-processor. MT3DMS is a comprehensive, three-dimensional mass transport model for simulating advection, dispersion/diffusion, sorption/desorption, and chemical reactions of a single contaminant in groundwater systems. The model has been successfully applied to thousands of sites and are widely accepted by regulators and the groundwater consulting and research community.

The numerical flow and solute transport model developed for the PFSG facility was calibrated to observed groundwater elevations and PCE concentrations under transient flow and solute transport conditions. The hydraulic head measurements used for model calibration were obtained during 35 groundwater monitoring events between July 2006 and January 2020. Calibration of the solute transport model was performed with 2,207 observed groundwater PCE concentrations collected during 68 groundwater monitoring events conducted from February 2003 to January 2020. Once calibrated, the model was used to evaluate the

remedial performance of AS/SVE in terms of overall cleanup time to meets the RAOs. The remediation simulation scenarios were based on assumed AS/SVE remediation rates in the constant concentration source areas. The assumed remediation rates were based upon observed remediation rates for these technologies at sites with similar lithologies and contaminant profiles.

A large number of studies have demonstrated that AS/SVE is capable of removing 90-99.9% of contaminants within two years of operation largely due to the volatilization of contaminants into the vadose zone (Bass and Brown, 1996; Concurrent Technologies Corporation on behalf of U.S. Army Armament Research, 1996). Contaminant removal is asymptotic so the majority of the PCE is removed in the first months of operation, and mass reductions approaching or exceeding 99% are typically observed within the first two years of remediation. In typical AS/SVE remediation, the sparge bubbles, resultant groundwater convection, air oxidation, and vapor recovery zone will remove contaminants from pathways with higher permeability before stripping more recalcitrant zones of contaminants at a slower rate. The AS/SVE remediation scenarios in the model incorporated three zones of source-area contaminants: (1) easily-removed contaminants within the air-flow pathways; (2) contaminants in locations within secondary air-flow pathways; and (3) recalcitrant contaminants, either in residual NAPL phase or sorbed-phase, not easily accessible to the air-flow pathways.

This behavior of AS/SVE remediation was simulated in the model by reducing the concentration of the MT3DMS constant concentration source area cells first-order degradation rates. For the first two years of the simulation, concentrations applied in the three source areas represented mass reductions of 97% from the initial source concentrations based on the model concentrations present in January 2020. During the first two-years of the simulation, the source concentrations were held constant representing the first two years of AS/SVE remediation. As time progresses and the remediation slowly approaches the asymptotic stage, the source area concentrations were reduced by lesser percentages than the initial reduction. After two years of AS/SVE operation, the source concentrations were reduced an additional 60% to reflect an overall mass reduction of 99% from the 2020 initial concentration. After year four of AS/SVE operation the source area concentrations were reduced by an additional 50%, which continued in two year increments with the plume evaluated after each successive simulation. The modeling rationale, methodology, and results are presented in the Groundwater Modeling Report provided in Appendix A.

4.5. AS/SVE Simulation Results

The remedial alternative modeling simulations indicated favorable results for the overall, long-term site remediation with the implementation of aggressive source reduction using AS/SVE treatment in the on-site source area at SWMUs 1C, 1E, 3, 4, 5, 6, and 7. When only the on-site source area is considered, the results from the modeling simulations indicated favorable AS/SVE mass removal in the on-site source area. Consequently, AS/SVE was deemed the best remedial approach for addressing the on-site source area. This was supported by the July 2006 pilot test results, which indicated that AS/SVE removed VOCs at a higher rate than MPX.

Based on the results of the groundwater modeling (see Appendix A for details), the estimated time to attain the RAO with the AS/SVE system for PCE (GWPS of 5 µg/L) at the POC wells is approximately 9.5 years. The model results deterministically predicted that the source area will be remediated to within the RAOs and compliant at the facility boundaries and on-site POC wells by approximately 9.5 years after full system start-up.

The proposed layout of the remedial system is depicted on Figure 31 and is described in Section 5. An advantage of this integrated system is that AS/SVE technology is flexible; therefore, adjustments can be made to target areas as additional data is collected throughout the remediation period. The remedial strategy presented herein targets the shallow zone COC plume and the overlying unsaturated zone extending from ground surface down to the groundwater table. Based upon hydraulic gradients and the mass of COCs in the deep zone, it is anticipated that targeting the shallow zone will indirectly have positive effects on the deep zone.

Actual field effectiveness and reduction in concentrations will be demonstrated through the remedial monitoring program, as presented in Section 6. Under the same assumptions that apply to the shallow zone, model predictions indicate that deep zone concentrations decrease substantially due to remediation in the shallow zone and that COC concentrations cannot be sustained following cleanup of the shallow zone. Based on the groundwater modeling results, the deep zone will reach the RAOs quicker than the shallow zone, which is expected given the significantly lower COC concentrations in the deep zone and strong attenuation between the shallow and deep zones.

5.0 REMEDIAL DESIGN

The components of the remedial measure will provide removal of the source, treatment of impacted soils, and degradation of the plume off-site. In order to implement the PCCP, additional steps and data are required to finalize the design, install the remedial system, and provide for operation and maintenance and monitoring of the remedial system. The tasks that will be required to implement the PCCP are the following:

- Remedial Design and Permitting;
- Remedial System Installation, Start-up, and Implementation;
- Remedial System As-Built and Design Report; and
- Remedial System Performance Monitoring.

Descriptions of the four tasks are provided in the following subsections.

5.1. Remedial Design and Permitting

The previous PCCP included an Interim Measure Work Plan, which was approved by the GEPD. Subsequent pilot testing was performed to further refine the remedial strategy for site-specific application. Therefore, Perma-Fix is presenting the updated design as a **Remediation Design Report** for the AS/SVE system for GEPD review and approval prior to construction (Appendix C).

The report presents: (1) the AS/SVE well locations and projected field layout; (2) engineering design and process flow diagrams for the air sparging and soil vapor extraction system; (3) the predicted airflows and pressures at the AS/SVE well manifolds and individual AS/SVE lines; and (4) a description of measures to indicate that the AS/SVE wells will achieve the design radius of influence (ROI) for both the AS wells and SVE wells.

Permitting is discussed in Section 3.6 of the Remedial Design Report (Appendix C).

5.2. Remedial System Installation and Start-Up

This section presents the remedial measures to address the impacted soil and groundwater both on-site and off-site. Within SWMUs 1C, 1E, 3, 4, 5, 6, and 7 (HWMUs 3-7), AS and SVE will be implemented in a single phase to reduce chemical concentrations in soil and groundwater. Aggressive remediation of the source area within the unsaturated zone and saturated zone within the shallow zone of the upper water-bearing unit beneath the site will, over time, reduce the concentrations in the off-site portion of the groundwater plume and in the deep zone, as demonstrated by the modeling results presented in Appendix A.

Prior to startup, baseline soil samples will be collected from the 12 newly constructed SVE wells shown on Figure 31. The soil samples collected from the SVE well borings will be submitted and analyzed for VOCs by USEPA Method 8260D and SVOCs by USEPA Method 8270D. The results of these samples will be used as pre-remediation baseline samples and compared to the soil verification sampling results to assess that final remediation to soil RAOs has been achieved. An expanded description of the baseline soil sampling is provided in Section 3.4 of the Remediation Design Report (Appendix C).

In addition, one soil sample will be collected within each SWMU/HWMU impacted by the August 2013 fire and analyzed for dioxins by USEPA Method 8270. The affected SWMUs/HWMUs include SWMU 2–

Existing Drum Storage Pad (HWMU 2 – Drum Sampling and Inspection Pad [DSIP]) and SWMU 3 – Drum Storage and Process Area (HWMU 3 – Drum Storage and Process Area [DSPA 1]). Soils were excavated in these SWMUs/HWMUs to remove identified contamination in the period shortly after the fire and the concrete pads were demolished above the impacted areas. The excavated areas were backfilled and seeded. The soil samples collected from SWMU 2/HWMU 2 and SWMU 3/HWMU3 will be collected from the approximate center of these SWMUs/HWMUs at a depth of 0-1 ft below the interface between the backfill and the pre-existing soil.

Baseline groundwater samples will be collected from 48 groundwater monitoring wells presented in Table 18, including three planned new remedial monitoring wells and four existing source area remediation monitoring wells. The planned new groundwater monitoring wells consist of proposed shallow downgradient wells MW-20S and MW-21S, to be installed adjacent to existing deep wells MW-20 and MW-21, and proposed shallow well MW-25S, to be installed near the facility entrance.

New wells MW-20S, MW-21-S, and MW-25S will be installed to a total depth of less than 35 ft below ground surface within the shallow zone. From each of the 12 SVE well boreholes, soil samples will be collected at three different intervals: 0-1 feet (ft), 5-6 ft, and from approximately the foot above the water table. Based upon a review of recent groundwater-level data from January 2020, the depth to groundwater from the ground surface ranges from approximately 13-20 ft in the onsite shallow wells. For the off-site shallow wells, the depth to groundwater from the ground surface ranges from approximately 5-18 ft. The overall average depth to groundwater for the shallow-zone groundwater monitoring wells is approximately 15 ft.

The groundwater field parameters that will be collected from the groundwater monitoring wells will include pH, temperature, conductivity, DO, turbidity, and oxidation-reduction potential. In addition, as stated previously, all groundwater samples will be analyzed by USEPA Method 8260D. The parameter list includes the 26 VOCs included in Table 1 of the facility permit and in Table 1 of this PCCP. The sampling will be conducted in place of one of the routine groundwater monitoring events. The baseline and remediation system groundwater monitoring wells and the samples that will be collected from them are presented in Table 18.

5.2.1. Air Sparging and Soil Vapor Extraction

To treat the impacted soil and groundwater at the affected SWMUs, a combination of AS and SVE will be implemented. Preliminary site characteristics and numerical evaluation indicates a total of 12 SVE wells (Figure 31) and 19 AS wells (Figure 31) will be required within SWMUs 1C, 1E, 3, 4, 5, 6, and 7 to fully encompass soil impacts above RAOs and address the elevated groundwater concentrations above 100 µg/L. As previously stated, the groundwater plume at the facility has remained relatively stable, with a horizontal and vertical extent that has retracted/diminished slightly during the past decade but is overall similar in configuration.

5.2.1.1. AS/SVE and Groundwater Monitoring Well Installations

Techniques used for well drilling, soil sampling, and well development will be performed according to procedures outlined in the EPA Region 4 "Environmental Investigations Standard Operating Procedures and Quality Assurance Manual" and the "Ecological Assessment Standard Operating Procedures and Quality Assurance Manual." More precisely, the general and specific procedures, methods, and considerations to be used and observed will be taken from SESD Guidance LSASDPROC-300-R4, "Soil Sampling," for all soil sampling, and from SESD Guidance SESDGUID-101-R2, "Design and Installation

of Monitoring Wells," for all well drilling and development. Decontamination of downhole drilling equipment will be conducted in accordance with procedures described in Section 3.9 of SESD Guidance LSADPROC-205-R4, "Field Equipment Cleaning and Decontamination." The documents associated with these manuals are dynamic and continuously updated to reflect newer technology and field procedures. Therefore, prior to commencing any field work, the procedures will be reviewed to ensure the most recent updates are used and followed. The final *Remedial System As-Built Report* will include a description of all equipment decontamination procedures.

Drilling equipment and procedures are discussed in Section 3.2 of the Remediation Design Report (Appendix C).

Three groundwater monitoring wells (MW-20S, MW-21S, and MW-25S) will also be installed. These three wells will be constructed of 2-inch diameter, Schedule 40 PVC casing. The groundwater wells will include a sand filter pack consisting of 20/30 grade silica sand (or equivalent) that will be emplaced in the borehole to a depth approximately 1-foot above the top of the screen. The well screens will be 20-slot (0.020 inch) schedule 40 PVC. A minimum 2-ft thick bentonite seal consisting of bentonite pellets will be placed on top of the sand filter pack. The remaining borehole void be filled with bentonite grout to the ground surface. MW-25S will be secured within a meter box and concrete pad, finished flush to surrounding pavement. MW-20S and MW-21S will be completed with protective concrete pad and outer riser casing.

The proposed construction depth of each well will be documented and based on the most recent groundwater data. The air injection within the deep zone is below the primary source area, according to the concentration profiles relative to depth presented in Figure 17. The 19 AS wells and 12 SVE wells will provide adequate coverage within the primary groundwater source area above 100 µg/L, exclusive of SWMU 1D (Northern Portion of Property), which is not addressed by this PCCP. Based on the 2024 AS/SVE test results, a 24 ft ROI was used to space the AS wells and a 39 ft ROI was used to space the SVE wells.

5.2.1.2. Groundwater Monitoring and Air Sparging Well Development

All groundwater monitoring and air sparging wells will be developed in accordance with Section 2.7 of SESD Guidance SESDGUID-101-R2, "*Design and Installation of Monitoring Wells."* Purged development water will be placed in 55-gallon, Department of Transportation-approved drums and disposed of off-site.

5.2.1.3. Waste Containerization and Off-Site Disposal

Details are provided in Section 3.5 of the Remedial Design Report (Appendix C).

5.2.1.4. AS/SVE System Start-Up

Once the AS/SVE wells are installed, the piping and electrical components constructed, and the requisite support equipment installed, the system operation will be adjusted to provide effective air delivery and vapor recovery influence and to optimize vapor emissions are within the applicable air emission standards. The SVE system will be started up and tested prior to starting the AS system. During SVE system operation, wellhead pressures, ROIs, and recovery flow rates will be recorded and adjusted as necessary to ensure maximum contaminant recovery and remedial effectiveness of the system. Once SVE system performance has been optimized, the AS system will be started up. The sparge cycle and sparge ROIs will be recorded and adjusted as necessary.

Well schematics and process flow diagrams for the AS/SVE system are shown in Figures 32 and 35. It is anticipated that constant air flow will be routed to the active AS wells. However, once dynamic equilibrium

has been achieved, the number of wells actively operated may change, to either perform zone treatment, or to perform episodic treatment of select AS wells to allow the sparge bubbles to expand and collapse within a given sparge cycle. When AS wells are active, the corresponding SVE well(s) influencing that area will also be active. This will promote capture of VOCs displaced from the underlying staturated interval by the AS influence. An air-discharge permit will be obtained prior to operation of the vapor extraction system. The estimate of initial off-gas concentration and flow rate indicates that an off-gas treatment unit will be required.

The selected off-gas treatment technology is granulated activated carbon (GAC). The specific number and size of the GAC units will be determined as part of the system design and will be based on the available data and parameters determined from the AS/SVE pilot testing. As discussed previously, COC concentrations in soil vapor typically decrease relatively rapidly during the first year of system operation, making it likely that emissions control requirements will change during the course of remediation. Air samples will be collected as required by the air-discharge permit. The air-discharge permit will be modified, as necessary, to accommodate any reductions or increases in emissions as a result of the system operation. The anticipated initial operating conditions were determined during the pilot testing and are summarized in Table 17.

Condensate and liquids collected from the AS/SVE system will be collected and containerized in drums. An initial hazardous waste profile will be set up within the Perma-Fix system for disposal of these liquids. Once collected, each drum will be labeled, manifested, and shipped to the Perma-Fix of Florida facility where it will be managed for final disposition.

5.3. Preliminary Schedule

An estimated schedule for the design and implementation of the AS/SVE source area remedial system is presented in Figure 36 and discussed in Section 3.7 of the Remedial Design Report (Appendix C).

5.4. Remedial System As-Built Report

Details are provided in Section 4.0 of the Remedial Design Report (Appendix C).

5.5. Operation and Maintenance and Remedial Measures Monitoring Plan

Details are provided in Section 5.0 of the Remedial Design Report (Appendix C). A Draft Remediation System Operation & Maintenance Plan is also provided in Appendix D of this PCCP.

6.0 REMEDIAL PERFORMANCE MONITORING

After the installation and prior to and during the startup of the AS/SVE system, a program of scheduled monitoring will be implemented to establish pre-remediation or "baseline" conditions and to effectively monitor the remedial systems. The frequency of AS/SVE monitoring will decrease with time as source area contamination is removed and resultant COC concentrations in groundwater are reduced. Details of the monitoring program are listed below and summarized in Tables 17-18.

6.1. Baseline Soil and Groundwater Sampling and AS/SVE System Monitoring

Details are provided in Section 3.4 of the Remedial Design Report (Appendix C).

6.2. Remedial Measures Groundwater Monitoring Program

The purpose of the remedial measures monitoring is to determine the effectiveness of the remedial system in controlling the dissolved COC plume on-site, in removing the source area, and in reducing the extent and concentrations of COCs off-site. Groundwater quality and water elevation data are proposed to be collected on a quarterly basis for two consecutive years after the start-up of the AS/SVE systems, and will be adjusted to a semi-annual schedule thereafter. The groundwater monitoring will be completed following the detailed protocols presented in the PFSG SAP that is included in Section E, Exhibit E-3 of this permit modification application.

Table 18 provides a listing of the groundwater monitoring wells that will be sampled during the baseline groundwater sampling event and during the annual (fourth quarter) remedial groundwater monitoring events over the course of the first two years of AS/SVE remediation. The monitoring list presented on Table 18 consists of all wells identified in permit condition III.D.2, plus planned new wells MW-20S, MW-21S, and MW-25S. Source area remediation monitoring wells B-106, B-108, B-113, B-114, and MP-8 are also included for water level measurements only. During the first, second, and third quarter during the first two years, and second quarter thereafter groundwater monitoring events during active AS/SVE remediation, the sampling program will maintain the list of 18 semiannual wells listed on permit condition III.D.3. The three new wells (MW-20S, MW-21S, and MW-25S) will also be gauged for water level only.

The remedial well monitoring and sampling will thus fulfill the requirements of the permit-required annual and semi-annual monitoring and sampling described in conditions III.D.2 and III.D.3 of the permit. The quarterly remedial groundwater sampling events conducted during the first two years of remediation will be conducted in lieu of the permit-required groundwater sampling as most of the wells in the remedial measures groundwater monitoring program are duplicative of those already being monitored under the permitted groundwater monitoring program, and sampling of those wells will be completed under the permit requirements. Those wells are included in this plan only to ensure that they continue to be sampled in accordance with this PCCP in the event there are changes to sampling locations and frequency.

Samples will initially be collected from the remedial measures sampling network prior to system start-up to provide baseline data that future samples may be compared against to provide information on the effectiveness of the remediation system. Following baseline sample collection and post-system-start-up, samples will be collected from the wells and parameters specified in Tables 18 for two years, four of those quarters covered under the permit requirements. Once the baseline sampling and two years of quarterly

remedial sampling events have been conducted, the sampling frequency will return to semi-annually under the permit requirements until remediation is complete.

During each monitoring event during remediation, groundwater samples will be analyzed for VOCs by USEPA Method 8260D. This parameter list includes the 26 VOCs included in Table 1of this updated PCCP.

6.2.1. AS/SVE Remedial System Performance Monitoring Reporting

The data collected during the monitoring of the AS/SVE remediation system and the routine groundwater monitoring program will be included in the semi-annual corrective action effectiveness reports required under the permit (condition III.G.). These reports will be submitted upon completion of the second quarter and fourth quarter sampling events and include and describe all analytical data collected during the first half and second half of the calendar year. Details are provided in Section 3.4 of the Remediation Design Report (Appendix C).

6.3. Remedial Measures Effectiveness Evaluation

Once the full-scale AS/SVE systems are implemented and fully operational, monitoring data will be used to assess the ability of the AS/SVE systems to achieve significant mass reductions within the treatment areas. Groundwater data will be used to verify remedial performance through concentration reductions in the contaminant plume. The evaluation criteria are described in the following sections.

6.3.1. AS/SVE Effectiveness Evaluation

The success of the AS/SVE system will be evaluated against analytical criteria that include direct measurements of COC concentrations in groundwater within and immediately downgradient of the source area. These direct measurements will be collected as described in Sections 6.1 and 6.2. Data collected from the monitoring events will be used to adjust the predicted remediation rates for AS/SVE. Positive indirect indicators for AS/SVE include the mass of COCs recovered by the system and the ROI of each technology. Short-term adjustments to the AS/SVE system will be made based upon the mass of COCs recovered and the ROI. Long-term adjustments to the AS/SVE system will be made based on the direct measurements of COC concentrations in groundwater.

6.4. Remedial System Verification Sampling

Remedial system verification sampling will be addressed in the Corrective Action Plan, to be submitted five years after system startup is completed, in accordance with permit condition III.E.3.c.

6.5. Decommissioning of the AS/SVE Remedial System

Decommissioning of the AS/SVE remediation system will be addressed in the Corrective Action Plan, to be submitted five years after system startup is completed, in accordance with permit condition III.E.3.c.

6.6. Summary

In summary, the remedial measures and RAO approach presented above is consistent with GEPD and USEPA guidance and is protective of public health and the environment. It does not pose any unacceptable potential health risks to future potential receptors in the area. The approach provides a level of protection of human health and the environment that is consistent with the site's present industrial land use, as well as the anticipated future land use, and does not inappropriately exceed the level of protection required. It incorporates a monitoring system that can provide an early warning and management tool if levels potentially exceed those that could be expected downgradient of the facility or if remedial effectiveness is

limited by subsurface conditions. This will provide sufficient time to design contingent response action, should such action become necessary.

7.0 FINANCIAL ASSURANCE

The Post-Closure Care Plan cost estimate and associated financial assurance mechanism are both located in Section I of the facility's Part B Permit Application.

8.0 REFERENCES

American Petroleum Institute, 1998. API RP 40: Recommended Practices for Core Analysis, American Petroleum Institute, 2nd Ed., Feb. 1998.

ASTM, 1991. ASTM D 425-88: Standard Test Method for Centrifuge Moisture Equivalent of Soils, ASTM Standards, Vol. 4.08, 1991.

ASTM, 1991. ASTM D 2216-90: Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil Aggregate Mixtures, ASTM Standards, Vol. 4.08, 1991.

ASTM, 1991. ASTM D 5084: Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter, ASTM Standards, Vol. 4.08, 1991.

Bass, D.H., and Brown, R.A., 1996. "Air Sparging Case Study Database Update", in Proceedings of the First International Symposium on In-Situ Air Sparging for site Remediation, Las Vegas, NV, International Network for Environmental Training, Potomac, MD.

Bedient, P.B., Rifai, H.S., and Newell, C.J., 1994. Ground Water Contamination: Transport and Remediation. PTR Prentice Hall, 1994.

Bouwer, Edward J., 1993. "Bioremediation of Chlorinated Solvents Using Alternative Electron Acceptors" in Handbook of Bioremediation, Lewis Publishers, 257 pages.

Cameron-Cole, 2008. *2007 Second Semi-Annual (July – December) Groundwater, Corrective Measure, and ISBR*

Pilot Test Monitoring Report, Tulsa Disposal, LLC. Oklahoma Department of Environmental Quality, Dated March 13, 2008.

Cameron-Cole, LLC. 2019. *2019 Quarterly Groundwater Monitoring Reports, Perma-Fix of South Georgia, Inc.*, April 2019 – December 2019.

Cameron-Cole, LLC. 2020. *2019 Annual Groundwater Monitoring Report, Perma-Fix of South Georgia, Inc*. Dated March 23, 2020.

Chemical Conservation of Georgia, Inc., 1991. Contamination Assessment Plan for the BULK STORAGE TANK FARM Containment Area. Dated September 6, 1991.

Chen, C.S., 1965. The regional lithostratigraphic analysis of Paleocene and Eocene rocks in Florida: Florida Geological Survey Bulletin 45, 1965.

Concurrent Technologies Corporation, 1996. Develop Installation Restoration, Design Technical Guidance Remediation Alternatives Data (Draft). U.S. Army Armament Research, Development & Engineering Center, Industrial Ecology Center, Contract No. DAAA21-93-C-0046, Task No. N.073, CDRL No. A005. Report dated May 21, 1996.

Fetter, C.W., 1993. Contaminant Hydrology, MacMillan Publishing Company. 458p.

Freeze, R. Allan and John A. Cherry, 1979. Groundwater. Prentice-Hall, Inc. 604 pages.

Gilbert, R.O., 1987. Statistical Methods for Environmental Pollution Monitoring. Van Nostrand Reinhold.

Grubb, Dennis G. and Nicholas Sitar, August 1994. Evaluation of Technologies for In-Situ Cleanup of DNAPL Contaminated Sites. EPA/600/R-94/120.

Howard, Phillip H., Robert S. Boethling, William F. Jarvis, William M. Meylan, and Edward M. Michalenko.

1991. Handbook of Environmental Degradation Rates. Lewis Publishers.

HSA Environmental, Inc., September 1996, RCRA Facility Investigation Report, Chemical Conservation of Georgia, Inc., Valdosta, GA, HSA Project No. 6-92-3277A.

HSA Environmental, Inc., December 1995, BULK STORAGE TANK FARM Contamination Assessment Report for Chemical Conservation of Georgia, Inc., Valdosta, GA, HSA Project No. 6-92-3277A.

Huddlestun, P.F., 1988. A revision of the lithostratigraphic units of the Coastal Plain of Georgia: Georgia

Geological Survey Bulletin 104, 1988.

Johnson, P.C., Stanley, C.C., Kemblowski, M.W., Byers, D.L, and Colthart, J.D., 1990. A Practical Approach to the Design, Operation and Monitoring of In-Situ Soil-Venting Systems, GWMR, Spring 1990. pp 159-178.Duffield, G.M., 1995. AQTESOLVTM Aquifer Test Solver v 2.01. Geraghty & Miller, Inc. Modeling Group, Reston, Virginia, February 1995.

Johnston, R.H., and Miller, J.A., 1988. Region 24, Southeastern United States, The Geology of North America, Volume 0-2, Hydrogeology, the Geological Society of America, 1988.

Leese, A., and Hinchee, R.E., 1997. Soil Bioventing Principles and Practice. CRC Press, Inc. 244 pages.

McConnell, J.B. and Hacke, C.M., 1993. Hydrogeology, Water Quality and Water-Resources Development

Potential of the Upper Floridan Aquifer in the Valdosta Area, South-Central Georgia: U.S. Geological Survey, WRI Report 93-4044, 1993.

Mercer, J.W., D.C. Skipp, and D. Giffin. 1990. Basics of pump-and-treat ground-water remediation

technology. EPA/600/8-90/003. Washington, D.C. USEPA.

Mill Creek Environmental Services, Inc., October 2003. *RFI Phase IV Work Plan*, Perma-Fix of South Georgia, Inc., Valdosta, GA.

Mill Creek Environmental Services, Inc., May 2003a, RFI Phase III Addendum, Perma-Fix of South Georgia, Inc., Valdosta, GA.

Mill Creek Environmental Services, Inc., December 2002, RFI Phase II Addendum, Chemical Conservation of Georgia, Inc., Valdosta, GA.

Mill Creek Environmental Services, Inc., June 2001, RFI Phase I Addendum and Phase II Work Plan, Chemical Conservation of Georgia, Inc., Valdosta, GA.

Mill Creek Environmental Services, Inc., January 2000, Addendum to RCRA Facility Investigation, Phase 1 Work Plan for Surface Water and Groundwater Sampling Activities, Chemical Conservation of Georgia, Inc., Valdosta, GA.

Miller, J.A., 1986. Hydrogeologic framework of the Floridan aquifer system in Florida and in parts of Georgia, South Carolina, and Alabama: U.S. Geological Survey Professional Paper 1403-B, 1986.

Nyer, Evan K., 1992, Practical Techniques for Groundwater and Soil Remediation, CRC Press. 306p.

Olsen, S.R., Sommers, L.E., Page A.L., Miller, R.H. and Keeney, D.R., editors., 1982. Methods of Soil Analysis, Part 2- Chemical and Microbiological Properties, Second Edition. American Society of Agronomy, Inc., SSSA, Inc.1982. p.416-418

Pankow, James F. and John A. Cherry 1996. Dense Chlorinated Solvents and other DNAPLs in Groundwater. Waterloo Press. 522 pages.

Risk-Based Remedies, Inc., 2008. *Risk Assessment Work Plan*. Perma-Fix of South Georgia, Inc. Valdosta, GA. March 2008.

Scott, T.M., 1988. The Lithostratigraphy of the Hawthorn Group (Miocene) of Florida: Florida Geological Survey Bulletin 59, 1988.

Scott, T.M., 1990. A Brief Overview of Miocene Lithostratigraphy – Northern Florida and Eastern Georgia: Florida Geological Survey Open File Report 31, 1990.

State of Georgia, Environmental Protection Division, RCRA Facility Assessment of Chemical Conservation of Georgia, Inc., May, 1995.

U.S. Army Corps of Engineers, 1997. In-Situ Air Sparging: Engineering and Design, EM 1110-1-4005, September 15, 1997.

U.S. Army Corps of Engineers, 2002. Soil Vapor Extraction and Bioventing: Engineering and Design, EM 1110-1-4001, June 3, 2002.

United States Environmental Protection Agency, February 1992. Dense Nonaqueous Phase Liquids – A Workshop Summary, Dallas, Texas, April 16 - 18, 1991, EPA/600/-92/030

U. S. EPA, 1991. Stabilization Technologies for RCRA Corrective Actions, EPA/625/6-91/026, 62 p.

USEPA, 1992a. Supplemental Guidance to RAGS: Calculating the Concentration Term. May 1992. Publication 9285.7-08I.

USEPA, 1992b. Guidelines for Exposure Assessment. Notice. Fed. Register 57:22888-22936.

USEPA, 1994. RCRA Corrective Action Plan, Office of Solid Waste and Emergency Response, May 1994, 151p.

USEPA, May 1995. How to Evaluate Alternative Cleanup Technologies for Underground Storage Tank Sites: A Guide for Corrective Action Plan Reviewers. EPA 510-B-95-007.

USEPA, 1996. Soil Screening Guidance Series: Technical Background Document. Office of solid Waste and Emergency Response, Washington, DC. Includes Appendix G, Determination of Ground Water Dilution Attenuation Factors for fixed Waste Site Areas using EPACMTP, Background Document. EPA Office of Solid Waste, May 11, 1994.

USEPA, 1996. Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, Athens, Georgia, May 1996.

USEPA, 1998. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater, Office of Research and Development, EPA/600/R-98/128, September.

USEPA, 2001. A Practical Guide to Estimating Cleanup Costs, U.S. Environmental Protection Agency Papers, University of Nebraska – Lincoln, http://digitalcommons.unl.edu/usepapapers/30.

USEPA, 2002. Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. December 2002. OSWER Publication 9285.6-10.

USEPA, 2002. Ecological Assessment Standard Operating Procedures and Quality Assurance Manual, Athens, Georgia, January 2002.

USEPA, 2009. List of Drinking Water Contaminants and MCLs: National Primary Drinking Water Standards. EPA 816-F-02-013. Online: http://www.epa.gov/safewater/mcl.htmlmcls, May 2009.

USEPA, October 2015. ProUCL Version 5.0 User Guide, EPA/600/R-07/041.

USEPA, 2018. Design and Installation of Monitoring Wells, U.S. Environmental Protection Agency Science and Ecosystem Support Division, Athens, Georgia, January 2018.

USEPA, 2020. Soil Sampling, U.S. Environmental Protection Agency Science and Ecosystem Support

Division, Athens, Georgia, June 2020.

USEPA guidance documents “Stabilization Technologies for RCRA Corrective Actions” (1991) and “Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action” (2004), and “Practical Techniques for Groundwater and Soil Remediation”, Nyer, Evan K, CRC Press were referenced.

Wisconsin Department of Natural Resources, 2003. Guidance for Design, Installation and Operation of In-Situ Air Sparging Systems, PUB-RR-186.

TABLES

TABLE 1
Soil and Groundwater Remedial Action Objectives (RAOs) With
Comparison to January 2020 Groundwater Data
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, GA

			Groundwater Solubility		On-Site Wells								Off-Site Wells							
					Shallow Wells				Deep Wells				Shallow Wells				Deep Wells			
	Soil		1%	10%	Max. Detection		Greater Than:		Max. Detection		Greater Than:		Max. Detection		Greater Than:		Max. Detection		Greater Than:	
Constituent of Concern	RAOS[1] (mg/kg)	GWPS[2] (ug/l)	Solubility[3] (ug/L)	Solubility[3] (ug/L)	Concentration (ug/l)	Well	1% Sol	10% Sol	Concentration (ug/l)	Well	1% Sol	10% Sol	Concentration (ug/l)	Well	1% Sol	10% Sol	Concentration (ug/l)	Well	1% Sol	10% Sol
1,1,1-Trichloroethane	810	200 [a]	12,900	129,000	**120,000**	MW-10S	**Yes**	No	**1,670**	MW-13D	No	No	1.7	MW-14S	No	No	0.95 J	MW-14D	No	No
1,1-Dichloroethane	3.6	*	50,400	504,000	1070 J	MW-10S	No	No	15.6 J	MW-13D	No	No	28.9	MW-14S	No	No	ND	NA	No	No
1,1-Dichloroethene	23	7 [a]	24,200	242,000	**8,820**	MW-10S	No	No	**3,120**	MW-13DD	No	No	6.40	MW-14S	No	No	17.2	MW-20	No	No
1,2-Dichlorobenzene	180	600 [a]	1,560	15,600	0.47 J	MW-6S	No	No	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No
1,2-Dichloroethane	0.46	5 [a]	86,000	860,000	**241**	MW-8S	No	No	ND	NA	No	No	1	MW-14S	No	No	ND	NA	No	No
2-Chlorotoluene	160	*	3,740	37,400	0.65 J	MW-12S	No	No	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No
Carbon Tetrachloride	0.65	5 [a]	7,930	79,300	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No
Chlorobenzene	28	100 [a]	4,980	49,800	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No
Chloroethane (ethyl chloride)	1,400	*	67,100	671,000	22.6 J	MW-8S	No	No	ND	NA	No	No	16.8	MW-14S	No	No	ND	NA	No	No
Chloroform	0.32	80 [a]	79,500	795,000	77.6	MW-8S	No	No	1.40	MW-6D	No	No	ND	NA	No	No	ND	NA	No	No
Cis-1,2-Dichloroethene	16	70 [a]	64,100	641,000	1000 J	MW-10S	No	No	ND	NA	No	No	15.9	MW-14S	No	No	0.88 J	MW-20	No	No
Isopropylbenzene (cumene)	190	*	613	6,130	1	MW-6S	No	No	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No
Methylene Chloride	35	5 [a]	130,000	1,300,000	**2,610**	MW-8S	No	No	**135 J**	MW-13DD	No	No	ND	NA	No	No	ND	NA	No	No
Tetrachloroethene	8.1	5 [a]	2,060	20,600	**10,800**	MW-10S	**Yes**	No	**922**	MW-13DD	No	No	7.2	MW-16	No	No	**53.8**	MW-20	No	No
Trans-1,2-Dichloroethene	7	100 [a]	45,200	452,000	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No
Trichloroethene	0.41	5 [a]	12,800	128,000	**6,160**	MW-10S	No	No	**779**	MW-13DD	No	No	**13.00**	MW-14S	No	No	2.7	MW-20	No	No
Vinyl Chloride	0.06	2 [a]	88,000	880,000	**449**	MW-8S	No	No	ND	NA	No	No	**20**	MW-14S	No	No	ND	NA	No	No
N-Propylbenzene	380	*	522	5,220	0.34 J	MW-6S	No	No	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No
Naphthalene	2	*	310	3,100	1.8 J	MW-8S	No	No	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No
1,2,4-Trimethylbenzene	30	*	570	5,700	5.3	MW-6S	No	No	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No
1,3,5-Trimethylbenzene	27	*	482	4,820	0.97 J	MW-6S	No	No	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No
Benzene	1.2	5 [a]	17,900	179,000	**131**	MW-8S	No	No	ND	NA	No	No	**11.4**	MW-14S	No	No	ND	NA	No	No
Toluene	490	1,000 [a]	5,260	52,600	**16,200**	MW-10S	**Yes**	No	285	MW-13D	No	No	0.45 J	MW-16	No	No	1	MW-14D	No	No
Ethylbenzene	5.8	700 [a]	1,690	16,900	70.2	MW-8S	No	No	58.3	MW-13D	No	No	ND	NA	No	No	ND	NA	No	No
Methyl Tert-Butyl Ether	47	*	510,000	5,100,000	0.52 J	MW-5S	No	No	0.25 J	MW-4D	No	No	0.28 J	MW-14S	No	No	ND	NA	No	No
Xylenes, Total	58	10,000 [a]	1,630	16,300	1320 J	MW-10S	No	No	25.8 J	MW-13D	No	No	0.53 J	MW-14S	No	No	ND	NA	No	No
Heptachlor	0.13	0.4 [a]	0.3	3	0.12	MW-13S	No	No	ND	NA	No	No	ND	NA	No	No	ND	NA	No	No

Notes:

[1] Soil Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)

[2] Goundwater Protection Standard. [a] Table 1: GWPS of Permit HW-020(D). * Background concentration as determined by Permit HW-020(D) Condition III.D.6 & 9. There were no detections in the historical background and any detection will be considered significant.

[3] Solubilities from Table 2-2 of EPA 542-R-04-010, March 2004, EPA Chemical Summary Sheet (1994-EPA 749-F-022a), EPA On-Line Tools for Site Assessment Calculator, Fetter (1994), and ChemIDplus (2006). Xylene solubility determined from average of the "m" and "p" published values. The reported values are modified to the 1% and 10 % concentrations.

GW = Groundwater

mg/kg = milligram per kilogram

ug/L = microgram per liter

ND = Not Detected at laboratory method detection limit

NA = Not Applicable

J = The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.

Groundwater analytical data shown for January 2020

Remedial Action Objective exceedances in **bold**

TABLE 2
MONITORING WELL CONSTRUCTION DETAILS AND 2022-2024 GROUNDWATER LEVELS
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GEORGIA

								May (2nd Q) 2022		November (4th Q) 2022		April (2nd Q) 2023		May (4th Q) 2023		November (4th Q) 2023		April (2nd Q) 2024		December (4th Q) 2024		
	Monitor Well Designation	Install Date	Casing Diameter (Inches)	Total Depth (ft BTOC)	Screened Interval (ft bgs)	Top of Casing Elevation (ft MSL)	Ground Elevation (ft MSL)	Depth to Groundwater (ft BTOC)	GWE (ft MSL)	Depth to Groundwater (ft BTOC)	GWE (ft MSL)	Depth to Groundwater (ft BTOC)	GWE (ft MSL)	Depth to Groundwater (ft BTOC)	GWE (ft MSL)	Depth to Groundwater (ft BTOC)	GWE (ft MSL)	Depth to Groundwater (ft BTOC)	GWE (ft MSL)	Depth to Groundwater (ft BTOC)	GWE (ft MSL)	Semiannual GWE Change[1] (ft)
On-Site	B-106	6/19/2006	2	24.35	15 - 25	190.596	191.139	14.48	176.12	15.63	174.97	NM	NM	NM	NM	14.80	175.80	14.00	176.60	14.27	176.33	0.27
Monitoring Wells	B-108	6/20/2006	2	24.22	15 - 25	191.973	192.085	16.22	175.75	17.30	174.67	NM	NM	NM	NM	16.02	175.95	15.33	176.64	15.56	176.41	0.23
Shallow	B-113	6/20/2006	2	24.4	15 - 25	191.493	191.527	16.30	175.19	17.10	174.39	NM	NM	NM	NM	15.78	175.71	15.08	176.41	15.27	176.22	0.19
	B-114	6/20/2006	2	24.48	15 - 25	192.23	192.066	15.91	176.32	17.43	174.80	NM	NM	NM	NM	NM	NM	15.45	176.78	15.41	176.82	-0.04
	MP-8	8/1/2004	1.25	22.21	17 - 19	191.889	191.889	16.05	175.84	17.27	174.62	NM	NM	NM	NM	16.17	175.72	15.34	176.55	15.57	176.32	0.23
	MW-1S*	NA	2	25.04	NA	190.55	187.485	15.30	175.25	16.33	174.22	15.76	174.79	16.11	174.44	15.52	175.03	14.90	175.65	15.07	175.48	0.17
	MW-2S*	NA	2	19.94	NA	187.99	186.21	NM	NM	13.57	174.42	NM	NM	13.48	174.51	12.80	175.19	12.25	175.74	12.33	175.66	0.08
	MW-3*	NA	2	20.69	NA	194.457	191.996	14.91	179.55	15.94	178.52	15.52	178.94	15.74	178.72	15.15	179.31	14.30	180.16	14.63	179.83	0.33
	MW-4S*	NA	2	28.12	NA	189.391	189.391	13.97	175.42	15.12	174.27	14.45	174.94	14.86	174.53	14.29	175.10	13.62	175.77	13.80	175.59	0.18
	MW-5S	3/22/1996	2	28.35	10 - 25	188.809	185.951	13.86	174.95	14.93	173.88	14.35	174.46	14.84	173.97	14.20	174.61	13.34	175.47	13.81	175.00	0.47
	MW-6S	3/21/1996	2	27.91	10 - 25	191.332	187.878	NM	NM	16.76	174.57	16.00	175.33	16.35	174.98	15.80	175.53	15.07	176.26	15.29	176.04	0.22
	MW-7S	3/27/1996	2	24.93	10 - 25	187.45	188.311	NM	NM	13.38	174.07	12.69	174.76	12.84	174.61	12.50	174.95	11.76	175.69	12.04	175.41	0.28
	MW-8S	3/22/1996	2	27.8	10 - 25	194.61	191.339	NM	NM	20.03	174.58	19.34	175.27	19.60	175.01	19.13	175.48	18.38	176.23	18.63	175.98	0.25
	MW-9S	3/22/1996	2	24.67	10 - 25	190.17	190.66	NM	NM	15.11	175.06	14.57	175.60	14.86	175.31	14.25	175.92	13.49	176.68	13.74	176.43	0.25
	MW-10S	3/23/1996	2	24.94	10 - 25	190.17	190.416	14.78	175.39	15.53	174.64	14.96	175.21	15.26	174.91	14.80	175.37	14.06	176.11	14.17	176.00	0.11
	MW-11S	3/21/1996	2	24.9	10 - 25	195.115	192.224	NM	NM	19.81	175.31	19.36	175.76	19.60	175.52	19.02	176.10	18.19	176.93	18.49	176.63	0.3
	MW-12S	3/23/1996	2	27.61	10 - 25	189.04	186.35	13.52	175.52	14.70	174.34	14.05	174.99	14.43	174.61	13.90	175.14	13.19	175.85	13.35	175.69	0.16
	MW-13S	6/6/1997	2	23.89	10 - 25	187.71	187.852	12.42	175.29	13.06	174.65	12.49	175.22	12.86	174.85	12.25	175.46	11.60	176.11	11.86	175.85	0.26
	MW-24S*	NA	2	21.69	NA	189.30	NA	NM	NM	14.31	174.99	13.70	175.60	13.98	175.32	13.45	175.85	12.64	176.66	12.83	176.47	0.19
	MW-103	6/16/2006	2	22.33	10 - 25	193.315	190.473	13.61	179.71	14.70	178.62	14.27	179.05	14.50	178.82	13.90	179.42	13.08	180.24	13.38	179.94	0.30
Deep	MW-1D*	NA	2	46.4	37 - 47	190.59	187.53	15.34	175.25	16.41	174.18	15.86	174.73	16.22	174.37	15.62	174.97	15.01	175.58	15.17	175.42	0.16
	MW-2DR*	3/24/2010	2	44.64	NA	189.52	186.4	NM	NM	14.87	174.65	14.55	174.97	14.80	174.72	14.33	175.19	13.71	175.81	13.79	175.73	0.08
	MW-4D*	NA	2	44.57	NA	189.47	186.53	NM	NM	15.26	174.21	14.78	174.69	15.14	174.33	14.50	174.97	13.96	175.51	14.06	175.41	0.1
	MW-5D	3/28/1996	2	43.71	31 - 41	188.9	185.96	NM	NM	14.76	174.14	14.35	174.55	14.72	174.18	14.00	174.90	13.52	175.38	13.60	175.30	0.08
	MW-6D	3/21/1996	2	43.55	31 - 41	191.37	188.01	NM	NM	16.65	174.72	16.13	175.24	16.51	174.86	15.88	175.49	15.29	176.08	15.44	175.93	0.15
	MW-7D	3/27/1996	2	40.93	31 - 41	188.06	188.35	NM	NM	13.26	174.80	13.26	174.80	15.40	172.66	12.70	175.36	12.15	175.91	12.20	175.86	0.05
	MW-8DR	3/1/2010	2	43.91	NA	195.43	191.37	NM	NM	20.43	175.00	19.90	175.53	20.23	175.20	19.68	175.75	18.95	176.48	19.16	176.27	0.21
	MW-9D	3/27/1996	2	40.76	31 - 41	190.24	190.6	NM	NM	15.16	175.08	14.65	175.59	14.97	175.27	14.41	175.83	13.63	176.61	13.81	176.43	0.18
	MW-10D	3/24/1996	2	40.78	31 - 41	190.17	190.45	NM	NM	15.59	174.58	15.02	175.15	15.35	174.82	14.80	175.37	14.07	176.10	14.32	175.85	0.25
	MW-11D	3/20/1996	2	43.56	31 - 41	195.14	192.29	18.63	176.51	19.79	175.35	19.30	175.84	19.55	175.59	19.00	176.14	18.16	176.98	18.43	176.71	0.27
	MW-12D	3/24/1996	2	42.65	31 - 41	189.04	186.38	NM	NM	14.79	174.25	14.34	174.70	14.68	174.36	14.00	175.04	13.55	175.49	13.63	175.41	0.08
	MW-13D	6/3/1997	2	41.32	31 - 41	187.61	187.86	12.90	174.71	13.20	174.41	12.63	174.98	12.98	174.63	12.41	175.20	11.73	175.88	11.52	176.09	-0.21
	MW-13D3	NA	2	138.38	122 - 138	187.50	187.86	85.92	101.58	91.58	95.92	86.28	101.22	87.18	100.32	90.62	96.88	83.37	104.13	84.09	103.41	0.72
	MW-13DD	12/23/2000	2	68.23	60 - 65	187.65	187.86	19.09	168.56	19.86	167.79	19.20	168.45	19.56	168.09	19.08	168.57	18.54	169.11	18.19	169.46	-0.35
	MW-24D	9/8/2004	2	38.82	35 - 40	188.87	189.67	NM	NM	14.10	174.77	13.69	175.18	13.94	174.93	13.33	175.54	12.57	176.30	12.84	176.03	0.27
Off-Site	MW-14S*	NA	2	24.38	NA	175.86	NA	5.27	170.59	5.50	170.36	5.08	170.78	5.48	170.38	5.02	170.84	5.02	170.84	4.93	170.93	-0.09
Monitoring Wells	MW-16	12/22/2000	2	36.11	20 - 35	181.45	178.77	NM	NM	10.10	171.35	9.25	172.20	NM	NM	9.20	172.25	8.84	172.61	8.89	172.56	0.05
Shallow	MW-18*	NA	2	39.34	NA	181.47	NA	NM	NM	13.07	168.40	12.06	169.41	12.60	168.87	12.23	169.24	11.65	169.82	11.57	169.90	-0.08
	MW-19R	3/24/2010	2	40.11	NA	188.82	189.07	NM	NM	14.40	174.42	13.90	174.92	14.25	174.57	13.72	175.10	2.84	185.98	13.21	175.61	10.37
	MW-26	9/9/2004	2	22.43	12.75 - 22.75	192.55	192.95	NM	NM	16.99	175.56	16.49	176.06	17.05	175.50	16.13	176.42	15.18	177.37	15.58	176.97	0.4
	MW-27	9/9/2004	2	22.37	12.7 - 22.7	191.44	191.96	NM	NM	16.41	175.03	15.91	175.53	16.55	174.89	15.64	175.80	14.77	176.67	15.13	176.31	0.36
	MW-28	9/9/2004	2	24.28	14 - 24	194.97	195.21	NM	NM	18.90	176.07	16.63	178.34	17.84	177.13	17.63	177.34	16.44	178.53	16.92	178.05	0.48
	TW-1	12/20/2000	2	6	1 - 6	171.83	168.8	NM	NM	3.45	168.38	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	TW-2	12/20/2000	2	4	1 - 4	171.07	166.75	NM	NM	4.90	166.17	3.72	167.35	NM	NM	4.19	166.88	3.98	167.09	NM	NM	NM
	TW-3	12/20/2000	2	6	1 - 6	170.02	167.15	NM	NM	3.68	166.34	2.91	167.11	NM	NM	2.88	167.14	2.89	167.13	NM	NM	NM
Deep	MW-14D*	NA	2	39.11	NA	175.79	NA	7.42	168.37	8.14	167.65	7.45	168.34	7.85	167.94	7.49	168.30	7.04	168.75	6.82	168.97	-0.22
	MW-15	12/19/2000	2	42.23	24 - 39	186.98	184.18	12.50	174.48	13.48	173.50	12.75	174.23	12.99	173.99	12.70	174.28	11.70	175.28	21.03	165.95	9.3
	MW-17*	NA	2	40.3	NA	171.70	NA	3.95	167.75	4.58	167.12	3.89	167.81	4.31	167.39	NM	NM	3.52	168.18	3.25	168.45	-0.27
	MW-20*	NA	2	42.01	28 - 38	170.13	170	2.05	168.08	2.80	167.33	1.93	168.20	2.46	167.67	2.05	168.08	1.61	168.52	NM	NM	NM
	MW-21*	NA	2	41.94	NA	169.43	NA	0.40	169.03	1.90	167.53	0.85	168.58	1.39	168.04	1.02	168.41	0.30	169.13	NM	NM	NM
	MW-22	4/16/2003	2	38.56	29.5 - 39.5	171.02	167.79	3.23	167.79	4.33	166.69	3.00	168.02	3.70	167.32	3.28	167.74	2.80	168.22	NM	NM	NM
	MW-23 [(2)]	9/2/2004	2	78.72	68 - 78	175.21	176	NM	NM	31.38	143.83	28.25	146.96	25.88	149.33	26.40	148.81	26.62	148.59	24.73	150.48	-1.89
	MW-29	9/10/2004	2	40.28	35.5 - 40.5	175.68	176.32	NM	NM	7.05	168.63	NM	NM	NM	NM	NM	NM	5.45	170.23	5.21	170.47	-0.24
							Shallow Zone Avg.	14.04	175.78	14.18	173.72	13.37	174.42	14.91	174.83	13.58	174.74	12.64	175.81	13.92	175.87	-0.05
							Deep Zone Avg.[2]	16.49	164.74	16.27	168.74	15.90	169.56	16.38	169.08	16.55	169.60	14.57	170.44	17.19	170.17	0.27
							Overall Avg.[2]	15.12	170.26	15.23	171.23	14.63	171.99	15.64	171.96	15.06	172.17	13.61	173.13	15.55	173.02	0.11

Notes:
NA = Not Available
NM = Not Measured
NC = Not Calculated
GWE = Groundwater Elevation
BTOC = Below Top of Casing
ft MSL = Feet Mean Sea Level
* = No well logs available for these wells
1 = Semiannual GWE Change = 2Q2024 GWE - 4Q2024 GWE
2 = Average does not include data from well MW-23. This well is screened much deeper and generally yields much lower groundwater elevations.

TABLE 3
VERTICAL HYDRAULIC GRADIENTS
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA, GEORGIA

Well Pair	Shallow Well		Deep Well		Vertical Gradients (i_v) (ft/ft)				December 2024 (4th Q)			
On-Site Wells	TOS[1]	BOS[1]	TOS[2]	BOS[2]	DL (ft)	Apr 2023 (2nd Q)	Nov 2023 (4nd Q)	Apr 2024 (2nd Q)	GWE-S (ft MSL)	GWE-D (ft MSL)	DH (ft)	i_v (ft/ft)
MW-1S/D	10	25	37	47	24.5	-0.104	-0.002	-0.003	175.48	175.42	-0.06	-0.002
MW-2S/DR	10	25	37	47	24.5	-0.050	0.000	0.003	175.66	175.73	0.07	0.003
MW-4S/D	10	25	37	47	24.5	0.017	-0.005	-0.011	175.59	175.41	-0.18	-0.007
MW-5S/D	10	25	31	41	18.5	-0.118	0.016	-0.005	175.00	175.30	0.30	0.016
MW-6S/D	10	25	31	41	18.5	-0.151	-0.002	-0.010	176.04	175.93	-0.11	-0.006
MW-7S/D	10	25	31	41	18.5	0.086	0.022	0.012	175.41	175.86	0.45	0.024
MW-8S/DR	10	25	31	41	18.5	-0.125	0.015	0.014	175.98	176.27	0.29	0.016
MW-9S/D	10	25	31	41	18.5	0.055	-0.005	-0.004	176.43	176.43	0.00	0.000
MW-10S/D	10	25	31	41	18.5	0.041	0.000	-0.001	176.00	175.85	-0.15	-0.008
MW-11S/D	10	25	31	41	18.5	-0.127	0.002	0.003	176.63	176.71	0.08	0.004
MW-12S/D	10	25	31	41	18.5	-0.126	-0.005	-0.019	175.69	175.41	-0.28	-0.015
MW-13S/D	10	25	31	41	18.5	0.026	-0.014	-0.012	175.85	176.09	0.24	0.013
MW-24S/D	10	25	35	40	20.0	-0.194	-0.016	-0.018	176.47	176.03	-0.44	-0.022
Off-Site Wells												
MW-14S/D	10	25	31	41	18.5	-0.132	-0.137	-0.113	170.93	168.97	-1.96	-0.106

Notes:

S=Shallow Well

D=Deep Well

TOS = Top of screen

BOS = Bottom of screen

GWE = Groundwater elevation

DL = Difference in average screen length

DH = Difference in groundwater elevations

iv = Calculated vertical gradient

NA = Elevation data not available

NC = Not calculated

[1] Where data is not known, data from wells in the same unit was assumed.

Negative iv indicates a vertical gradient downward whereas a positive iv indicates a vertical gradient upward.

TABLE 4
Historical Soil Analytical Results 1995-1997 (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Soil Boring/ Monitoring Well Designation	Depth (ft)	Sampling Event (mo/yr)	Volatile Organic Aromatics by Method EPA 8240A																			Total VOCs	Semi-Volatile Organic Aromatics by EPA Method 8270A												
			Acetone	Benzene	2-Butanone	Carbon Disulfide	Chlorobenzene	Chloroform	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	Ethylbenzene	2-Hexanone	Methylene Chloride	4-Methyl-2-Pentanone	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Total Xylenes[1]		Benzyl Alcohol	Benzylbutyl Phthalate	Diethyl Phthalate	Dimethyl Phthalate	Di-n-Butyl Phthalate	Di-n-Octylphthalate	Isophorone	2-Methylphenol	3&4 Methylphenol[2]	Naphthalene	Phenol	1,2,4-Trichlorobenzene	2,4,5-Trichlorophenol
	RAOs:		6100	1.2	2700	77	28	0.32	3.6	0.46	23	16	5.8	20	35	3300	8.1	490	810	0.41	58	--	630	290	5100	--	630	63	570	320	320	2	1900	5.8	630
	1-2 ft	3/96	0.1676	ND	0.17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-1	**5-6 ft**	3/96	0.062	ND	0.062	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	0.0372	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.077	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-2	**5-6 ft**	3/96	ND	ND	0.026	0.0115	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.038	ND	ND	ND	ND	ND	ND	0.0906	ND	ND	ND	ND	ND
	10-11 ft	3/96	3.30	ND	3.6126	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.044	ND	ND	ND	ND	ND	ND	0.044	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-3	**5-6 ft**	3/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.044	ND	ND	ND	ND	ND	ND	0.044	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	0.132	ND	0.0206	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.044	ND	ND	ND	ND	ND	ND	0.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.077	ND	ND	ND	0.0125	0.0137	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-4	**5-6 ft**	3/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	ND	ND	ND	ND	ND	ND	ND	0.0193	0.081	0.0193	ND	ND	0.086	ND	ND	ND	0.0721	0.0707	ND	0.35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	0.115	ND	ND	0.265	ND	ND	ND	ND	ND	ND	ND	ND	0.036	ND	ND	ND	ND	ND	ND	0.42	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-5	**5-6 ft**	3/96	ND	ND	ND	0.0679	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.068	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	0.0668	ND	ND	0.041	ND	ND	ND	ND	ND	ND	ND	ND	0.028	ND	ND	ND	ND	ND	ND	0.14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	13.054	ND	2.516	ND	ND	ND	ND	ND	ND	ND	**6.883**	ND	0.633	ND	0.364	5.886	ND	ND	35.301	64.6	ND	2.469	ND	ND	1.88	ND	ND	0.313	ND	0.184	1.023	ND	5.297
B-7	**5-6 ft**	3/96	6.113	ND	0.457	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.829	ND	ND	ND	ND	ND	ND	8.40	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	7.3	ND	4.026	ND	ND	ND	ND	ND	ND	ND	0.16	ND	2.18	ND	ND	0.799	ND	ND	0.901	15.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.79	ND	0.184
	1-2 ft	3/96	33.824	ND	31.118	ND	ND	ND	ND	ND	ND	ND	0.412	ND	2.647	2.941	ND	16.691	0.382	0.265	2.309	90.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.008	ND	ND
B-8	**5-6 ft**	3/96	49.794	ND	68.63	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.137	5.137	ND	1.027	ND	ND	ND	130	0.33	ND	ND	ND	ND	ND	0.326	ND	ND	ND	ND	1.731
	10-11 ft	3/96	69.695	ND	100.732	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.439	3.658	ND	ND	ND	ND	ND	177	ND	ND	ND	ND	ND	ND	0.181	ND	ND	ND	0.197	ND	0.72
	1-2 ft	3/96	9.2	ND	20.2	ND	ND	ND	ND	ND	ND	ND	0.04	ND	0.131	0.528	0.0346	0.075	ND	0.0176	0.2835	30.5	0.18	0.4725	ND	ND	0.1088	ND	ND	ND	ND	ND	0.39	ND	0.5588
B-9	**5-6 ft**	3/96	17.1	ND	3.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.14	1.07	ND	0.009	ND	ND	ND	21.6	0.4758	ND	ND	ND	ND	ND	0.2226	ND	ND	ND	0.8979	ND	0.6753
	10-11 ft	3/96	21.616	ND	22.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	0.685	ND	0.0071	ND	ND	ND	44.8	0.0897	ND	ND	ND	ND	ND	0.3336	ND	0.1506	ND	0.391	ND	ND
	1-2 ft	3/96	2.1	ND	0.0311	ND	ND	ND	ND	ND	ND	0.0104	0.0067	ND	0.134	ND	0.017	0.0177	0.0067	0.05	0.0396	2.41	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-10	**5-6 ft**	3/96	4.3	ND	4.42	ND	ND	ND	0.008	ND	ND	ND	ND	ND	0.725	0.268	ND	0.0659	0.0094	0.091	0.0297	9.92	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	3.9	ND	11.738	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.577	0.566	ND	0.021	ND	0.0203	ND	16.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	217.5	ND	280.8	0.682	ND	ND	ND	ND	ND	ND	0.276	ND	1.136	7.63	ND	1.526	ND	ND	1.494	511	ND	0.257	ND	0.18	ND	ND	0.68	ND	ND	0.3514	ND	ND	ND
B-11	**5-6 ft**	3/96	51.17	ND	95.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.472	ND	ND	ND	ND	ND	150	0.077	ND	ND	0.0587	ND	ND	0.39	ND	ND	ND	0.0917	ND	ND
	10-11 ft	3/96	20.3449	ND	41.039	0.2591	ND	ND	ND	ND	ND	ND	ND	ND	0.762	2.591	ND	ND	ND	ND	ND	65.0	ND	0.1489	ND	ND	ND	ND	0.2213	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	4.665	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.61	ND	0.3811	ND	ND	ND	ND	5.66	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-12	**5-6 ft**	3/96	0.3954	ND	0.104	0.044	ND	ND	ND	ND	ND	0.027	ND	ND	0.065	0.013	ND	ND	ND	ND	ND	0.65	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	ND	ND	0.0208	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.021	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	32.5	ND	280	ND	ND	ND	ND	ND	0.20	ND	0.95	ND	2.17	5.67	0.8167	11.3	20.2	**1.45**	5.3	361	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.16	0.59	ND	ND
B-15	**5-6 ft**	3/96	18.9	ND	30.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.06	3.43	ND	0.4808	0.192	ND	0.33	55.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.218	ND	ND
	10-11 ft	3/96	25.6	ND	23.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.316	2.63	ND	ND	ND	ND	ND	53.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	19.082	0.015	26.805	ND	ND	ND	0.03	0.01	0.012	ND	ND	0.027	2.854	2.093	ND	0.104	0.146	0.137	0.008	51.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-16	**5-6 ft**	3/96	35.801	ND	57.372	ND	ND	ND	0.016	ND	0.007	ND	0.017	0.064	3.526	4.167	ND	0.376	0.09	0.141	0.085	102	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	13.694	ND	22.542	ND	ND	ND	ND	ND	ND	ND	ND	0.029	0.152	1.011	ND	0.008	ND	ND	ND	37.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	8.228	ND	4.347	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.53	ND	ND	ND	ND	ND	ND	19.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-17	**5-6 ft**	3/96	7.484	ND	12.42	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.731	0.641	ND	ND	ND	ND	ND	27.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	12.534	ND	7.72	ND	ND	ND	ND	ND	ND	ND	ND	ND	11.486	0.844	ND	ND	0.186	**0.439**	ND	33.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	10/95	0.049	ND	ND	ND	ND	ND	0.008	ND	ND	0.054	0.008	ND	0.096	ND	0.065	0.021	ND	0.039	0.073	0.41	ND	0.379	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-18	**5-6 ft**	10/95	0.274	ND	0.193	0.006	ND	ND	ND	ND	ND	ND	ND	ND	0.049	ND	ND	ND	ND	ND	ND	0.52	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	10/95	3.861	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.944	ND	ND	ND	ND	ND	ND	5.81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	10/95	4.911	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.083	ND	ND	ND	ND	ND	ND	6.99	ND	ND	ND	ND	ND	ND	ND	ND	0.232	ND	ND	ND	ND
B-19	**5-6 ft**	10/95	14.284	ND	13.989	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.826	0.421	ND	ND	ND	ND	ND	30.5	ND	ND	ND	ND	ND	ND	ND	ND	0.185	ND	ND	ND	ND
	10-11 ft	10/95	15.876	ND	17.126	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.724	0.862	ND	ND	ND	ND	ND	35.6	ND	ND	0.205	ND	ND	ND	ND	ND	0.106	ND	0.102	ND	ND
	1-2 ft	3/96	0.326	ND	0.155	0.0094	ND	ND	ND	ND	ND	ND	ND	ND	0.031	ND	ND	ND	0.012	ND	ND	0.53	ND	0.615	ND	ND	0.586	ND	ND	ND	ND	ND	ND	ND	ND
B-20	**5-6 ft**	3/96	9.819	ND	4.736	ND	ND	ND	ND	ND	ND	ND	ND	0.022	0.278	0.95	ND	0.028	0.0061	0.012	0.009	15.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.059	ND	ND
	10-11 ft	3/96	10.892	ND	18.722	ND	ND	ND	0.006	ND	ND	ND	0.0269	0.013	0.418	0.56	0.0115	0.199	0.044	0.101	0.181	31.2	ND	0.167	ND	ND	0.127	ND	0.098	ND	ND	ND	0.083	ND	ND
	1-2 ft	3/96	70.538	0.266	80.988	ND	0.0078	**0.601**	0.273	0.151	0.319	ND	**38.686**	ND	**45.217**	8.038	**28.738**	129.32	139.268	**195.236**	**180.767**	918	0.3896	0.3101	ND	ND	0.437	ND	0.0875	ND	ND	ND	ND	ND	ND
B-21	**5-6 ft**	3/96	34.124	ND	90.661	ND	ND	0.05	0.016	0.056	ND	ND	0.01	0.048	1.437	4.31	ND	0.162	0.048	0.178	0.0741	131	0.459	ND	ND	ND	ND	ND	ND	ND	ND	0.152	ND	0.3945	ND	ND
	10-11 ft	3/96	32.384	ND	70.091	ND	ND	ND	ND	ND	ND	ND	ND	0.007	0.149	0.681	ND	ND	ND	ND	ND	103	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1088	ND	ND

TABLE 4
Historical Soil Analytical Results 1995-1997 (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Soil Boring/ Monitoring Well Designation	Depth (ft)	Sampling Event (mo/yr)	Volatile Organic Aromatics by Method EPA 8240A																			Semi-Volatile Organic Aromatics by EPA Method 8270A												
			Acetone	Benzene	2-Butanone	Carbon Disulfide	Chlorobenzene	Chloroform	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	Ethylbenzene	2-Hexanone	Methylene Chloride	4-Methyl-2-Pentanone	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Total Xylenes[1]	**Total VOCs**	Benzyl Alcohol	Benzylbutyl Phthalate	Diethyl Phthalate	Dimethyl Phthalate	Di-n-Butyl Phthalate	Di-n-Octylphthalate	Isophorone	2-Methylphenol	3&4 Methylphenol[2]	Naphthalene	Phenol	1,2,4-Trichlorobenzene	2,4,5-Trichlorophenol
	RAOs:		6100	1.2	2700	77	28	0.32	3.6	0.46	23	16	5.8	20	35	3300	8.1	490	810	0.41	58	--	630	290	5100	--	630	63	570	320	320	2	1900	5.8	630
B-22	**1-2 ft**	3/96	0.392	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.52	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-6 ft	3/96	0.187	ND	0.098	0.80	ND	ND	ND	ND	ND	ND	ND	ND	0.033	ND	ND	ND	ND	ND	ND	1.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	ND	ND	0.011	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.045	ND	ND	ND	ND	ND	ND	0.056	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
S-4	**1-2 ft**	3/96	ND	ND	ND	ND	ND	ND	ND	ND	0.018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-6 ft	3/96	ND	ND	ND	ND	ND	ND	ND	ND	0.033	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.033	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-1	**1-3 ft**	3/96	6.14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057	ND	ND	ND	ND	ND	ND	6.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	27.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.012	ND	ND	ND	ND	ND	ND	27.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	2.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-2	**1-3 ft**	3/96	1.34	ND	ND	ND	ND	ND	ND	ND	ND	0.010	0.023	ND	ND	0.006	ND	0.171	ND	ND	0.135	1.69	ND	2.088	ND	ND	14.3	0.145	ND	ND	ND	0.074	ND	0.085	0.975
	5-7 ft	3/96	12.8	ND	0.016	ND	ND	ND	ND	ND	ND	0.010	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	3.26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	28.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.012	ND	ND	ND	ND	ND	ND	28.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-3	**1-3 ft**	3/96	5.24	ND	ND	ND	ND	ND	ND	ND	ND	0.009	0.112	ND	0.012	ND	ND	0.038	ND	ND	1.132	6.54	ND	0.166	ND	ND	ND	0.511	ND	ND	ND	0.693	ND	ND	ND
	5-7 ft	3/96	5.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	6.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.70	ND	ND	ND	ND	ND	0.097	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	14.2	ND	ND	ND	ND	ND	ND	ND	ND	0.008	0.066	ND	ND	ND	ND	0.021	ND	ND	0.659	15.0	ND	0.114	ND	ND	ND	0.224	ND	ND	ND	0.46	ND	ND	ND
SS-4	**1-3 ft**	3/96	10.8	ND	0.016	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.012	ND	ND	ND	ND	ND	ND	10.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011	ND	ND	ND	ND	ND	ND	0.61	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.058	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.058	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-5	**1-3 ft**	3/96	0.486	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.072	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.072	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.131	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.367	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.37	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-6	**1-3 ft**	3/96	0.106	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.061	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.061	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-7	**1-3 ft**	3/96	6.243	ND	0.937	ND	ND	ND	0.061	ND	ND	0.197	0.066	ND	ND	0.171	0.053	0.151	ND	ND	0.403	8.28	ND	ND	ND	ND	ND	ND	ND	ND	0.149	ND	ND	ND	ND
	5-7 ft	3/96	11.071	ND	0.925	ND	ND	ND	0.007	ND	ND	ND	0.008	ND	ND	0.09	ND	0.012	ND	ND	0.056	12.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	27.9	ND	1.63	ND	ND	ND	0.006	ND	ND	ND	ND	ND	ND	0.125	ND	ND	ND	ND	ND	29.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.082	ND	ND
	12-14 ft	3/96	8.69	ND	0.897	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.096	ND	ND	ND	ND	ND	9.68	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-9	**1-3 ft**	3/96	0.60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011	ND	ND	ND	ND	ND	ND	0.61	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	8.67	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.67	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	35.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	12.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-10	**1-3 ft**	3/96	0.338	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.208	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.153	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.081	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.081	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-11	**1-3 ft**	3/96	0.227	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.319	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.145	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.132	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-12	**1-3 ft**	3/96	0.125	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.148	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.189	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.134	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-13	**1-3 ft**	3/96	0.868	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.87	ND	0.102	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	10.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.008	10.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	19.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.064	ND	ND	ND	ND	ND	ND	19.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	28.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.064	ND	ND	ND	ND	ND	ND	28.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 4
Historical Soil Analytical Results 1995-1997 (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Soil Boring/ Monitoring Well Designation	Depth (ft)	Sampling Event (mo/yr)	Volatile Organic Aromatics by Method EPA 8240A																			Total VOCs	Semi-Volatile Organic Aromatics by EPA Method 8270A												
			Acetone	Benzene	2-Butanone	Carbon Disulfide	Chlorobenzene	Chloroform	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	Ethylbenzene	2-Hexanone	Methylene Chloride	4-Methyl-2-Pentanone	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Total Xylenes[1]		Benzyl Alcohol	Benzylbutyl Phthalate	Diethyl Phthalate	Dimethyl Phthalate	Di-n-Butyl Phthalate	Di-n-Octylphthalate	Isophorone	2-Methylphenol	3&4 Methylphenol[2]	Naphthalene	Phenol	1,2,4-Trichlorobenzene	2,4,5-Trichlorophenol
	RAOs:		6100	1.2	2700	77	28	0.32	3.6	0.46	23	16	5.8	20	35	3300	8.1	490	810	0.41	58	--	630	290	5100	--	630	63	570	320	320	2	1900	5.8	630
SS-14	**1-3 ft**	6/97	0.034	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.032	ND	ND	ND	ND	ND	ND	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	6/97	0.088	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.042	ND	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	6/97	0.028	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.021	ND	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	6/97	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.028	ND	ND	ND	ND	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5S	**5-7 ft**	3/96	2.0	ND	0.373	ND	ND	ND	ND	ND	ND	ND	0.955	ND	0.067	0.018	ND	2.045	ND	ND	5.621	11.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	11-13 ft	3/96	0.359	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.094	ND	ND	ND	ND	ND	ND	0.45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5D	**1-3 ft**	3/96	0.708	ND	ND	0.009	ND	ND	ND	ND	ND	ND	0.39	ND	ND	0.086	ND	7.06	ND	ND	2.282	10.5	ND	1.5	ND	ND	0.165	0.135	ND	ND	0.245	0.323	ND	ND	ND
	5-7 ft	3/96	0.468	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.022	ND	ND	ND	ND	0.054	ND	ND	0.156	0.70	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.489	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.037	ND	ND	ND	ND	0.138	ND	ND	0.249	0.91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-6S	**5-7 ft**	3/96	0.471	ND	0.020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.024	ND	ND	ND	ND	ND	ND	0.52	ND	ND	ND	ND	ND	ND	ND	0.21	ND	ND	ND	ND	ND
	11-13 ft	3/96	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.017	ND	ND	ND	ND	ND	ND	1.62	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-6D	**1-3 ft**	3/96	0.496	0.009	ND	ND	ND	ND	ND	ND	ND	ND	0.037	ND	ND	ND	ND	0.088	ND	ND	0.229	0.86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.009	ND	ND	0.068	1.48	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	2.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.017	ND	ND	ND	ND	ND	ND	2.62	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	14-16 ft	3/96	0.817	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-7S	**5-7 ft**	3/96	0.266	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	11-13 ft	3/96	1.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-7D	**1-3 ft**	3/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.915	ND	0.032	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011	ND	ND	ND	ND	ND	0.96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	1.8	ND	0.038	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.84	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	4.5	ND	0.156	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.022	ND	ND	ND	ND	ND	4.68	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-8S	**5-7 ft**	3/96	13.4	ND	7.35	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.043	0.521	ND	ND	ND	ND	0.036	21.4	0.39	2.25	ND	ND	0.48	3.15	ND	ND	ND	ND	1.12	ND	ND
	11-13 ft	3/96	16.5	ND	12	ND	ND	ND	ND	ND	ND	ND	2	0.012	0.056	0.856	0.058	0.41	0.012	0.021	11.5	43.4	ND	ND	ND	ND	ND	0.481	ND	ND	ND	ND	0.08	ND	ND
MW-9S	**1-3 ft**	3/96	0.047	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.027	ND	ND	ND	ND	ND	ND	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.027	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.023	ND	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.099	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.022	ND	ND	ND	ND	ND	ND	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.762	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.033	ND	ND	ND	ND	ND	ND	0.80	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-10S	**1-3 ft**	3/96	0.246	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.006	ND	0.151	ND	ND	0.008	ND	ND	ND	0.41	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	7.452	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.091	ND	ND	ND	ND	ND	ND	7.54	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	11.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.112	ND	ND	ND	ND	ND	ND	11.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	6.71	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.169	ND	ND	ND	ND	ND	ND	6.88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-10D	**1-3 ft**	3/96	0.128	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	0.26	ND	0.427	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	9.93	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.108	ND	ND	ND	ND	ND	ND	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	8.48	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.124	ND	ND	ND	ND	ND	ND	8.60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	1.107	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.098	ND	ND	ND	ND	ND	ND	1.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-12D	**1-3 ft**	3/96	1.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.111	ND	ND	ND	ND	ND	ND	1.17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.111	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.158	ND	ND	ND	ND	ND	ND	0.27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.251	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.182	ND	ND	ND	ND	ND	ND	0.43	ND	0.418	ND	0.073	ND	0.479	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.869	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.141	ND	ND	ND	ND	ND	ND	1.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13D	**1-3 ft**	6/97	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.024	ND	ND	ND	ND	ND	ND	0.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	6/97	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.027	ND	ND	ND	ND	ND	ND	0.22	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	6/97	0.047	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.022	ND	ND	ND	ND	ND	ND	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	6/97	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.037	ND	ND	ND	ND	ND	ND	1.84	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Units: mg/kg
ND = Not Detected
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in **bold**

[1] RAO based on the lowest of the two of m- or p-xylene

[2] RAO based on the lowest of the two of 3- or 4-methylphenol

TABLE 5
Soil Analytical Results - June 2006 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Volatile Organic Compounds by USEPA Method 8260B																																				
			Chlorinated VOCs														Aromatic/Hydrocarbon VOCs																Ketones/Other					
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Chlorobenzene	Chloroform	Chloromethane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,1-Dichloroethane	Tetrachloroethene	Trichloroethene	Cis-1,2-Dichloroethene	Trans-1,2-Dichloroethene	Vinyl Chloride	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	4-Isopropyltoluene	Benzene	Ethylbenzene	Isopropylbenzene	M,P-Xylenes[1]	O-Xylene	Total Xylenes	Methyl Tert-Butyl Ether	Naphthalene	N-Butylbenzene	N-Propylbenzene	Sec-Butylbenzene	Styrene	Tert-Butylbenzene	Toluene	2-Butanone	4-Methyl-2-Pentanone	Acetone	Carbon Disulfide	Total VOCs
		RAOs:	28	0.32	11	35	810	0.2	23	0.46	3.6	8.1	0.41	16	7	0.06	30	27	--	1.2	5.8	190	55	65	58	47	2.0	390	380	780	600	780	490	2,700	3,300	6,100	77	--
ASI-1	**1-2 ft**	6/15/2006	<0.010	<0.010	<0.030	7.85	0.456	<0.0197	<0.0197	0.0591	0.0217	<0.079	**0.806**	0.022	<0.0295	<0.030	<0.0197	<0.0197	<0.0492	0.115	0.091	<0.0197	0.379	0.11	0.489	<0.010	0.443	<0.030	<0.020	<0.02	<0.020	<0.030	1.64	75.6	5.03	89.6	<0.030	182
	6-7 ft	6/15/2006	<0.009	0.038	<0.027	13.3	3.9	<0.0181	0.147	0.0424	0.0641	<0.072	**6.89**	0.042	<0.0271	<0.027	2.78	1.45	0.347	0.633	1.23	0.226	3.77	1.02	4.79	<0.009	<0.153	0.496	0.315	0.13	<0.018	<0.027	16.6	31.9	2.85	31.3	<0.027	119
	11-12 ft	6/15/2006	<0.011	0.024	<0.033	10.2	1.15	<0.0217	0.17	0.0469	0.0281	<0.087	**0.968**	<0.022	<0.0326	<0.033	<0.0217	<0.0217	<0.0543	0.132	0.051	<0.0217	0.185	0.057	0.242	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	1.38	56.3	<0.0977	68.9	<0.033	140
ASM-3	**1-1.5 ft**	6/15/2006	<0.012	0.074	<0.035	2.12	1.82	<0.0233	<0.0233	<0.0116	0.0294	<0.093	**2.13**	<0.023	<0.0349	<0.035	2.19	1.4	0.417	0.148	0.149	0.201	0.609	0.306	0.915	<0.012	0.364	0.741	0.223	0.15	<0.023	<0.035	1.56	<0.1510	<0.1050	<0.1510	<0.035	14.6
	6-7 ft	6/15/2006	<0.009	0.047	<0.026	28.1	2.19	<0.0172	0.239	0.109	0.0982	<0.069	**3.07**	0.064	<0.0258	<0.026	0.214	0.0586	<0.0431	0.511	0.228	<0.0172	0.742	0.204	0.946	<0.009	<0.150	<0.026	0.042	<0.02	<0.017	<0.026	5.47	40.7	3.61	49.7	0.028	135
	11-12 ft	6/15/2006	<0.010	0.061	<0.029	1.63	2.52	**0.22**	0.0726	0.0335	<0.0191	0.688	**6.31**	<0.019	<0.0287	<0.029	2.69	3.52	1.15	0.192	0.692	0.246	2.57	1.87	4.44	<0.010	0.269	1.03	0.333	0.51	<0.019	0.19	2.69	<0.1240	<0.0860	<0.1240	<0.029	29.5
B-100	**1-1.5 ft**	6/14/2006	<0.000	0.005	<0.000	0.006	0.0034	<0.0002	<0.0002	0.0021	0.0007	0.001	0.008	0.001	<0.0002	<0.000	0.0005	0.0002	<0.0004	<0.000	<0.000	0.0004	0.002	0.001	0.003	<0.000	<0.000	<0.000	<0.000	<0.00	<0.000	<0.000	0.003	0.0169	<0.0007	0.0754	<0.000	0.127
	5-6 ft	6/14/2006	<0.009	<0.009	<0.027	1.37	<0.0090	<0.0181	<0.0181	<0.0090	0.0859	<0.072	0.061	0.063	<0.0271	<0.027	<0.0181	<0.0181	<0.0452	0.034	<0.018	<0.0181	0.032	0.019	0.051	<0.009	<0.027	<0.027	<0.018	<0.02	<0.018	<0.027	0.193	57.9	2.03	33.9	<0.027	95.7
	10-11 ft	6/14/2006	<0.008	<0.008	<0.023	0.299	<0.0078	<0.0155	<0.0155	<0.0078	0.0178	<0.062	<0.008	0.016	<0.0233	<0.023	<0.0155	<0.0155	<0.0388	<0.008	<0.016	<0.0155	<0.023	<0.008	ND	<0.008	<0.023	<0.023	<0.016	<0.02	<0.016	<0.023	0.042	57.1	<0.0698	33.5	<0.023	91.0
B-101	**1-2 ft**	6/19/2006	<0.012	0.105	<0.037	<0.062	0.143	<0.0246	<0.0246	<0.0123	0.0285	<0.098	**0.65**	0.152	<0.0369	<0.037	<0.0246	<0.0246	<0.0615	0.045	0.033	<0.0246	0.063	0.027	0.09	<0.012	<0.037	<0.037	<0.025	<0.02	<0.025	<0.037	0.141	<0.1600	<0.1110	<0.1600	<0.037	1.39
	6-7 ft	6/19/2006	<0.010	0.023	<0.029	25.6	2.32	<0.0191	0.416	0.0516	0.17	<0.076	**5.79**	0.707	<0.0286	<0.029	<0.0191	<0.0191	<0.0477	0.299	0.153	<0.0191	0.096	0.254	0.35	<0.010	<0.029	<0.029	<0.019	<0.02	<0.019	<0.029	1.79	0.906	<0.0859	0.53	<0.029	39.1
	11-12 ft	6/19/2006	<0.009	<0.009	<0.028	8.85	0.869	<0.0188	0.152	0.031	0.0329	<0.075	**1.73**	0.155	<0.0282	<0.028	<0.0188	<0.0188	<0.0469	0.085	0.064	<0.0188	0.132	0.058	0.19	<0.009	<0.028	<0.028	<0.019	<0.02	<0.019	<0.028	1.2	26.9	<0.0845	14.1	<0.028	54.4
B-102	**1-2 ft**	6/14/2006	<0.010	0.153	<0.029	<0.049	<0.0098	<0.0195	<0.0195	<0.0098	<0.0195	<0.078	<0.010	<0.020	<0.0293	<0.029	<0.0195	<0.0195	<0.0488	<0.010	<0.020	<0.0195	<0.029	<0.010	ND	<0.010	<0.029	<0.029	<0.020	<0.02	<0.020	<0.029	<0.020	<0.1270	<0.0878	<0.1270	<0.029	0.153
	5-6 ft	6/14/2006	<0.011	0.284	<0.034	4.84	0.065	<0.0228	<0.0228	0.0788	0.0288	<0.091	0.239	0.045	<0.0341	<0.034	<0.0228	<0.0228	<0.0569	0.049	0.033	<0.0228	0.105	0.054	0.159	<0.011	<0.034	<0.034	<0.023	<0.02	<0.023	<0.034	0.389	96.6	3.58	109	<0.034	215
	11-12 ft	6/14/2006	<0.008	0.016	<0.025	3.02	0.0907	<0.0163	<0.0163	0.027	0.0294	<0.065	0.28	0.034	<0.0245	<0.025	<0.0163	<0.0163	<0.0408	0.048	0.022	<0.0163	0.087	0.034	0.121	<0.008	<0.025	<0.025	<0.016	<0.02	<0.016	<0.025	0.376	45	2.16	48	<0.025	99.2
B-103	**1-2 ft**	6/20/2006	<0.013	0.043	<0.039	4.55	0.245	<0.0261	<0.0261	<0.0130	0.0469	<0.104	**0.808**	0.048	<0.0391	<0.039	<0.0261	<0.0261	<0.0652	0.068	<0.026	<0.0261	<0.039	<0.013	ND	<0.013	<0.039	<0.039	<0.026	<0.03	<0.026	<0.039	0.139	<0.1690	<0.1170	<0.1690	<0.039	5.95
	6-7 ft	6/20/2006	<0.011	0.187	<0.034	21.3	0.683	<0.0227	0.157	<0.0114	0.0974	<0.091	**2.59**	0.194	<0.0341	<0.034	<0.0227	<0.0227	<0.0568	0.208	0.057	<0.0227	0.104	0.041	0.145	<0.011	<0.034	<0.034	<0.023	<0.02	<0.023	<0.034	1.13	<0.1480	<0.1020	<0.1480	<0.034	26.7
	11-12 ft	6/20/2006	<0.044	0.194	<0.133	**62.2**	3.74	<0.0884	0.937	<0.0442	0.349	<0.353	**9.67**	0.672	<0.1330	<0.133	<0.0884	<0.0884	<0.2210	0.663	0.186	<0.0884	0.292	0.106	0.398	<0.044	<0.133	<0.133	<0.088	<0.09	<0.088	<0.133	3.6	<0.5740	<0.3980	<0.5740	<0.133	82.6
B-104	**1-2 ft**	6/15/2006	<0.012	0.047	<0.035	0.982	0.0335	<0.0231	<0.0231	0.0554	<0.0231	<0.093	0.212	<0.023	<0.0347	<0.035	<0.0231	<0.0231	<0.0578	<0.012	<0.023	<0.0231	<0.035	<0.012	ND	<0.012	<0.035	<0.035	<0.023	<0.02	<0.023	<0.035	0.053	<0.1500	<0.1040	<0.1500	<0.035	1.38
	6-7 ft	6/15/2006	<0.010	0.207	<0.029	29.8	0.729	<0.0190	<0.0190	**0.518**	0.113	<0.076	**2.77**	0.115	<0.0285	<0.029	<0.0190	<0.0190	<0.0475	0.299	0.151	<0.0190	0.412	0.164	0.576	<0.010	<0.029	<0.029	0.021	<0.02	<0.019	<0.029	2.3	72.9	4.21	89.3	<0.029	204
	11-12 ft	6/15/2006	<0.010	0.187	<0.029	**44.4**	1.3	<0.0195	0.251	0.443	0.185	0.223	**4.74**	0.153	<0.0293	<0.029	<0.0195	<0.0195	<0.0489	0.491	0.217	<0.0195	0.659	0.215	0.874	<0.010	<0.029	<0.029	<0.020	<0.02	<0.020	<0.029	4.12	80.5	5.72	76.8	<0.029	221
B-105	**1-2 ft**	6/16/2006	<0.011	<0.011	<0.034	0.265	0.0856	<0.0227	<0.0227	<0.0114	<0.0227	<0.091	0.148	<0.023	<0.0341	<0.034	<0.0227	<0.0227	<0.0568	<0.011	<0.023	<0.0227	<0.034	0.025	0.025	<0.011	<0.034	0.046	<0.023	<0.02	<0.023	<0.034	<0.023	<0.1480	<0.1020	<0.1480	<0.034	0.570
	6-7 ft	6/16/2006	<0.109	**0.395**	<0.326	33.7	60	<0.2170	0.694	<0.1090	0.32	2.67	**83.6**	<0.217	<0.3260	<0.326	<0.2170	<0.2170	<0.5430	**3.42**	**25.5**	<0.2170	**88.5**	20.2	**108.7**	<0.109	0.314	0.534	0.662	<0.22	0.811	<0.326	190	146	<0.9780	43.5	<0.326	701
	11-12 ft	6/16/2006	<0.047	0.21	<0.140	**53.5**	22.4	<0.0934	0.635	<0.0467	0.299	<0.374	**19.5**	<0.093	<0.1400	<0.140	<0.0934	<0.0934	<0.2340	**2.32**	4.38	<0.0934	13.7	2.97	16.67	<0.047	<0.148	0.29	0.21	<0.09	<0.093	<0.140	59.7	177	<0.4200	60.6	0.15	418
B-106	**1-2 ft**	6/20/2006	<0.011	0.026	<0.033	1.76	0.208	<0.0220	<0.0220	<0.0110	<0.0220	<0.088	**0.585**	0.069	<0.0330	<0.033	<0.0220	<0.0220	<0.0549	0.018	<0.022	<0.0220	<0.033	<0.011	ND	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	0.047	<0.1430	<0.0989	<0.1430	<0.033	2.71
	6-7 ft	6/20/2006	<0.052	0.253	<0.155	**57.7**	7.33	<0.1030	1.06	<0.0517	0.413	<0.413	**15.6**	0.64	<0.1550	<0.155	<0.1030	<0.1030	<0.2580	0.522	0.129	<0.1030	0.377	<0.052	0.377	<0.052	<0.153	<0.155	<0.103	<0.10	<0.103	<0.155	3.04	<0.6710	<0.4650	<0.6710	<0.155	87.1
	11-12 ft	6/20/2006	<0.072	**0.487**	<0.215	**110**	8.59	<0.1430	1.35	<0.0716	0.594	<0.572	**17.1**	0.687	<0.2150	<0.215	<0.1430	<0.1430	<0.3580	0.759	0.215	<0.1430	0.479	0.165	0.644	<0.072	<0.153	<0.215	<0.143	<0.14	<0.143	<0.215	4.07	<0.9300	<0.6440	<0.9300	0.458	145
B-107	**1-2 ft**	6/20/2006	<0.062	**0.482**	<0.185	**74.5**	0.971	<0.1230	0.338	**0.747**	0.434	<0.494	**6.83**	0.537	<0.1850	<0.185	<0.1230	<0.1230	<0.3090	0.518	0.808	<0.1230	3.74	1.4	5.14	<0.062	<0.185	<0.185	<0.123	<0.12	<0.123	<0.185	5.95	91.7	<0.5560	126	<0.185	315
	6-7 ft	6/20/2006	<0.054	<0.054	<0.163	28.5	0.12	<0.1090	<0.1090	**0.47**	<0.1090	<0.435	**1.28**	0.16	<0.1630	<0.163	<0.1090	<0.1090	<0.2720	<0.054	<0.109	<0.1090	0.17	<0.054	0.17	<0.054	<0.147	<0.163	<0.109	<0.11	<0.109	<0.163	0.826	<0.7070	<0.4890	45.1	<0.163	76.6
	11-12 ft	6/20/2006	<0.050	0.228	<0.149	**48.7**	0.258	<0.0992	<0.0992	0.407	<0.0992	<0.397	**2.35**	0.263	<0.1490	<0.149	<0.0992	<0.0992	<0.2480	0.169	<0.099	<0.0992	0.293	<0.050	0.293	<0.050	<0.148	<0.149	<0.099	<0.10	<0.099	<0.149	1.19	47.1	<0.4460	43.8	<0.149	145
B-108	**1-2 ft**	6/21/2006	<0.012	**0.53**	<0.035	**56.7**	5.64	<0.0230	0.344	0.146	0.361	1.0	**54**	<0.023	<0.0345	<0.035	0.284	0.136	<0.0575	<0.012	2.05	0.0805	7.78	2.76	10.54	<0.012	<0.035	<0.035	0.068	<0.02	<0.023	<0.035	4.32	22.3	1.79	82.4	<0.035	243
	6-7 ft	6/21/2006	<1.090	**10.1**	<3.260	**565**	581	<2.1700	19.7	<1.0900	**8.37**	**41.1**	**2250**	<2.170	<3.2600	<3.260	<2.1700	<2.1700	<5.4300	<1.090	**34.5**	<2.1700	**112**	25.5	**137.5**	<1.090	<0.147	<3.260	<2.170	<2.17	<2.170	<3.260	214	<14.1000	<9.7800	355	<3.260	4216
	11-12 ft	6/21/2006	<1.090	**75.4**	<3.260	**2180**	**5480**	<2.1700	**128**	<1.0900	**45.9**	**139**	**18200**	<2.170	<3.2600	<3.260	4.57	<2.1700	<5.4300	**47.3**	**97.5**	<2.1700	**345**	**81.3**	**426.3**	<1.090	<0.147	<3.260	<2.170	<2.17	21	<3.260	**854**	<14.1000	31.1	276	<3.260	28006
B-109	**1-2 ft**	6/20/2006	<0.755	**2.19**	<2.260	**48.7**	215	<1.5100	<1.5100	<0.7550	<1.5100	<6.040	**380**	<1.510	<2.2600	<2.260	<1.5100	<1.5100	<3.7700	**2.42**	3.62	<1.5100	6.19	1.13	7.32	<0.755	<0.148	<2.260	<1.510	<1.51	<1.510	<2.260	56.8	<9.8100	<6.7900	<9.8100	<2.260	716
	6-7 ft	6/20/2006	<0.111	**0.823**	<0.333	**171**	18.4	<0.2220	2.14	<0.1110	1.02	<0.889	**26.5**	<0.222	<0.3330	<0.333	<0.2220	<0.2220	<0.5560	0.638	<0.222	<0.2220	<0.333	0.134	0.134	<0.111	<0.150	<0.333	<0.222	<0.22	<0.222	<0.333	4.63	26.3	<1.0000	7.54	<0.333	259
	11-12 ft	6/20/2006	<0.049	**0.388**	<0.147	**108**	9.86	<0.0983	1.05	<0.0492	0.497	<0.393	**12.3**	<0.098	<0.1470	<0.147	<0.0983	<0.0983	<0.2460	0.438	0.147	<0.0983	0.359	0.074	0.433	<0.049	<0.147	<0.147	<0.098	<0.10	<0.098	<0.147	2.99	33.1	<0.4420	12	<0.147	181
B-110	**1-2 ft**	6/21/2006	<0.013	**0.773**	<0.038	**98.9**	7.7	<0.0252	2.23	<0.0126	0.654	0.349	**48.5**	<0.025	<0.0378	<0.038	<0.0252	<0.0252	<0.0630	<0.013	0.183	<0.0252	0.359	0.204	0.563	<0.013	<0.038	<0.038	<0.025	<0.03	<0.025	<0.038	1.02	<0.1640	<0.1130	<0.1640	<0.038	161
	6-7 ft	6/21/2006	<0.056	**0.566**	<0.168	**105**	1.7	<0.1120	<0.1120	<0.0561	0.308	<0.448	**12.1**	<0.112	<0.1680	<0.168	<0.1120	<0.1120	<0.2800	<0.056	<0.112	<0.1120	0.219	<0.056	0.219	<0.056	<0.151	<0.168	<0.112	<0.11	<0.112	<0.168	0.83	52.3	<0.5040	93.3	<0.168	266
	11-12 ft	6/21/2006	<0.011	**1.06**	<0.033	**219**	8.3	<0.0219	1.94	0.0921	0.644	0.26	**82.5**	0.28	<0.0329	**0.068**	<0.0219	<0.0219	<0.0548	0.084	0.163	<0.0219	0.586	0.17	0.756	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	1.92	30.5	<0.0987	42.3	<0.033	390
B-110a	**1-2 ft**	6/21/2006	<0.012	**0.462**	<0.035	**65.8**	8.98	<0.0230	1.08	<0.0115	0.548	0.762	**51.2**	<0.023	<0.0345	<0.035	<0.0230	<0.0230	<0.0575	<0.012	0.28	<0.0230	0.41	0.411	0.821	<0.012	<0.035	<0.035	<0.023	<0.02	<0.023	<0.035	0.829	<0.1490	<0.1030	<0.1490	<0.035	131
B-111	**1-2 ft**	6/20/2006	<0.095	0.227	<0.284	32.8	16.1	<0.1890	2.58	<0.0945	**6.66**	3.66	**23.4**	1.25	<0.2840	<0.284	<0.1890	<0.1890	<0.4730	0.397	**30.9**	1.76	**235**	**65.9**	**300.9**	<0.095	<0.157	<0.284	<0.189	<0.19	<0.189	<0.284	101	166	<0.8510	148	<0.284	836
	6-7 ft	6/20/2006	<0.054	<0.054	<0.163	14.2	0.854	<0.1090	0.462	<0.0543	0.987	<0.435	**2.63**	0.356	<0.1630	<0.163	<0.1090	<0.1090	<0.2720	0.154	1.72	<0.1090	13	3.32	16.32	<0.054	<0.147	<0.163	<0.109	<0.11	<0.109	<0.163	7.56	128	<0.4890	99.6	<0.163	273
	11-12 ft	6/20/2006	<0.048	0.077	<0.144	12.3	0.269	<0.0961	0.355	<0.0480	0.744	<0.384	**1.72**	0.533	<0.1440	<0.144	<0.0961	<0.0961	<0.2400	<0.048	0.149	<0.0961	0.764	0.197	0.961	<0.048	<0.144	<0.144	<0.096	<0.10	<0.096	<0.144	2.98	70.1	<0.4320	58.8	<0.144	149
B-112	**1-2 ft**	6/21/2006	<0.011	0.239	<0.034	27.3	1.48	<0.0225	0.409	<0.0112	0.229	0.096	**13.5**	<0.023	<0.0337	<0.034	<0.0225	<0.0225	<0.0562	<0.011	0.063	<0.0225	0.117	0.071	0.188	<0.011	<0.034	<0.034	<0.023	<0.02	<0.023	<0.034	0.422	<0.1460	<0.1010	<0.1460	<0.034	43.9
	6-7 ft	6/21/2006	<0.057	**0.892**	<0.170	**210**	5.97	<0.1140	1.79	<0.0568	0.841	<0.455	**55.3**	<0.114	<0.1700	<0.170	<0.1140	<0.1140	<0.2840	<0.057	0.324	<0.1140	0.989	0.295	1.284	<0.057	<0.153	<0.170	<0.114	<0.11	<0.114	<0.170	3.86	51.9	<0.5110	62.1	<0.170	394
	11-12 ft	6/21/2006	<0.011	**0.375**	<0.033	**236**	2.44	<0.0220	0.577	<0.0110	0.346	0.097	**20.6**	<0.022	<0.0330	**0.069**	<0.0220	<0.0220	<0.0549	0.024	0.1	<0.0220	0.296	0.092	0.388	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	1.65	22.3	<0.0989	20.5	<0.033	305
B-113	**1-2 ft**	6/21/2006	<0.058	**0.494**	<0.174	17	38.5	<0.1160	1.3	**1.24**	**5.45**	**91.2**	**60.1**	5.14	<0.1740	<0.174	2.44	1.13	<0.2910	<0.058	**10.4**	0.512	**88**	37.1	**125.1**	<0.058	<0.174	<0.174	0.372	<0.12	<0.116	<0.174	73.2	63.1	<0.5230	59.8	<0.174	556.5
	6-7 ft	6/21/2006	<0.056	**0.461**	<0.169	13.6	24.1	<0.1120	0.781	**0.86**	3.35	**73.8**	**41.6**	4.02	<0.1690	<0.169	1.66	0.708	<0.2810	<0.056	**11.3**	0.393	**72.7**	26.2	**98.9**	<0.056	<0.169	<0.169	0.337	<0.11	<0.112	<0.169	62.6	73.4	<0.5060	62.9	<0.169	474.8
	11-12 ft	6/21/2006	<0.011	0.067	<0.032	4.29	0.0656	<0.0215	<0.0215	0.0892	0.319	0.326	0.41	1.28	<0.0323	<0.032	<0.0215	<0.0215	<0.0538	<0.011	0.094	<0.0215	0.553	0.248	0.801	<0.011	<0.032	<0.032	<0.022	<0.02	<0.022	<0.032	1.09	33.7	0.52	28.2	<0.032	71.3

TABLE 5

Soil Analytical Results - June 2006 Field Investigation (mg/kg)

Post-Closure Care Plan

Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Volatile Organic Compounds by USEPA Method 8260B																																		
			Chlorinated VOCs														Aromatic/Hydrocarbon VOCs																Ketones/Other				
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Chlorobenzene	Chloroform	Chloromethane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,1-Dichloroethane	Tetrachloroethene	Trichloroethene	Cis-1,2-Dichloroethene	Trans-1,2-Dichloroethene	Vinyl Chloride	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	4-Isopropyltoluene	Benzene	Ethylbenzene	Isopropylbenzene	M,P-Xylenes[1]	O-Xylene	Total Xylenes	Methyl Tert-Butyl Ether	Naphthalene	N-Butylbenzene	N-Propylbenzene	Sec-Butylbenzene	Styrene	Tert-Butylbenzene	Toluene	2-Butanone	4-Methyl-2-Pentanone	Acetone	Carbon Disulfide	Total VOCs
		RAOs:	28	0.32	11	35	810	0.2	23	0.46	3.6	8.1	0.41	16	7	0.06	30	27	--	1.2	5.8	190	55	65	58	47	2.0	390	380	780	600	780	490	2,700	3,300	6,100	77	--
B-114	**1-2 ft**	6/21/2006	<0.012	<0.012	<0.035	0.415	0.986	<0.0230	0.376	<0.0115	0.245	0.225	**6.84**	<0.023	<0.0345	<0.035	<0.0230	<0.0230	<0.0575	<0.012	<0.023	<0.0230	<0.035	<0.012	ND	<0.012	<0.035	<0.035	<0.023	<0.02	<0.023	<0.035	<0.023	<0.1490	<0.1030	<0.1490	<0.035	9.1
	6-7 ft	6/21/2006	<0.011	0.078	<0.033	1.45	1.46	<0.0220	0.412	<0.0110	0.267	0.211	**9.21**	<0.022	<0.0330	<0.033	<0.0220	<0.0220	<0.0549	<0.011	0.033	<0.0220	0.078	0.029	0.107	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	0.111	<0.1430	<0.0989	<0.1430	<0.033	13.3
	11-12 ft	6/21/2006	<0.011	0.073	<0.033	0.11	1.86	<0.0222	0.962	<0.0111	0.459	0.41	**11.9**	0.204	<0.0333	<0.033	<0.0222	<0.0222	<0.0556	<0.011	0.024	<0.0222	0.05	<0.011	0.05	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	0.066	<0.1440	<0.1000	<0.1440	<0.033	16.1
HA-1	**1-2 ft**	6/21/2006	<0.062	<0.062	<0.185	**97.6**	4.27	<0.1230	1.33	**0.821**	2.39	3.77	**17.4**	0.599	<0.1850	<0.185	<0.1230	<0.1230	<0.3090	<0.062	1.19	<0.1230	5.35	1.73	7.08	<0.062	<0.167	<0.185	<0.123	<0.12	<0.123	<0.185	21.5	324	11.2	268	<0.185	761
HA-2	**1-2 ft**	6/21/2006	<0.061	<0.061	<0.181	30.2	<0.0605	<0.1210	<0.1210	<0.0605	0.423	0.556	**2.76**	<0.121	<0.1810	<0.181	<0.1210	<0.1210	<0.3020	<0.061	0.236	<0.1210	1.22	0.532	1.752	<0.061	<0.163	<0.181	<0.121	<0.12	<0.121	<0.181	4.58	299	2.64	259	<0.181	601
HA-3	**1-2 ft**	6/21/2006	<0.063	<0.063	<0.188	34.3	2.36	<0.1250	0.394	**1.86**	1.26	**9.59**	**9.74**	<0.125	<0.1880	<0.188	0.275	0.131	<0.3120	<0.063	1.17	<0.1250	6.5	1.97	8.47	<0.063	<0.169	<0.188	<0.125	<0.13	<0.125	<0.188	12.7	166	4.03	189	<0.188	441
HA-4	**1-2 ft**	6/21/2006	<0.012	0.32	<0.035	**152**	8.85	<0.0233	2.07	**1.16**	3.55	**33.2**	**43.2**	4.12	<0.0349	**0.459**	0.356	0.255	<0.0581	0.271	3.05	0.106	14.4	4.58	18.98	<0.012	<0.035	<0.035	0.109	<0.02	<0.023	<0.035	37.8	240	14.4	235	<0.035	799
MPX-1	**1-2 ft**	6/14/2006	<0.012	0.037	0.549	0.862	0.0417	<0.0239	<0.0239	<0.0119	<0.0239	<0.096	0.097	<0.024	<0.0358	<0.036	<0.0239	<0.0239	<0.0597	<0.012	<0.024	<0.0239	<0.036	<0.012	ND	<0.012	<0.036	<0.036	<0.024	<0.02	<0.024	<0.036	0.052	<0.1550	<0.1070	<0.1550	0.074	1.71
	5-6 ft	6/14/2006	<0.010	0.022	<0.029	1.8	0.0604	<0.0195	<0.0195	0.0224	<0.0195	<0.078	0.094	<0.020	<0.0292	<0.029	<0.0195	<0.0195	<0.0487	0.026	<0.020	<0.0195	0.052	<0.010	0.052	<0.010	<0.029	<0.029	<0.020	<0.02	<0.020	<0.029	0.224	19.6	<0.0877	34.2	<0.029	56.1
	10-11 ft	6/14/2006	<0.009	<0.009	<0.028	5.07	1.19	<0.0185	0.0823	0.0268	0.0194	<0.074	**1.63**	<0.019	<0.0277	<0.028	1.26	0.622	0.126	0.13	0.462	0.163	1.78	0.46	2.24	<0.009	<0.150	0.262	0.138	<0.02	<0.019	<0.028	4.39	44.6	2.24	50.4	<0.028	115
MW-100	**2-3 ft**	6/20/2006	0.013	**0.44**	<0.027	<0.045	0.0697	<0.0179	<0.0179	0.0411	0.1	6.38	**5.99**	1.01	<0.0268	<0.027	<0.0179	<0.0179	<0.0447	0.03	<0.018	<0.0179	<0.027	<0.009	ND	<0.009	<0.027	<0.027	<0.018	<0.02	<0.018	<0.027	<0.016	<0.1160	<0.0804	<0.1160	0.06	14.1
	6-7 ft	6/20/2006	<0.011	0.152	<0.034	<0.057	<0.0114	<0.0227	<0.0227	<0.0114	0.0498	<0.091	**0.564**	0.97	<0.0341	<0.034	<0.0227	<0.0227	<0.0568	0.016	<0.023	<0.0227	<0.034	<0.011	ND	<0.011	<0.034	<0.034	<0.023	<0.02	<0.023	<0.034	<0.023	<0.1480	<0.1020	<0.1480	<0.034	1.75
	11-12 ft	6/20/2006	<0.009	0.224	<0.028	<0.047	<0.0093	<0.0186	<0.0186	<0.0093	0.053	<0.074	**0.506**	2.6	<0.0279	**0.176**	<0.0186	<0.0186	<0.0465	0.023	<0.019	<0.0186	<0.028	0.009	0.009	<0.009	<0.028	<0.028	<0.019	<0.02	<0.019	<0.028	0.021	<0.1210	<0.0837	<0.1210	<0.028	3.61
MW-101	**1-2 ft**	6/20/2006	<0.000	0.003	<0.000	<0.001	0.001	<0.0002	0.0033	0.0039	0.0148	0.003	0.005	0.08	0.0005	0.032	0.0011	0.0005	<0.0006	0.008	0.008	0.0005	0.038	0.022	0.06	<0.000	<0.000	<0.000	<0.000	<0.00	<0.000	<0.000	0.038	<0.0016	<0.0011	<0.0016	0.001	0.264
	6-7 ft	6/20/2006	<0.000	0.004	<0.000	0.006	0.0032	<0.0002	0.0129	0.0088	0.0684	0.005	0.018	0.198	0.001	**0.145**	0.0007	0.0004	<0.0006	0.031	0.014	0.0006	0.066	0.045	0.111	0.001	<0.000	<0.000	<0.000	<0.00	<0.000	<0.000	0.071	0.004	0.0025	0.0294	0.001	0.737
	11-12 ft	6/20/2006	<0.000	0.003	0.001	0.049	0.0025	<0.0002	0.0063	0.0016	0.0432	0.002	0.014	0.11	0.0003	0.042	0.0005	0.0003	<0.0005	0.026	0.01	0.0003	0.068	0.048	0.116	<0.000	<0.000	<0.000	<0.000	<0.00	<0.000	<0.000	0.028	<0.0012	<0.0008	<0.0012	0.001	0.457
MW-102	**1-2 ft**	6/14/2006	<0.010	0.043	<0.031	1.55	<0.0104	<0.0207	<0.0207	0.0383	<0.0207	1.67	**0.47**	0.024	<0.0311	<0.031	12.3	5.02	0.261	0.031	1.64	0.498	12.4	5.25	17.65	<0.010	1.67	0.503	1.46	<0.02	<0.021	<0.031	1.36	<0.1350	<0.0932	<0.1350	<0.031	46.2
	5-6 ft	6/14/2006	<0.008	0.018	<0.023	1.19	<0.0078	<0.0156	<0.0156	<0.0078	<0.0156	<0.063	0.068	0.019	<0.0234	<0.023	<0.0156	<0.0156	<0.0391	<0.008	0.038	<0.0156	0.169	0.055	0.224	<0.008	<0.149	0.037	0.022	<0.02	<0.016	<0.023	0.135	2.58	<0.0703	1.33	<0.023	5.66
	10-11 ft	6/14/2006	<0.008	0.07	<0.024	6.28	0.0949	<0.0158	0.0435	0.0443	0.1	<0.063	**0.686**	0.16	<0.0237	<0.024	<0.0158	<0.0158	<0.0395	0.076	0.059	<0.0158	0.235	0.081	0.316	<0.008	<0.150	<0.024	0.016	<0.02	<0.016	<0.024	0.652	38	1.79	35	<0.024	83.4
MW-103	**1-2 ft**	6/19/2006	<0.011	0.001	0.001	<0.056	0.0009	<0.0225	<0.0225	<0.0113	<0.0225	<0.090	0.002	<0.023	<0.0338	<0.034	0.0003	0.0003	<0.0563	<0.011	<0.000	<0.0225	0.001	<0.011	0.001	<0.011	<0.034	<0.034	<0.023	<0.02	<0.023	<0.034	0.035	<0.1460	<0.1010	<0.1460	0.001	0.043
	6-7 ft	6/19/2006	<0.010	0.001	<0.030	<0.050	0.003	<0.0198	<0.0198	<0.0099	<0.0198	<0.079	0.003	<0.020	<0.0297	<0.030	0.0003	<0.0198	<0.0495	<0.010	<0.000	<0.0198	0.001	<0.010	0.001	<0.010	<0.030	<0.030	<0.020	<0.02	<0.020	<0.030	0.024	<0.1290	<0.0891	<0.1290	0.001	0.033
	11-12 ft	6/19/2006	<0.011	0.003	<0.033	<0.056	0.0011	<0.0223	<0.0223	<0.0111	<0.0223	<0.089	0.002	<0.022	<0.0334	<0.033	0.0004	<0.0223	<0.0557	<0.011	<0.000	<0.0223	0.001	<0.011	0.001	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	0.023	<0.1450	<0.1000	<0.1450	0.045	0.076
SVE-4	**1-2 ft**	6/19/2006	<0.013	**0.347**	<0.039	<0.065	0.0441	<0.0259	<0.0259	<0.0130	<0.0259	<0.104	0.108	<0.026	<0.0389	<0.039	<0.0259	<0.0259	<0.0648	<0.013	<0.026	<0.0259	0.043	<0.013	0.043	<0.013	<0.039	<0.039	<0.026	<0.03	<0.026	<0.039	0.132	<0.1680	<0.1170	<0.1680	<0.039	0.674
	6-7 ft	6/19/2006	<0.011	0.064	<0.033	6.53	0.402	<0.0219	0.0804	0.0407	0.0315	<0.088	**0.589**	0.045	<0.0329	<0.033	<0.0219	<0.0219	<0.0548	0.052	0.063	<0.0219	0.233	0.083	0.316	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	0.786	71.2	3.44	94.8	<0.033	178
	11-12 ft	6/19/2006	<0.010	0.15	<0.029	4.46	0.976	<0.0195	0.14	<0.0098	0.0205	<0.078	**0.79**	0.04	<0.0293	<0.029	<0.0195	<0.0195	<0.0489	0.045	0.042	<0.0195	0.094	0.027	0.121	<0.010	<0.029	<0.029	<0.020	<0.02	<0.020	<0.029	0.666	58.4	1.89	63.1	<0.029	131

Notes:

Units: mg/kg

NS = Not Sampled

<# = Concentration less than detection limit

Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)

RAO exceedances in **bold**

[1] RAO based on the lowest of the two of m- or p-xylene

TABLE 5
Soil Analytical Results - June 2006 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Semi-Volatile Organic Compounds by USEPA Method 8270C																			Metals
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Benzoic Acid	Benzyl Alcohol	Bis(2-Ethylhexyl) Phthalate	Butyl Benzyl Phthalate	Di-N-Butyl Phthalate	1,2-Dichlorobenzene	Dimethyl Phthalate	Isophorone	4-Isopropyltoluene	1-Methylnaphthalene	2-Methylnaphthalene	2-Methylphenol	4-Methylphenol	Naphthalene	3-Nitroaniline	N-Nitrosodimethylamine	Di-N-Octyl Phthalate	Phenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	Lead (Total)
		RAOs:	25,000	630	39	290	630	180	--	570	--	18	24	320	630	2.0	--	0.002	63	1,900	630	6	400
ASI-1	**1-2 ft**	**6/15/2006**	<0.035	<0.131	2.23	0.241	<0.164	<0.1230	<0.127	0.504	<0.0492	0.246	0.368	<0.1340	<0.1410	1.47	2.08	<0.157	<0.186	<0.141	<0.1640	<0.1410	NS
	6-7 ft	**6/15/2006**	<0.035	<0.131	<0.228	<0.142	<0.164	<0.1230	<0.127	<0.071	0.347	<0.153	<0.1460	<0.1350	<0.1420	0.771	<0.1350	<0.157	<0.187	<0.142	<0.1640	<0.1420	NS
	11-12 ft	**6/15/2006**	<0.034	<0.126	<0.218	<0.136	<0.157	<0.1180	<0.122	<0.068	<0.0543	<0.147	<0.1400	<0.1290	<0.1360	<0.147	<0.1290	<0.151	<0.179	<0.136	<0.1570	<0.1360	NS
ASM-3	**1-1.5 ft**	**6/15/2006**	<0.036	<0.135	<0.234	<0.146	<0.169	<0.1270	<0.130	0.226	0.417	<0.157	<0.1500	<0.1390	<0.1460	1.26	<0.1390	<0.162	<0.192	<0.146	<0.1690	<0.1460	NS
	6-7 ft	**6/15/2006**	<0.034	<0.128	<0.223	<0.138	<0.161	<0.1210	<0.124	<0.070	<0.0431	<0.150	<0.1430	<0.1320	<0.1380	0.409	<0.1320	<0.154	<0.183	0.192	<0.1610	<0.1380	NS
	11-12 ft	**6/15/2006**	<0.034	<0.126	<0.218	<0.136	<0.157	<0.1180	<0.122	<0.068	1.15	<0.147	<0.1400	<0.1290	<0.1360	**3.53**	<0.1290	<0.151	<0.179	<0.136	<0.1570	<0.1360	NS
B-100	**1-1.5 ft**	**6/14/2006**	<0.035	<0.132	4.18	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.0004	<0.154	<0.1470	<0.1350	<0.1420	<0.154	<0.1350	<0.158	<0.188	<0.142	0.436	<0.1420	NS
	5-6 ft	**6/14/2006**	1.32	<0.126	<0.219	<0.136	<0.158	<0.1190	<0.122	0.456	<0.0452	<0.147	<0.1410	<0.1300	<0.1360	<0.147	<0.1300	<0.152	<0.180	0.679	0.601	<0.1360	NS
	10-11 ft	**6/14/2006**	1.05	<0.128	0.23	<0.138	<0.160	<0.1200	<0.123	0.522	<0.0388	<0.149	<0.1420	<0.1310	<0.1380	<0.149	<0.1310	<0.153	<0.182	0.636	0.552	<0.1380	NS
B-101	**1-2 ft**	**6/19/2006**	<0.038	<0.143	<0.247	<0.154	<0.178	<0.1340	<0.138	<0.077	<0.0615	<0.166	<0.1590	<0.1460	<0.1540	<0.166	<0.1460	<0.171	<0.203	<0.154	<0.1780	<0.1540	NS
	6-7 ft	**6/19/2006**	<0.036	<0.136	<0.236	<0.147	<0.171	<0.1280	<0.132	<0.074	<0.0477	<0.159	<0.1520	<0.1400	<0.1470	<0.159	<0.1400	<0.164	<0.194	<0.147	<0.1710	<0.1470	NS
	11-12 ft	**6/19/2006**	1.58	<0.130	<0.225	<0.140	<0.162	<0.1220	<0.125	<0.070	<0.0469	<0.151	<0.1440	<0.1330	<0.1400	<0.151	<0.1330	<0.155	<0.184	<0.140	<0.1620	<0.1400	NS
B-102	**1-2 ft**	**6/14/2006**	<0.036	<0.133	0.237	<0.144	<0.167	<0.1250	<0.129	<0.072	<0.0488	<0.155	<0.1480	<0.1370	<0.1440	<0.155	<0.1370	<0.160	<0.190	<0.144	<0.1670	<0.1440	NS
	5-6 ft	**6/14/2006**	0.836	<0.132	<0.229	<0.142	<0.165	<0.1240	0.29	1.01	<0.0569	<0.154	<0.1470	<0.1350	<0.1420	<0.154	<0.1350	<0.158	<0.188	0.578	<0.1650	<0.1420	NS
	11-12 ft	**6/14/2006**	0.322	<0.132	<0.228	<0.142	<0.164	<0.1240	<0.127	0.48	<0.0408	<0.153	<0.1460	<0.1350	<0.1420	<0.153	<0.1350	<0.158	<0.187	0.268	<0.1640	<0.1420	NS
B-103	**1-2 ft**	**6/20/2006**	<0.036	<0.135	<0.234	<0.145	<0.169	<0.1270	<0.130	<0.073	<0.0652	<0.157	<0.1500	<0.1380	<0.1450	<0.157	<0.1380	<0.162	<0.192	<0.145	<0.1690	<0.1450	NS
	6-7 ft	**6/20/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.0568	<0.153	<0.1470	<0.1350	<0.1420	<0.153	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
	11-12 ft	**6/20/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.2210	<0.153	<0.1470	<0.1350	<0.1420	<0.153	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
B-104	**1-2 ft**	**6/15/2006**	<0.036	<0.134	<0.232	<0.145	<0.168	<0.1260	<0.129	<0.073	<0.0578	<0.156	<0.1490	<0.1380	<0.1450	<0.156	<0.1380	<0.161	<0.191	<0.145	<0.1680	<0.1450	NS
	6-7 ft	**6/15/2006**	0.318	<0.130	<0.225	<0.140	<0.162	<0.1220	<0.125	0.297	<0.0475	<0.151	<0.1440	<0.1330	<0.1400	<0.151	<0.1330	<0.155	<0.184	0.21	<0.1620	<0.1400	NS
	11-12 ft	**6/15/2006**	0.229	<0.131	<0.227	<0.141	<0.164	<0.1230	<0.127	0.429	<0.0489	<0.153	<0.1460	<0.1340	<0.1410	<0.153	<0.1340	<0.157	<0.186	<0.141	<0.1640	<0.1410	NS
B-105	**1-2 ft**	**6/16/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.0568	<0.153	<0.1470	<0.1350	<0.1420	<0.153	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
	6-7 ft	**6/16/2006**	0.945	<0.126	4.72	0.364	0.434	<0.2170	0.268	0.209	<0.5430	<0.147	<0.1400	<0.1290	<0.1360	**4.5**	<0.1290	<0.151	<0.179	<0.136	<0.1580	0.186	NS
	11-12 ft	**6/16/2006**	0.462	<0.127	0.295	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.2340	<0.148	<0.1420	<0.1310	<0.1370	**2.16**	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
B-106	**1-2 ft**	**6/20/2006**	<0.034	<0.127	<0.221	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.0549	<0.148	<0.1420	<0.1310	<0.1370	<0.148	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
	6-7 ft	**6/20/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.2580	<0.153	<0.1470	<0.1350	<0.1420	<0.155	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
	11-12 ft	**6/20/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1430	<0.127	<0.072	<0.3580	<0.153	<0.1470	<0.1350	<0.1420	<0.215	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
B-107	**1-2 ft**	**6/20/2006**	3.79	<0.143	11.5	0.576	0.603	<0.1350	<0.138	0.509	<0.3090	<0.167	<0.1590	<0.1470	<0.1540	0.26	<0.1470	<0.172	0.423	0.758	<0.1790	<0.1540	28.3
	6-7 ft	**6/20/2006**	0.782	<0.126	<0.218	<0.136	<0.158	<0.1180	<0.122	0.338	<0.2720	<0.147	<0.1400	<0.1290	<0.1360	<0.163	<0.1290	<0.151	<0.179	0.659	<0.1580	<0.1360	NS
	11-12 ft	**6/20/2006**	0.424	<0.127	<0.221	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.2480	<0.148	<0.1420	<0.1310	<0.1370	<0.149	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
B-108	**1-2 ft**	**6/21/2006**	<0.036	<0.133	0.54	<0.144	<0.167	<0.1250	<0.129	0.213	<0.0575	<0.155	<0.1480	<0.1370	<0.1440	<0.155	<0.1370	<0.160	<0.190	<0.144	<0.1670	<0.1440	NS
	6-7 ft	**6/21/2006**	0.767	0.224	<0.218	<0.136	<0.158	<2.1700	<0.122	<0.068	<5.4300	<0.147	<0.1400	0.293	0.226	<3.260	<0.1290	<0.151	<0.179	0.383	<0.1580	<0.1360	NS
	11-12 ft	**6/21/2006**	<0.034	<0.126	0.535	<0.136	<0.158	<2.1700	<0.122	<0.068	<5.4300	<0.147	<0.1400	<0.1290	<0.1360	<3.260	<0.1290	<0.151	<0.179	<0.136	<0.1580	<0.1360	NS
B-109	**1-2 ft**	**6/20/2006**	<0.034	<0.127	2.76	0.281	<0.159	<1.5100	<0.123	<0.069	<3.7700	<0.148	0.208	<0.1310	<0.1370	<2.260	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
	6-7 ft	**6/20/2006**	<0.034	<0.129	<0.223	<0.139	<0.161	<0.2220	<0.124	<0.070	<0.5560	<0.150	<0.1430	<0.1320	<0.1390	<0.333	<0.1320	<0.154	<0.183	<0.139	<0.1610	<0.1390	NS
	11-12 ft	**6/20/2006**	<0.034	<0.129	<0.223	<0.139	<0.161	<0.1210	<0.124	<0.070	<0.2460	<0.150	<0.1430	<0.1320	<0.1390	<0.150	<0.1320	<0.154	<0.183	<0.139	<0.1610	<0.1390	NS
B-110	**1-2 ft**	**6/21/2006**	<0.039	<0.146	<0.253	<0.157	<0.183	<0.1370	<0.141	<0.079	<0.0630	<0.170	<0.1620	<0.1500	<0.1570	<0.170	<0.1500	<0.175	<0.208	<0.157	<0.1830	<0.1570	NS
	6-7 ft	**6/21/2006**	<0.035	<0.130	<0.225	<0.140	<0.163	<0.1220	<0.126	<0.071	<0.2800	<0.151	<0.1450	<0.1330	<0.1400	<0.168	<0.1330	<0.156	<0.185	<0.140	<0.1630	<0.1400	NS
	11-12 ft	**6/21/2006**	<0.034	<0.127	<0.220	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.0548	<0.148	<0.1410	<0.1300	<0.1370	<0.148	<0.1300	<0.152	<0.181	<0.137	<0.1590	<0.1370	NS
B-110a	**1-2 ft**	**6/21/2006**	<0.036	<0.133	3.59	<0.144	<0.167	<0.1250	<0.129	<0.072	<0.0575	<0.155	<0.1480	<0.1370	<0.1440	<0.155	<0.1370	<0.160	<0.190	<0.144	<0.1670	<0.1440	NS
B-111	**1-2 ft**	**6/20/2006**	7.81	0.414	5.52	0.477	<0.169	<0.1890	<0.130	<0.073	<0.4730	<0.157	<0.1500	<0.1380	<0.1450	<0.284	<0.1380	<0.162	<0.192	0.334	<0.1690	<0.1450	NS
	6-7 ft	**6/20/2006**	0.811	0.212	0.702	<0.136	<0.158	<0.1180	<0.122	<0.068	<0.2720	<0.147	<0.1400	<0.1290	<0.1360	<0.163	<0.1290	<0.151	<0.179	0.354	<0.1580	<0.1360	NS
	11-12 ft	**6/20/2006**	<0.034	<0.127	<0.221	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.2400	<0.148	<0.1420	<0.1310	<0.1370	<0.148	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
B-112	**1-2 ft**	**6/21/2006**	<0.035	<0.130	<0.226	<0.140	<0.163	<0.1220	<0.126	<0.071	<0.0562	<0.152	<0.1450	<0.1340	<0.1400	<0.152	<0.1340	<0.156	<0.185	<0.140	<0.1630	<0.1400	NS
	6-7 ft	**6/21/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.2840	<0.153	<0.1470	<0.1350	<0.1420	<0.170	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
	11-12 ft	**6/21/2006**	<0.034	<0.127	<0.221	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.0549	<0.148	<0.1420	<0.1310	<0.1370	<0.148	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
B-113	**1-2 ft**	**6/21/2006**	<0.036	<0.135	14.5	<0.145	<0.169	<0.1270	<0.130	<0.073	<0.2910	<0.157	<0.1500	<0.1380	<0.1450	0.455	<0.1380	<0.162	0.334	<0.145	<0.1690	<0.1450	23.5
	6-7 ft	**6/21/2006**	2.13	<0.130	10.3	0.598	0.222	<0.1220	<0.126	<0.071	<0.2810	<0.152	<0.1450	<0.1340	<0.1400	0.205	<0.1340	<0.156	0.444	0.651	<0.1630	<0.1400	23.6
	11-12 ft	**6/21/2006**	2.54	<0.125	0.3	<0.134	<0.156	<0.1170	<0.120	<0.068	<0.0538	<0.145	<0.1390	<0.1280	0.184	<0.145	<0.1280	<0.149	<0.177	0.628	<0.1560	<0.1340	4.2

TABLE 5
Soil Analytical Results - June 2006 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Semi-Volatile Organic Compounds by USEPA Method 8270C																				Metals
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Benzoic Acid	Benzyl Alcohol	Bis(2-Ethylhexyl) Phthalate	Butyl Benzyl Phthalate	Di-N-Butyl Phthalate	1,2-Dichlorobenzene	Dimethyl Phthalate	Isophorone	4-Isopropyltoluene	1-Methylnaphthalene	2-Methylnaphthalene	2-Methylphenol	4-Methylphenol	Naphthalene	3-Nitroaniline	N-Nitrosodimethylamine	Di-N-Octyl Phthalate	Phenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	Lead (Total)
		RAOs:	25,000	630	39	290	630	180	--	570	--	18	24	320	630	2.0	--	0.002	63	1,900	630	6	400
B-114	**1-2 ft**	**6/21/2006**	<0.036	<0.133	<0.231	<0.144	<0.167	<0.1250	<0.129	<0.072	<0.0575	<0.155	<0.1480	<0.1370	<0.1440	<0.155	<0.1370	<0.160	<0.190	<0.144	<0.1670	<0.1440	NS
	6-7 ft	**6/21/2006**	<0.034	<0.127	<0.221	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.0549	<0.148	<0.1420	<0.1310	<0.1370	<0.148	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
	11-12 ft	**6/21/2006**	<0.034	<0.129	<0.223	<0.139	<0.161	<0.1210	<0.124	<0.070	<0.0556	<0.150	<0.1430	<0.1320	<0.1390	<0.150	<0.1320	<0.154	<0.183	<0.139	<0.1610	<0.1390	NS
HA-1	**1-2 ft**	**6/21/2006**	0.872	<0.143	<0.248	<0.154	<0.179	<0.1350	<0.138	<0.078	<0.3090	<0.167	<0.1590	<0.1470	<0.1540	<0.185	<0.1470	<0.172	<0.204	0.22	<0.1790	<0.1540	NS
HA-2	**1-2 ft**	**6/21/2006**	0.636	<0.140	<0.243	<0.151	<0.175	<0.1320	<0.135	<0.076	<0.3020	<0.163	<0.1560	<0.1440	<0.1510	<0.181	<0.1440	<0.168	<0.200	0.232	<0.1750	<0.1510	NS
HA-3	**1-2 ft**	**6/21/2006**	0.654	<0.145	<0.251	<0.156	<0.181	<0.1360	<0.140	<0.079	<0.3120	<0.169	<0.1610	<0.1490	<0.1560	<0.188	<0.1490	<0.174	<0.206	<0.156	<0.1810	<0.1560	NS
HA-4	**1-2 ft**	**6/21/2006**	<0.036	<0.135	<0.234	<0.145	<0.169	<0.1270	<0.130	<0.073	<0.0581	<0.157	<0.1500	<0.1380	<0.1450	<0.157	<0.1380	<0.162	<0.192	0.332	<0.1690	<0.1450	NS
MPX-1	**1-2 ft**	**6/14/2006**	<0.037	<0.138	<0.240	<0.149	<0.173	<0.1300	<0.134	<0.075	<0.0597	<0.161	<0.1540	<0.1420	<0.1490	<0.161	<0.1420	<0.166	<0.197	<0.149	<0.1730	<0.1490	10.3
	5-6 ft	**6/14/2006**	0.697	<0.130	0.552	<0.140	<0.163	<0.1220	<0.126	<0.071	<0.0487	<0.152	<0.1450	<0.1340	<0.1400	<0.152	<0.1340	<0.156	<0.185	<0.140	<0.1630	<0.1400	14.9
	10-11 ft	**6/14/2006**	<0.035	<0.129	<0.224	<0.139	<0.161	<0.1210	<0.125	<0.070	0.126	<0.150	<0.1440	<0.1330	<0.1390	0.509	<0.1330	<0.155	<0.184	<0.139	<0.1610	<0.1390	NS
MW-100	**2-3 ft**	**6/20/2006**	<0.036	<0.135	<0.234	<0.145	<0.169	<0.1270	<0.130	<0.073	<0.0447	<0.157	<0.1500	<0.1380	<0.1450	<0.157	<0.1380	<0.162	<0.192	<0.145	<0.1690	<0.1450	NS
	6-7 ft	**6/20/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.0568	<0.153	<0.1470	<0.1350	<0.1420	<0.153	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
	11-12 ft	**6/20/2006**	<0.034	<0.127	<0.221	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.0465	<0.148	<0.1420	<0.1310	<0.1370	<0.148	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
MW-101	**1-2 ft**	**6/20/2006**	<0.038	<0.141	<0.245	<0.152	<0.177	<0.1330	<0.137	<0.077	<0.0006	<0.165	<0.1570	<0.1450	<0.1520	<0.165	<0.1450	<0.170	<0.201	<0.152	<0.1770	<0.1520	NS
	6-7 ft	**6/20/2006**	<0.036	<0.136	<0.236	<0.147	<0.171	<0.1280	<0.132	<0.074	<0.0006	<0.159	<0.1520	<0.1400	<0.1470	<0.159	<0.1400	<0.164	<0.194	<0.147	<0.1710	<0.1470	NS
	11-12 ft	**6/20/2006**	<0.034	<0.129	<0.223	<0.139	<0.161	<0.1210	<0.124	<0.070	<0.0005	<0.150	<0.1430	<0.1320	<0.1390	<0.150	<0.1320	<0.154	<0.183	<0.139	<0.1610	<0.1390	NS
MW-102	**1-2 ft**	**6/14/2006**	<0.037	<0.138	1.33	<0.149	<0.172	0.0404	<0.133	1.29	0.261	<0.161	0.211	<0.1410	<0.1490	**2.51**	<0.1410	<0.165	<0.196	<0.149	<0.1720	<0.1490	NS
	5-6 ft	**6/14/2006**	0.379	<0.128	0.369	<0.138	<0.160	<0.1200	<0.123	0.388	<0.0391	<0.149	<0.1420	<0.1310	<0.1380	0.351	<0.1310	<0.153	<0.182	<0.138	<0.1600	<0.1380	NS
	10-11 ft	**6/14/2006**	0.353	<0.129	0.249	<0.139	<0.161	<0.1210	<0.124	0.229	<0.0395	<0.150	<0.1430	<0.1320	<0.1390	0.334	<0.1320	**0.418**	<0.183	<0.139	<0.1610	<0.1390	NS
MW-103	**1-2 ft**	**6/19/2006**	<0.035	<0.131	<0.226	<0.141	<0.163	<0.1230	<0.126	<0.071	<0.0006	<0.152	<0.1450	<0.1340	<0.1410	<0.152	<0.1340	<0.157	<0.186	<0.141	<0.1630	<0.1410	NS
	6-7 ft	**6/19/2006**	<0.035	<0.130	<0.226	<0.141	<0.163	<0.1230	<0.126	<0.071	<0.0005	<0.152	<0.1450	<0.1340	<0.1410	<0.152	<0.1340	<0.156	<0.186	<0.141	<0.1630	<0.1410	NS
	11-12 ft	**6/19/2006**	<0.039	<0.146	<0.253	<0.157	<0.182	<0.1370	<0.141	<0.079	<0.0005	<0.170	<0.1620	<0.1500	<0.1570	<0.170	<0.1500	<0.175	<0.208	<0.157	<0.1820	<0.1570	NS
SVE-4	**1-2 ft**	**6/19/2006**	<0.035	<0.131	0.237	<0.141	<0.164	<0.1230	<0.127	0.208	<0.0648	<0.153	<0.1460	<0.1340	<0.1410	<0.153	<0.1340	<0.157	<0.186	<0.141	1.44	<0.1410	NS
	6-7 ft	**6/19/2006**	3.09	0.314	<0.220	<0.137	<0.159	<0.1200	<0.123	0.731	<0.0548	<0.148	<0.1410	<0.1300	<0.1370	<0.148	<0.1300	<0.152	<0.181	0.803	2.09	<0.1370	NS
	11-12 ft	**6/19/2006**	0.334	0.219	<0.220	<0.137	<0.159	<0.1200	<0.123	1.11	<0.0489	<0.148	<0.1410	<0.1300	<0.1370	<0.148	<0.1300	<0.152	<0.181	0.804	2.36	<0.1370	NS

Notes:
Units: mg/kg
NS = Not Sampled
<# = Concentration less than detection limit
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in bold

1 RAO based on the lowest of the two of m- or p-xylene

TABLE 6
Soil Analytical Results - January Through March 2014 Field Investigations (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Volatile Organic Compounds by USEPA Method 8260B																						
			Chlorinated VOCs										Aromatic/Hydrocarbon VOCs									Ketones/Other				
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Chloroform	2-Chlorotoluene	Cis-1,2-Dichloroethene	1,2-Dichloroethane	1,1-Dichloroethane	Methylene Chloride	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane	Tetrachloroethene	Trichloroethene	Benzene	Ethylbenzene	Isopropylbenzene	Methyl Tert-Butyl Ether	Styrene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Toluene	Total Xylenes	Acetone	2-Butanone	Carbon Disulfide	4-Methyl-2-Pentanone	Total VOCs
RAOs (mg/kg)			0.32	160	16	0.46	3.6	35	5.8	810	8.1	0.41	1.2	5.8	190	47	600	30	27	490	58	6,100	2,700	77	3,300	
SS-1	**2-2.5 ft**	1/28/2014	ND	ND	ND	ND	ND	ND	ND	ND	**100**	**0.60**	ND	ND	0.45	ND	ND	ND	ND	ND	0.6	ND	ND	ND	ND	102
SS-1 (DUP)	**2-2.5 ft**	1/28/2014	ND	ND	ND	ND	ND	0.21 J	ND	ND	**100**	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.67 J	ND	ND	ND	ND	101
SS-2	**2-2.5 ft**	1/28/2014	0.085	ND	0.0074	ND	ND	0.0016 J	ND	ND	0.062	0.0008 J	ND	0.00556	ND	ND	0.0037	0.0042	0.0031	0.015	0.053	0.036	0.0035 J	ND	0.0013 J	0.28
SS-3	**0.5-1 ft**	1/28/2014	**23**	ND	ND	ND	ND	0.18 J	ND	ND	0.64	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	23.8
SS-4	**0.5-1 ft**	1/28/2014	**1.7**	ND	ND	ND	ND	0.012	0.0015 J	0.0011 J	ND	0.086	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80
SS-5	**0.5-1 ft**	1/28/2014	**9.4**	ND	ND	ND	ND	0.011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.02	0.0045 J	0.024	ND	ND	0.0020 J	9.46
SS-6	**0.5-1 ft**	1/28/2014	**0.42**	ND	ND	0.0058	ND	0.0009 J	ND	ND	0.11	ND	ND	0.0007 J	ND	ND	0.0036	ND	ND	0.0021	0.0064	0.11	0.0044	ND	0.0007 J	0.66
SS-7	**0.5-1 ft**	1/28/2014	0.0053	ND	0.0033	ND	ND	ND	ND	ND	0.58	0.00098	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
SS-8	**0.5-1 ft**	1/30/2014	**9.9**	ND	ND	ND	ND	0.13 J	ND	ND	ND	ND	ND	0.068 J	ND	ND	ND	ND	ND	0.49	0.56	0.86	ND	0.14 J	ND	12.1
SS-9	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	0.0660 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0970 J	0.63	ND	ND	0.18 J	ND	0.97
SS-10	**0.5-1 ft**	2/11/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-11	**0.5-1 ft**	2/11/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-12	**0.5-1 ft**	2/11/2014	**2.6**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.60
SS-13	**0.5-1 ft**	2/11/2014	**0.57**	ND	0.026	ND	0.0026 J	0.01	ND	ND	0.0029 J	0.0020 J	0.0059	ND	ND	ND	ND	ND	ND	0.0015 J	0.0038	ND	ND	ND	ND	0.62
SS-14	**0.5-1 ft**	3/5/2014	0.0055	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0016 J	ND	ND	ND	ND	ND	0.0027	ND	0.011	ND	0.0014 J	ND	0.022
SS-15	**0.5-1 ft**	3/5/2014	ND	0.0023	ND	ND	ND	0.0008 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0009 J	ND	ND	0.03	ND	ND	ND	0.034
SS-16	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	0.16	ND	ND	**12**	0.88	ND	1.7	6.7	3.1	31	**85**	ND	ND	ND	ND	141
SS-16 (DUP)	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**17**	0.94	ND	2.6	5.9	2.7	56	**110**	ND	ND	ND	0.99	196
SS-17	**0.5-1 ft**	3/5/2014	**2.6**	ND	ND	ND	ND	0.16 J	ND	ND	ND	ND	ND	0.25 J	ND	ND	ND	0.31 J	0.17 J	ND	0.531	1.8	ND	ND	ND	5.82
SS-18	**0.5-1 ft**	3/5/2014	**0.34**	0.011 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2	ND	ND	ND	0.32	0.3	0.18	0.71	5.6	ND	ND	ND	7.66
SS-19	**0.5-1 ft**	3/5/2014	0.053	ND	0.0036	ND	ND	ND	ND	ND	0.029	0.004	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.09
SS-20	**0.5-1 ft**	3/5/2014	**32**	ND	ND	ND	ND	0.29 J	ND	ND	ND	ND	ND	0.67	ND	ND	ND	0.19 J	ND	1.3	2	1.3	ND	ND	ND	37.8
SS-21	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ditch Samples																										
D-1	**0.5-1 ft**	1/30/2014	0.0013 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.052	ND	ND	ND	0.053
D-2	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
D-3	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	0.0011 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.001
D-3 (DUP)	**0.5-1 ft**	1/30/2014	0.0023 J	ND	ND	ND	ND	0.0008 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.003
D-4	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	ND	ND	ND	0.019	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0078 J	ND	0.003 J	ND	0.030
SS-22	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-23	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Units: mg/kg
NS = Not Sampled
ND = Concentration less than detection limit
J = Laboratory qualifier indicating the result is estimated between the method deteciton limit and reporting limits.
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in **bold**

TABLE 6
Soil Analytical Results - January Through March 2014 Field Investigations (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Semi-Volatile Organic Compounds by USEPA Method 8270C																												
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Acenaphthene	Anthracene	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[g,h,i]perylene	Benzo[k]fluoranthene	Benzoic Acid	Benzyl Alcohol	Benzylbutyl Phthalate	Bis(2-Ethylhexyl) Phthalate	Carbazole	Chrysene	Dibenz[a,h]anthracene	2,4-Dichlorophenol	Diethyl Phthalate	Dimethyl Phthalate	Di-N-Butyl Phthalate	Di-N-Octyl Phthalate	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	Isophorone	1-Methylnaphthalene	2-Methylnaphthalene	2-Methyl pyridine	Naphthalene	Phenanthrene	Phenol	Pyrene	1,2,4-Trichlorobenzene
RAOs (mg/kg)			360	1,800	1.1	0.11	1.1	--	11	25,000	630	290	39	--	110	0.11	19	5,100	--	630	63	240	240	1.1	570	18	24	--	2	--	1,900	180	6
SS-1	**2-2.5 ft**	1/28/2014	ND	ND	0.02 J	ND	0.031 J	ND	ND	ND	0.33	ND	0.32	ND	0.025 J	ND	0.032	ND	ND	ND	ND	0.049 J	ND	ND	ND	0.38	0.54	ND	0.11 J	0.058 J	ND	0.035 J	ND
SS-1 (DUP)	**2-2.5 ft**	1/28/2014	0.020 J	0.018 J	0.033 J	0.022 J	0.044 J	ND	ND	ND	0.27	ND	0.35	ND	0.04 J	ND	0.034 J	ND	ND	ND	0.091 J	0.084 J	0.051 J	0.023 J	ND	0.51	0.74	ND	0.12 J	0.10 J	ND	0.054 J	ND
SS-2	**2-2.5 ft**	1/28/2014	ND	ND	ND	ND	ND	ND	ND	0.330 J	0.36	ND	0.073 J	ND	ND	ND	ND	ND	ND	ND	0.10 J	ND	ND	ND	ND	ND	ND	ND	ND	0.015 J	0.04 J	ND	0.002 J
SS-3	**0.5-1 ft**	1/28/2014	ND	0.018 J	0.051 J	0.025 J	0.047 J	ND	ND	ND	3.7	ND	0.071 J	ND	0.052 J	ND	ND	ND	ND	ND	0.14 J	0.18 J	0.032 J	ND	ND	0.48	0.73	ND	0.16 J	0.054 J	ND	0.2	0.026 J
SS-4	**0.5-1 ft**	1/28/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.46	ND	ND	ND	ND	ND	ND	ND	0.13 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-5	**0.5-1 ft**	1/28/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.049 J	0.120 J	ND	ND	ND	ND	ND	ND	ND	ND	0.039 J	ND	ND	ND	ND	ND	ND	ND	0.019 J	ND	0.029 J	ND
SS-6	**0.5-1 ft**	1/28/2014	ND	ND	ND	ND	ND	ND	ND	ND	3.2	0.055 J	0.24	ND	ND	ND	ND	ND	ND	ND	ND	0.021 J	0.025 J	ND	ND	0.45	0.63	ND	0.14 J	0.026 J	ND	0.019 J	ND
SS-7	**0.5-1 ft**	1/28/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.090 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-8	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	ND	ND	0.230 J	0.35	ND	0.061 J	ND	ND	ND	ND	ND	ND	ND	0.2	ND	ND	ND	ND	0.078	0.11 J	ND	0.025 J	0.018 J	ND	ND	ND
SS-9	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	ND	ND	0.230 J	0.4	ND	ND	ND	ND	ND	ND	0.22	ND	ND	0.11 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-10	**0.5-1 ft**	2/11/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.038 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-11	**0.5-1 ft**	2/11/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-12	**0.5-1 ft**	2/11/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.024 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-13	**0.5-1 ft**	2/11/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.550 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-14	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.91	7.6	ND	ND	ND	ND	ND	ND	0.24	0.074 J	ND	ND	ND	ND	ND	ND	ND	0.023 J	ND	ND	ND	ND
SS-15	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11 J	2.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.032 J	ND	ND	ND	ND	ND
SS-16	**0.5-1 ft**	3/5/2014	ND	0.0370 J	0.0340 J	ND	ND	ND	ND	ND	ND	11.00 J	**170**	0.02 J	ND	ND	ND	ND	ND	1.2	0.41	0.16 J	ND	ND	ND	0.26	0.43	ND	**3**	0.32	0.63	0.13 J	ND
SS-16 (DUP)	**0.5-1 ft**	3/5/2014	ND	0.0290 J	0.0230 J	ND	ND	ND	ND	ND	ND	11	**130**	ND	0.0028 J	ND	ND	ND	ND	1.5	0.39	0.13 J	ND	ND	ND	0.35	0.54	ND	**3.1**	0.31	0.67	0.12 J	ND
SS-17	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0720 J	2.9	ND	ND	ND	ND	ND	ND	0.076 J	0.15 J	ND	ND	ND	0.032 J	ND	ND	ND	ND	ND	ND	ND	ND
SS-18	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	0.0650 J	0.36	3.8	ND	ND	ND	ND	ND	ND	0.17 J	0.029 J	ND	ND	ND	0.048 J	0.019 J	0.023 J	0.05 J	0.021 J	ND	ND	ND	ND
SS-19	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0220 J	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-20	**0.5-1 ft**	3/5/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SS-21	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ditch Samples																																	
D-1	**0.5-1 ft**	1/30/2014	ND	0.13 J	0.48	**0.25**	0.34	0.14 J	0.22	ND	ND	ND	0.72 J	0.0320 J	0.53	0.05 J	ND	ND	ND	ND	ND	0.96	ND	0.18 J	ND	ND	ND	ND	ND	0.47	ND	0.92	ND
D-2	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	0.0220 J	ND	ND	0.38 J	ND	0.48	2.7	ND	0.02 J	ND	ND	0.0480 J	0.1300 J	0.0870 J	ND	0.0220 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.017 J	ND
D-3	**0.5-1 ft**	1/30/2014	ND	ND	0.0730 J	0.07	0.12 J	0.0480 J	0.0460 J	0.26 J	ND	0.12 J	5.7	ND	0.0880 J	ND	ND	ND	ND	0.0710 J	0.03 J	0.0940 J	ND	0.0550 J	ND	ND	ND	ND	ND	0.019 J	ND	0.082 J	ND
D-3 (DUP)	**0.5-1 ft**	1/30/2014	ND	ND	0.2000 J	**0.13**	0.20 J	0.0770 J	0.0110 J	0.27 J	ND	0.22	3.9	ND	0.22	0.0250 J	ND	ND	0.0460 J	0.0530 J	ND	0.31	ND	0.0920 J	ND	ND	ND	ND	ND	0.04 J	ND	0.26	ND
D-4	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-22	**0.5-1 ft**	3/5/2014	ND	ND	0.0300 J	0.0290 J	0.0540 J	0.0240 J	0.0230 J	0.29 J	ND	ND	0.0780 J	ND		ND	ND	ND	0.0870 J	ND	ND	0.0500 J	ND	0.0240 J	ND	ND	ND	ND	ND	ND	ND	0.055 J	ND
SS-23	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Units: mg/kg
NS = Not Sampled
ND = Concentration less than detection limit
J = Laboratory qualifier indicating the result is estimated between the method deteciton limit and reporting limits.
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in **bold**

TABLE 7
Soil Analytical Results - September 2015 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Volatile Organic Compounds (VOCs) by USEPA Method 8260B																									
			Chlorinated VOCs													Aromatic/Hydrocarbon VOCs								Ketones/Other					
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Chloroform	2-Chlorotoluene	4-Chlorotoluene	Cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,2-Dichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	Methylene Chloride	Tetrachloroethene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Benzene	Ethylbenzene	Isopropylbenzene	N-Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	Toluene	Acetone	2-Butanone	Carbon Disulfide	2-Hexanone	4-Methyl-2-Pentanone	Total VOCs
RAOs (mg/kg)			0.32	160	160	16	180	0.46	3.6	23	35	8.1	810	0.2	0.41	1.2	5.8	190	380	30	27	58	490	6,100	2,700	77	20	3,300	--
BSTF-1-1'	**0.5-1 ft**	9/9/2015	0.087	ND	ND	1.4	0.004	0.14	0.011	0.0079	0.16	**40**	0.071	0.0041	**31**	0.016	0.022	ND	0.0025 J	0.0046	ND	0.036	0.084	0.058	0.04	ND	ND	ND	73
BSTF-1-14'	**13-14 ft**	9/9/2015	0.016	ND	ND	0.015	ND	0.17	ND	ND	17.00 J	0.06	ND	ND	0.19	0.0025 J	0.0031 J	ND	ND	0.0015 J	ND	0.018	0.04	86	82	ND	0.068	11.00 J	197
BSTF-2-1.5'	**2-2.5 ft**	9/9/2015	**1.5**	ND	ND	ND	ND	**1.5**	ND	ND	13	**83**	2.2	ND	**130**	0.54 J	**48**	3.2	6.3	**39**	18	**320**	150	94	94	ND	ND	16	1020
BSTF-2-14'	**13-14 ft**	9/9/2015	ND	ND	ND	ND	ND	0.026	ND	ND	0.053	0.0073	ND	ND	0.011	ND	ND	ND	ND	ND	ND	0.0093 J	0.0062	ND	100 J	ND	0.07	ND	100
BSTF-3-1.5'	**0.5-1.5 ft**	9/9/2015	0.0059	0.022	0.022	0.28	ND	0.011	0.0056	ND	0.2	0.18	ND	ND	0.055	0.0023 J	0.023	ND	ND	0.012	ND	0.21	0.11	54	40	ND	0.028	5.6	101
BSTF-3-14'	**13-14 ft**	9/9/2015	ND	ND	ND	0.0045	ND	ND	ND	ND	0.022	0.0043 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0059 J	0.0029 J	49	31	0.0021 J	0.0099	ND	80
BSTF-4-1.5'	**0.5-1.5 ft**	9/9/2015	ND	ND	ND	0.39	ND	ND	ND	ND	ND	0.11 J	ND	ND	ND	ND	0.09 J	ND	ND	ND	ND	0.55	0.42	6.7	6.5	ND	ND	0.5	15
BSTF-4-14'	**13-14 ft**	9/9/2015	ND	ND	ND	0.25	ND	ND	ND	ND	0.14 J	0.72 J	ND	ND	0.0650 J	ND	ND	ND	ND	ND	ND	ND	0.0530 J	37	22	ND	ND	0.68	61
BSTF-5-1.5'	**0.5-1.5 ft**	9/9/2015	ND	ND	ND	0.87 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.7	0.9	ND	ND	ND	3.5
BSTF-5-12'	**11-12 ft**	9/9/2015	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.19	0.15	ND	ND	0.029	0.37

Notes:
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J = Laboratory qualifier indicating the result is estimated between the method deteciton limit and reporting limits.
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in **bold**

TABLE 7
Soil Analytical Results - September 2015 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Semi-Volatile Organic Compounds by USEPA Method 8270C																						
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Acenaphthene	Acetophenone	Benzo[a]anthracene	Benzyl Alcohol	Benzylbutyl Phthalate	Bis(2-Ethylhexyl) Phthalate	Chrysene	Diethyl Phthalate	2,4-Dimethylphenol	Dimethyl Phthalate	Di-N-Butyl Phthalate	Di-N-Octyl Phthalate	Fluoranthene	Fluorene	Isophorone	1-Methylnaphthalene	2-Methylnaphthalene	2-Methylphenol	3&4 Methylphenol [2]	Naphthalene	Phenanthrene	Phenol	Pyrene	2,4,5-Trichlorophenol
	RAOs (mg/kg)		360	780	1.1	630	290	39	110	5,100	130	--	630	63	240	240	570	18	24	320	320	2	--	1,900	180	630
BSTF-1-1'	**0.5-1 ft**	9/9/2015	ND	ND	0.0069 J	0.0960 J	0.0460 J	15	0.012	ND	ND	ND	ND	0.048 J	0.02	ND	ND	0.016	0.016	ND	ND	0.075	ND	ND	0.24	ND
BSTF-1-14'	**13-14 ft**	9/9/2015	0.0059 J	ND	ND	6.3	ND	0.031 J	ND	ND	ND	0.029 J	ND	ND	ND	0.018	0.44	0.65	0.99	0.044 J	0.074 J	0.25	ND	ND	ND	ND
BSTF-2-1.5'	**2-2.5 ft**	9/9/2015	ND	1.7	ND	2.4	ND	18	ND	ND	ND	ND	0.074 J	ND	ND	ND	0.85	0.19	0.34	ND	ND	1.8	ND	ND	ND	ND
BSTF-2-14'	**13-14 ft**	9/9/2015	ND	ND	ND	0.37	ND	0.057 J	ND	ND	ND	0.077 J	ND	ND	ND	ND	ND	0.0034 J	0.0052 J	0.038 J	ND	ND	ND	0.27	ND	ND
BSTF-3-1.5'	**0.5-1.5 ft**	9/9/2015	ND	ND	ND	0.0520 J	0.42	6.2	ND	0.0200 J	0.0280 J	ND	0.48	0.058 J	ND	ND	ND	0.04	0.057	0.18 J	0.23 J	0.069	ND	0.95	ND	ND
BSTF-3-14'	**13-14 ft**	9/9/2015	ND	ND	ND	ND	0.45	6.0	ND	0.0240 J	ND	ND	0.54	0.059 J	ND	ND	0.14 J	0.015	0.028	0.041 J	0.050 J	0.04	ND	0.24	0.0045 J	ND
BSTF-4-1.5'	**0.5-1.5 ft**	9/9/2015	ND	ND	ND	0.0300 J	0.020 J	0.57	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.012	0.02	0.067 J	0.18 J	0.035	ND	0.45	ND	ND
BSTF-4-14'	**13-14 ft**	9/9/2015	ND	ND	ND	ND	ND	0.16 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.045 J	0.044 J	ND	ND	0.22	ND	ND
BSTF-5-1.5'	**0.5-1.5 ft**	9/9/2015	ND	ND	0.0059 J	ND	0.087 J	12	0.0058 J	ND	ND	ND	ND	0.35	0.012	ND	ND	0.015	0.017	0.036 J	ND	0.024	0.0085	ND	0.012	0.14 J
BSTF-5-12'	**11-12 ft**	9/9/2015	ND	ND	ND	ND	ND	1.7	ND	ND	ND	ND	ND	0.056 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Units: mg/kg
NS = Not Sampled
ND = Concentration less than detection limit
J = Laboratory qualifier indicating the result is estimated between the method deteciton limit and reporting limits.
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in **bold**

TABLE 8
Soil Analytical Results - February 2016 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Volatile Organic Compounds by USEPA Method 8260B																										
			Chlorinated VOCs												**Aromatic/Hydrocarbon VOCs**										**Ketones/Other**				
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Chloroform	2-Chlorotoluene	Cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,2-Dichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	Methylene Chloride	Tetrachloroethene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Benzene	Ethylbenzene	Isopropylbenzene	N-Propylbenzene	Styrene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	Toluene	Vinyl Chloride	Acetone	2-Butanone	2-Hexanone	4-Methyl-2-Pentanone	Total VOCs
RAOs (mg/kg)			**0.32**	**160**	**16**	**180**	**0.46**	**3.6**	**23**	**35**	**8.1**	**810**	**0.2**	**0.41**	**1.2**	**5.8**	**190**	**380**	**600**	**30**	**27**	**58**	**490**	**0.059**	**61,000**	**27,000**	**200**	**33,000**	-
DSA3-2(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	0.0024 J	ND	ND	0.002 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.5	1.5	ND	ND	4.0
DSA3-2(1.5) (Dup 1)	**13-14 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	0.42 J	0.18	ND	ND	0.14 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.062 J**	1.3	0.79	ND	ND	2.9
DSA3-2(13)	**12-13 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	63	89	ND	ND	152
DSA3-3(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.17	0.11	ND	ND	0.28
DSA3-3(11)	**10-11 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140	110	ND	ND	250
DSA3-4(1.5)	**0.5-1 ft**	2/8/2016	0.018	ND	0.049	ND	ND	0.027	0.031	0.0044 J	0.022	0.1	ND	**1.0**	0.025	0.0021 J	ND	ND	ND	ND	ND	0.02	0.044	ND	0.20 J	0.2	ND	0.0087	2
DSA3-4(7)	**6-7 ft**	2/8/2016	ND	ND	0.026	ND	0.0032 J	0.0034 J	ND	0.26	ND	0.01	ND	0.095	0.0052	0.0073	ND	ND	ND	ND	ND	0.035	0.13	ND	64	61	ND	ND	126
DSA3-5(1.5)	**0.5-1 ft**	2/8/2016	0.011	ND	0.016	ND	0.0095	0.007	0.015	0.085	0.036	0.094	ND	**0.46**	0.0091	0.0029 J	ND	ND	ND	ND	ND	0.018	0.014	ND	ND	0.12	ND	0.016	0.9
DSA3-5(13)	**12-13 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.012	ND	ND	ND	ND	49	29	ND	0.24	78
DSA3-1(1.5)	**0.5-1 ft**	2/8/2016	0.017	ND	0.018	ND	0.0025 J	0.0049	0.0044	0.017	0.81	0.0059	ND	ND	0.0042	ND	ND	ND	ND	ND	ND	0.0064 J	0.0059	ND	0.048	0.02	ND	ND	1.0
DSA3-1(13)	**12-13 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.21	5.81	0.0062 J	0.19	13
WBUA-1(0.5)	**0-0.5 ft**	2/9/2016	ND	ND	0.27	ND	ND	ND	ND	ND	1.6	ND	ND	**1.4**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.3
WBUA-1(0.5) (Dup 4)	**0-0.5 ft**	2/9/2016	ND	ND	0.2	ND	ND	ND	ND	ND	2.9	ND	ND	**1.4**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.57	ND	ND	5.1
WBUA-1(9)	**8-9 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.029	0.028	ND	ND	0.06
WBUA-2(0.5)	**0-0.5 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.29	ND	ND	ND	ND	ND	0.29
WBUA-2(13)	**12-13 ft**	2/10/2016	ND	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	17	2.6	ND	ND	20
WBUA-3(0.5)	**0-1 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	ND	**85**	ND	ND	**25**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110
WBUA-3(15)	**14-15 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	7.3	1.8	ND	ND	**1.20 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.5	6.1	ND	ND	24
WBUA-4(0.5)	**0-1 ft**	2/10/2016	ND	ND	14	ND	ND	ND	ND	16 J	**470**	ND	ND	**360**	ND	ND	ND	ND	ND	ND	ND	ND	5.60 J	ND	ND	ND	ND	ND	866
WBUA-4(13)	**12-13 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	6.6	0.97	ND	ND	**1.3**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.9
WBUA-5(0.5)	**0-0.5 ft**	2/10/2016	ND	ND	0.17	ND	ND	ND	ND	ND	1.5	ND	ND	**1.9**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.6
WBUA-5(5)	**4-5 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.022	ND	ND	0.02
SRA/DSPA2-1(1.5)	**0.5-1.5 ft**	2/8/2016	0.23	0.092	0.077	0.039	ND	0.053	0.025	28 J	**140**	0.38	0.011	**72**	0.071	**9 J**	ND	0.11	ND	0.53	0.29	6.4	24	ND	ND	0.22	0.059	0.4	282
SRA/DSPA2-1(5)	**4-5 ft**	2/8/2016	ND	ND	ND	ND	0.0035 J	ND	ND	ND	0.1	ND	ND	0.039	ND	0.022	ND	ND	ND	0.034	0.014	0.14	0.042	ND	26 J	22	0.059	ND	48
SRA/DSPA2-2(0.5)	**0-0.5 ft**	2/8/2016	0.094	ND	ND	ND	0.078	0.22	0.014	8 J	3.4	ND	ND	**3.30 J**	0.045	ND	0.075	0.046	0.036	0.12	0.068	12	1.70 J	ND	150	170	ND	6.8	356
SRA/DSPA2-2(15)	**14-15 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	0.03	0.015	0.006	ND	0.033	ND	0.021	ND	ND	ND	ND	ND	0.13	0.029	ND	130	200	0.048	16	346
SRA/DSPA2-3(1)	**0-1 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	0.0061 J	0.022	0.0039 J	ND	0.17	ND	0.0042 J	ND	ND	ND	0.0051 J	ND	0.022	0.017	ND	0.13	0.05	ND	ND	0.43
SRA/DSPA2-3(15)	**14-15 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	24	23	ND	0.18	47
SRA/DSPA2-4(1)	**0-1 ft**	2/9/2016	0.05	ND	ND	ND	0.12	ND	0.19	ND	ND	ND	ND	ND	0.12	ND	0.12	0.11	0.023	ND	0.24	16	7.20 J	0.04	280	290	0.049	17	611
SRA/DSPA2-4(1) (Dup 2)	**0-2 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	17	6.1	ND	ND	**5.6**	ND	ND	ND	ND	ND	ND	ND	14	22	ND	170	170	ND	11	416
SRA/DSPA2-4(11)	**10-11 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	130	ND	4.2	244
SRA/DSPA2-5(1)	**0-1 ft**	2/9/2016	ND	ND	0.062	ND	0.029	ND	ND	ND	**140**	0.023	ND	0.19	ND	ND	ND	ND	ND	0.026	0.013	ND	0.0075 J	ND	0.052	0.03	ND	ND	140
SRA/DSPA2-5(9)	**8-9 ft**	2/9/2016	ND	ND	0.013	ND	0.0068 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	610	490	ND	0.14	1100
SRA/DSPA2-6(1)	**0-1 ft**	2/9/2016	ND	ND	0.094	ND	ND	0.0051	ND	ND	**24**	0.017	ND	**3.50 J**	ND	ND	ND	ND	ND	ND	ND	ND	0.0023 J	ND	0.089	0.04	ND	ND	28
SRA/DSPA2-6(13)	**12-13 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	0.047	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	0.05	ND	ND	0.22
SRA/DSPA2-7(1)	**0-1 ft**	2/9/2016	ND	ND	0.035	ND	ND	ND	ND	ND	0.33	ND	ND	0.17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.018 J	0.03	ND	ND	0.6
SRA/DSPA2-7(15)	**14-15 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057	0.04	ND	ND	0.10
SRA/DSPA2-8(1)	**0-1 ft**	2/9/2016	0.096 J	ND	0.35	ND	0.11 J	0.44	0.16	26	3.7	1.9	ND	**16**	0.13 J	2.4	ND	ND	ND	0.15 J	0.072 J	13	16	ND	95	43	ND	6	225
SRA/DSPA2-8(11)	**10-11 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	5.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	130	ND	4	250
SSA-1(0.5)	**0-0.5 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.014 J	0.04	ND	ND	0.05
SSA-1(13)	**12-13 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	0.11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0045 J	ND	0.019 J	0.04	ND	ND	0.17
SSA-1(13) (Dup 3)	**12-14 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	0.36	12	ND	0.78	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.66	**4.3**	ND	1.4	ND	ND	20
SSA-2(0.5)	**0-0.5 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011 J	0.03	ND	ND	0.04
SSA-2(13)	**12-13 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	19	ND	1.30 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.6	**5.4**	5.9	15	ND	ND	48

Notes:
Units: mg/kg
NS = Not Sampled
ND = Concentration less than detection limit
J = Laboratory qualifier indicating the result is estimated between the method deteciton limit and reporting limits.
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in **bold**

TABLE 8
Soil Analytical Results - February 2016 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Semi-Volatile Organic Compounds by USEPA Method 8270C																				
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Acetophenone	Benzoic Acid	Benzyl Alcohol	Benzylbutyl Phthalate	Bis(2-Ethylhexyl) Phthalate	Diethyl Phthalate	2,4-Dimethylphenol	Dimethyl Phthalate	Di-N-Butyl Phthalate	Di-N-Octyl Phthalate	Fluoranthene	Fluorene	Isophorone	1-Methylnaphthalene	2-Methylnaphthalene	2-Methylphenol	3&4 Methylphenol	Naphthalene	Phenanthrene	Phenol	Pyrene	2,4,5-Trichlorophenol
Preliminary RAOs (mg/kg)			**780**	**25,000**	**630**	**290**	**39**	**5,100**	**130**	**-**	**630**	**63**	**240**	**240**	**570**	**18**	**24**	**320**	**320**	**2**	**-**	**1,900**	**180**	**630**
DSA3-2(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DSA3-2(1.5) (Dup 1)	**13-14 ft**	2/8/2016	ND	ND	ND	ND	0.034 J	ND	ND	ND	ND	ND	ND	ND	0.043 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
DSA3-2(13)	**12-13 ft**	2/8/2016	ND	ND	0.11 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8	ND	ND	0.044 J	0.051 J	ND	ND	0.34	ND	0.35
DSA3-3(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	0.041 J	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.032 J
DSA3-3(11)	**10-11 ft**	2/8/2016	ND	ND	0.16 J	ND	0.027 J	ND	ND	ND	ND	ND	ND	ND	0.3	0.0025 J	0.0036 J	0.069 J	0.076 J	0.004 J	ND	0.32	ND	0.95
DSA3-4(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	ND	0.61	ND	ND	ND	ND	ND	ND	ND	0.021 J	ND	ND	ND	ND	ND	0.0078	ND	ND	ND
DSA3-4(7)	**6-7 ft**	2/8/2016	ND	ND	0.053 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.110 J	ND	ND	ND	ND	ND	ND	0.044 J	ND	0.025 J
DSA3-5(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	ND	0.67	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0037 J	ND	ND	ND	ND
DSA3-5(13)	**12-13 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0086	0.015	ND	0.017 J	0.039	ND	0.058 J	ND	ND
DSA3-1(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	ND	0.031 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DSA3-1(13)	**12-13 ft**	2/8/2016	ND	ND	0.021 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.088 J	ND	ND	0.051 J	0.035 J	ND	ND	ND	ND	ND
WBUA-1(0.5)	**0-0.5 ft**	2/9/2016	ND	ND	ND	ND	0.16 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBUA-1(0.5) (Dup 4)	**0-0.5 ft**	2/9/2016	ND	ND	ND	ND	0.15 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBUA-1(9)	**8-9 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBUA-2(0.5)	**0-0.5 ft**	2/10/2016	ND	ND	ND	ND	14	ND	ND	ND	ND	0.16 J	ND	ND	ND	ND	ND	ND	ND	0.0058 J	ND	ND	ND	ND
WBUA-2(13)	**12-13 ft**	2/10/2016	ND	0.43	0.43	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.023 J	ND	ND
WBUA-3(0.5)	**0-1 ft**	2/10/2016	ND	ND	ND	2.7	32	ND	ND	ND	0.48	1.2	0.0066 J	ND	ND	0.56	ND	ND	ND	0.32	0.032	ND	0.028	ND
WBUA-3(15)	**14-15 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.028 J	ND	0.027 J	ND	ND	ND	ND	ND
WBUA-4(0.5)	**0-1 ft**	2/10/2016	ND	ND	2.9	59	**260**	ND	ND	ND	0.67 J	1.5	0.073	ND	ND	0.83	ND	ND	ND	1.3	0.21	ND	0.066	ND
WBUA-4(13)	**12-13 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBUA-5(0.5)	**0-0.5 ft**	2/10/2016	ND	ND	0.065 J	ND	0.045 J	ND	ND	ND	ND	ND	ND	ND	ND	0.18	ND	ND	ND	0.13	ND	ND	ND	ND
WBUA-5(5)	**4-5 ft**	2/10/2016	ND	ND	ND	ND	0.038 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SRA/DSPA2-1(1.5)	**0.5-1.5 ft**	2/8/2016	ND	ND	ND	1.6	12	ND	0.048 J	ND	1.2	ND	ND	0.0065 J	0.57	0.079	0.12	ND	ND	0.36	0.028	0.086 J	0.0045 J	ND
SRA/DSPA2-1(5)	**4-5 ft**	2/8/2016	ND	ND	ND	5.7	**110**	0.091 J	ND	1.2	5.2	ND	0.013	ND	0.76	0.12	0.19	ND	0.037 J	0.83	0.04	0.38	0.018	ND
SRA/DSPA2-2(0.5)	**0-0.5 ft**	2/8/2016	0.14 J	ND	0.24	ND	0.8	ND	ND	ND	ND	ND	ND	ND	ND	0.0078	0.01	ND	0.031 J	0.01	ND	0.091 J	ND	ND
SRA/DSPA2-2(15)	**14-15 ft**	2/8/2016	ND	0.10 J	0.2	0.035 J	0.37	ND	ND	ND	ND	ND	ND	ND	ND	0.0098	0.015	ND	ND	0.0084	ND	ND	ND	ND
SRA/DSPA2-3(1)	**0-1 ft**	2/8/2016	ND	ND	ND	ND	0.35	ND	ND	ND	ND	ND	0.012	ND	ND	ND	ND	ND	ND	ND	0.0096	ND	0.013	ND
SRA/DSPA2-3(15)	**14-15 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SRA/DSPA2-4(1)	**0-1 ft**	2/9/2016	0.10 J	ND	ND	0.17 J	1.8	ND	ND	ND	ND	0.26	ND	ND	ND	ND	ND	ND	ND	0.019	ND	ND	ND	ND
SRA/DSPA2-4(1) (Dup 2)	**0-2 ft**	2/9/2016	ND	ND	ND	ND	3.9	ND	ND	ND	ND	0.64 J	ND	ND	ND	ND	ND	ND	ND	0.039 J	ND	ND	ND	ND
SRA/DSPA2-4(11)	**10-11 ft**	2/9/2016	ND	ND	0.3	ND	0.36	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.49	ND	ND
SRA/DSPA2-5(1)	**0-1 ft**	2/9/2016	ND	ND	ND	ND	37	ND	ND	ND	ND	ND	0.016	ND	0.57	ND	ND	ND	ND	0.043	ND	ND	0.031	ND
SRA/DSPA2-5(9)	**8-9 ft**	2/9/2016	ND	ND	ND	ND	0.11 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SRA/DSPA2-6(1)	**0-1 ft**	2/9/2016	ND	ND	ND	0.44	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SRA/DSPA2-6(13)	**12-13 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0051 J	ND	ND	ND	ND
SRA/DSPA2-7(1)	**0-1 ft**	2/9/2016	ND	ND	ND	ND	0.89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SRA/DSPA2-7(15)	**14-15 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SRA/DSPA2-8(1)	**0-1 ft**	2/9/2016	ND	ND	ND	0.17 J	13	ND	ND	ND	0.25	ND	ND	ND	ND	0.0064 J	0.02	ND	ND	0.082	ND	0.34	ND	ND
SRA/DSPA2-8(11)	**10-11 ft**	2/9/2016	ND	ND	ND	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12 J	ND	ND
SSA-1(0.5)	**0-0.5 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SSA-1(13)	**12-13 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SSA-1(13) (Dup 3)	**12-14 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SSA-2(0.5)	**0-0.5 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SSA-2(13)	**12-13 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Units: mg/kg
NS = Not Sampled
ND = Concentration less than detection limit
J = Laboratory qualifier indicating the result is estimated between the method deteciton limit and reporting limits.
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in bold

TABLE 9

Historical Soil Physical and Chemical Properties Testing Results - March 1996

Post-Closure Care Plan

Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Sample Designation												
Well Name	Depth (ft bgs)	Lithologic Unit	Date	Moisture Content (%)	Porosity (Total) (%BV)	Unified Soil Classification	Density (lbs/ft^3)	Infiltration (cm^2)	Vertical Flow Rate (cm/sec)	Cation Exchange Capacity (meq Na^+/100g)	Organic Content (%)	Soil Sorption Capacity
MW-5S	7-9	Silty Fine Sand	3/22/96	13.3	30.0	SC	115.7	1.20E-10	1.41E-05	6.7	4.8	High
MW-6S	7-9	Silty Fine Sand	3/21/96	14.2	28.3	SC	118.6	3.83E-08	4.50E-03	8.6	4.4	High
MW-7S	7-9	Silty Fine Sand	3/27/96	11.4	29.8	SC	116.1	7.98E-09	9.38E-04	4.9	2.6	Low
MW-8S	7-9	Silty Fine Sand	3/22/96	14.1	40.2	SC	98.9	7.74E-09	9.10E-04	4.7	2.8	High
MW-5S	9-11	Silty Fine Sand	3/22/96	13.0	38.1	SC	102.3	3.15E-09	3.70E-04	6.4	3.3	Low
MW-6S	9-11	Silty Fine Sand	3/21/96	11.8	27.8	SC	119.4	2.70E-10	3.18E-05	7.9	4.1	High
MW-7S	9-11	Silty Fine Sand	3/27/96	12.4	34	SC	109.1	1.44E-09	1.69E-04	5.6	2.9	Low
MW-8S	9-11	Silty Fine Sand	3/22/96	8.8	NM	SP-SM	NM	2.40E-10	2.82E-05	5.4	3.5	High
Silty Fine Sand Average (Vadose Zone)				*12.4*	*32.6*		*111.4*	*7.40E-09*	*8.70E-04*	*6.3*	*3.6*	
MW-6D	39-41	Med to Coarse Sand	3/21/96	25.4	36.2	SC	105.5	NA	1.06E-05	5.2	2.2	Low
MW-6D	40.5-41	Med to Coarse Sand	3/21/96	NA	NA	SP	NA	NA	NA	NA	NA	NA
Medium Sand Average (Shallow Zone)				*25.4*	*36.2*		*105.5*	*NA*	*1.06E-05*	*5.2*	*2.2*	
MW-9D	41-43	Sandy Clay	3/27/96	42.8	51.9	CL	79.4	NA	1.41E-07	21.7	4.4	High
MW-10D	41-43	Sandy Clay	3/24/96	43.2	50.5	CL	81.9	NA	1.06E-05	28.7	7.8	High
Sandy Clay Average (Deep Zone)				*43.0*	*51.2*		*80.7*	*NA*	*5.36E-06*	*25.2*	*6.1*	

Sample Designation				Sieve Analysis (% Passing)					
Well Name	Depth (ft bgs)	Lithologic Unit	Date	3/4 in	No. 4	No. 10	No. 40	No. 100	No. 200
MW-5S	7-9	Silty Fine Sand	3/22/96	100	100	100	69	40	30
MW-6S	7-9	Silty Fine Sand	3/21/96	100	100	100	64	39	31
MW-7S	7-9	Silty Fine Sand	3/27/96	100	100	100	67	28	24
MW-8S	7-9	Silty Fine Sand	3/22/96	100	100	100	70	28	21
MW-5S	9-11	Silty Fine Sand	3/22/96	100	100	100	63	30	26
MW-6S	9-11	Silty Fine Sand	3/21/96	100	100	100	78	30	28
MW-7S	9-11	Silty Fine Sand	3/27/96	100	100	100	51	24	22
MW-8S	9-11	Silty Fine Sand	3/22/96	100	100	100	56	12	10
Silty Fine Sand Average (Vadose Zone)				*100*	*100*	*100*	*65*	*29*	*24*
MW-6D	39-41	Med to Coarse Sand	3/21/96	100	100	100	96	56	22
MW-6D	40.5-41	Med to Coarse Sand	3/21/96	100	100	99	78	3	1
Medium Sand Average (Shallow Zone)				*100*	*100*	*100*	*87*	*29*	*11*
MW-9D	41-43	Sandy Clay	3/27/96	100	100	100	99	92	64
MW-10D	41-43	Sandy Clay	3/24/96	100	100	100	99	84	66
Sandy Clay Average (Deep Zone)				*100*	*100*	*100*	*99*	*88*	*65*

NA = Not Analyzed

NM = Not measured due to wax contamination of sample

TABLE 10
Soil Physical Property Results - July 2006 Field Investigation
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Sample Information					Soil Permeability (KH_2O)[1]						Bulk Density[1]		Grain Density[1]	Description
Sample Desc.		Date	Time	Lithologic Unit	Horizontal			Vertical			Dry	Natural		
					md	cm/sec	cm^2	md	cm/sec	cm^2	g/cm^3	g/cm^3	g/cm^3	
B-113	8.0-8.5	6/20/06	8:30	Silty Fine Sand	8.73	8.99E-06	7.64E-11	NA	NA	NA	1.92	2.14	2.67	Sd red-tan vf-mgr vslty no stn no flor
ASI-1	11.0-12.0	6/14/06	14:00	Silty Fine Sand	89.39	9.21E-05	7.82E-10	NA	NA	NA	1.87	2.05	2.65	Sd red-tan vf-mgr slty no stn no flor
Silty Fine Sand Average (Vadose Zone)					*49.06*	*5.05E-05*	*4.29E-10*	*NA*	*NA*	*NA*	*1.90*	*2.09*	*2.66*	
ASI-1	15.5-16.0	6/14/06	14:15	Clayey Fine Sand	NA	NA	NA	0.22	2.31E-07	1.96E-12	1.86	2.15	2.65	Sd red-tan vf-mgr slty no stn no flor
MW-100	17.0-17.5	6/17/06	9:30	Clayey Fine Sand	NA	NA	NA	5.52	5.68E-06	4.83E-11	1.78	2.10	2.66	Sd red-tan vf-mgr slty no stn no flor
B-113	17.5-18.0	6/20/06	8:50	Clayey Fine Sand	NA	NA	NA	0.17	1.74E-07	1.48E-12	1.76	2.09	2.66	Sd red-tan vf-mgr slty cly no stn no flor
Clayey Fine Sand Average (Shallow Zone)					*NA*	*NA*	*NA*	*1.97*	*2.03E-06*	*1.72E-11*	*1.80*	*2.12*	*2.66*	
MW-100	25.0-25.5	6/17/06	9:45	Med to Corase Sand	NA	NA	NA	2.65	2.73E-06	2.32E-11	1.66	2.01	2.59	Sd red-tan vf-mgr slslty no stn no flor
B-113	25.0-25.5	6/20/06	9:10	Med to Corase Sand	NA	NA	NA	9.24	9.52E-06	8.09E-11	1.75	2.09	2.68	Sd red-tan vf-mgr slty cly no stn no flor
ASI-1	27.5-28.0	6/14/06	14:35	Med to Corase Sand	NA	NA	NA	126.63	1.30E-04	1.11E-09	1.69	2.03	2.67	Sd red-tan vf-mgr slslty no stn no flor
Medium to Coarse Sand Average (Shallow Zone)					*NA*	*NA*	*NA*	*46.18*	*4.74E-05*	*4.04E-10*	*1.70*	*2.04*	*2.64*	

Sample Information					Effective Porosity[5]	Specific Retention[5]	Moisture Content[2]	Porosity[1] (Total)	Void Space[1]	Water Sat.[1]	TOC[3]
Sample Desc.		Date	Time	Lithologic Unit	%BV	%	%	%BV	%PV	%PV	kg/kg
B-113	8.0-8.5	6/20/06	8:30	Silty Fine Sand	NA	NA	NA	28.0	21.2	78.8	NA
ASI-1	11.0-12.0	6/14/06	14:00	Silty Fine Sand	NA	NA	NA	29.3	37.9	62.1	ND
Silty Fine Sand Average (Vadose Zone)					*NA*	*NA*	*NA*	*28.67*	*29.52*	*70.48*	*ND*
ASI-1	15.5-16.0	6/14/06	14:15	Clayey Fine Sand	6.1	79.4	14.3	29.6	1.1	98.9	ND
MW-100	17.0-17.5	6/17/06	9:30	Clayey Fine Sand	12.9	56.0	14.9	33.1	0.9	99.1	ND
B-113	17.5-18.0	6/20/06	8:50	Clayey Fine Sand	7.0	77.0	15.4	33.7	0.6	99.4	ND
Clayey Fine Sand Average (Shallow Zone)					*8.67*	*70.82*	*14.86*	*32.14*	*0.87*	*99.13*	*ND*
MW-100	25.0-25.5	6/17/06	9:45	Med to Corase Sand	13.9	59.1	17.7	35.7	0.7	99.3	ND
B-113	25.0-25.5	6/20/06	9:10	Med to Corase Sand	13.7	56.0	15.1	34.8	0.1	99.9	ND
ASI-1	27.5-28.0	6/14/06	14:35	Med to Corase Sand	16.1	50.4	16.1	36.6	7.3	92.7	ND
Medium to Coarse Sand Average (Shallow Zone)					*14.60*	*55.16*	*16.28*	*35.69*	*2.69*	*97.31*	*ND*

[F] = Fractured due to clay shrinkage during drying
* = Estimated value, result was less than the reporting limit of 0.05 % (0.0005 kg/kg or 500 ppm)
NA = Not Analyzed
ND** = Not Detected, was less than minimum detection limit of 0.02% (0.0002 kg/kg or 200 ppm)

Analytical Methods :

[1] : *API RP 40: Recommended Practices for Core Analysis,* American Petroleum Institute, 2nd Edition, Feb. 1998
[2] : *ASTM D 2216-90: Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures* , ASTM Standards, Vol. 4.08, 1991
[3] : *MSA Walkley-Black* : ASA,SSSA - Methods of Soil Analysis, Chemical and Microbiological Properties, Part 2, 2nd Edition, 1982
[4] : *ASTM D 5084: Standard Test Method for Measurement of Hyd. Cond. Of Saturated Porous Materials Using a Flexible Wall Permeameter,* ASTM Standards, Vol. 4.08, 1991
[5] : *ASTM D 425-88: Standard Test Method for Centrifuge Moisture Equivalent of Soils* , ASTM Standards, Vol. 4.08, 1991

TABLE 11
Groundwater Aquifer Pumping Tests and Results - July 1996
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Test Well	Observation Well	Test Type	Aquifer Model	Solution Method	Test Data Q (gpm)	r (ft)	rc (ft)	rw (ft)	b (ft)	Parameter Estimates Transmissivity (ft^2/min)	Transmissivity (cm^2/sec)	Conductivity (ft/min)	Conductivity (cm/sec)	S --
MW-12S	MW-4S	Pumping	Unconfined	Theis	16.4	31	0.083	0.3	29	2.14E+00	3.31E+01	7.37E-02	1.14E+00	1.13E-02
		Recovery	Unconfined	Theis	NA	31	0.083	0.3	29	1.05E+00	1.63E+01	3.62E-02	5.61E-01	1.70E-03
	MW-6S	Pumping	Unconfined	Theis	16.4	40	0.083	0.3	29	2.12E+00	3.29E+01	7.32E-02	1.13E+00	2.10E-04
		Recovery	Unconfined	Theis	NA	40	0.083	0.3	29	1.20E+00	1.85E+01	4.13E-02	6.40E-01	2.52E-03
MW-5S	MW-2S	Pumping	Unconfined	Theis	10.5	50	0.083	0.3	29	1.64E+00	2.53E+01	5.64E-02	8.74E-01	7.21E-04
		Recovery	Unconfined	Theis	NA	50	0.083	0.3	29	1.35E+00	2.09E+01	4.66E-02	7.22E-01	1.22E-03
	MW-12S	Pumping	Unconfined	Theis	10.5	101	0.083	0.3	29	1.96E+00	3.03E+01	6.75E-02	1.05E+00	2.35E-04
		Recovery	Unconfined	Theis	NA	101	0.083	0.3	29	1.26E+00	1.95E+01	4.34E-02	6.72E-01	6.25E-04
									Shallow Zone Average	1.59E+00	2.46E+01	5.48E-02	8.48E-01	2.32E-03
									Shallow Zone Standard Deviation	4.36E-01	6.75E+00	1.50E-02	2.33E-01	3.72E-03
MW-12D	MW-4D	Pumping	Unconfined	Theis	1.83	18	0.083	0.3	29	1.90E-01	2.94E+00	6.55E-03	1.01E-01	2.34E-03
		Recovery	Unconfined	Theis	NA	18	0.083	0.3	29	2.21E-01	3.42E+00	7.61E-03	1.18E-01	1.03E-03
	MW-6D	Pumping	Unconfined	Theis	1.83	40	0.083	0.3	29	2.12E-01	3.29E+00	7.32E-03	1.13E-01	8.24E-04
		Recovery	Unconfined	Theis	NA	40	0.083	0.3	29	1.59E-01	2.46E+00	5.49E-03	8.49E-02	4.08E-04
MW-5D	MW-2D	Pumping	Unconfined	Theis	1.76	41	0.083	0.3	29	1.38E+00	2.14E+01	4.77E-02	7.39E-01	1.48E-03
		Recovery	Unconfined	Theis	NA	41	0.083	0.3	29	7.90E-01	1.22E+01	2.72E-02	4.22E-01	3.86E-04
	MW-12D	Pumping	Unconfined	Theis	1.76	114	0.083	0.3	29	7.22E-01	1.12E+01	2.49E-02	3.86E-01	3.58E-03
		Recovery	Unconfined	Theis	NA	114	0.083	0.3	29	9.94E-01	1.54E+01	3.43E-02	5.31E-01	1.14E-03
									Deep Zone Average	5.84E-01	9.04E+00	2.01E-02	3.12E-01	1.40E-03
									Deep Zone Standard Deviation	4.59E-01	7.11E+00	1.58E-02	2.45E-01	1.08E-03

Notes:
Q = Pump test pumping rate
r = Radial distance from test well to observation well
rc = Well casing radius
rw = Well boring radius
b = Aquifer thickness
NA = Not Applicable

TABLE 12

Groundwater Aquifer MPX Pumping Tests and Results - July 2006

Post-Closure Care Plan

Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Test Well	Observation Well	Test Type	Aquifer Model	Solution Method	Test Data					Parameter Estimates			
					Q	r	rc	rw	b	Transmissivity		Conductivity	
					(gpm)	(ft)	(ft)	(ft)	(ft)	(ft^2/min)	(cm^2/sec)	(ft/min)	(cm/sec)
MPX-1	SVE-1	Pumping	Unconfined	Theis	6.24	3.94	0.1667	0.5625	30	3.62E-01	5.61E+00	1.21E-02	6.15E-03
		Recovery	Unconfined	Theis	NA	3.94	0.1667	0.5625	30	6.26E-01	9.69E+00	2.09E-02	1.06E-02
	SVE-2	Pumping	Unconfined	Theis	6.24	9.77	0.1667	0.5625	30	3.62E-01	5.61E+00	1.21E-02	6.15E-03
		Recovery	Unconfined	Theis	NA	9.77	0.1667	0.5625	30	6.39E-01	9.89E+00	2.13E-02	1.08E-02
	SVE-3	Pumping	Unconfined	Theis	6.24	5.83	0.1667	0.5625	30	2.22E-01	3.44E+00	7.39E-03	3.75E-03
		Recovery	Unconfined	Theis	NA	5.83	0.1667	0.5625	30	8.22E-01	1.27E+01	2.74E-02	1.39E-02
	SVE-4	Pumping	Unconfined	Theis	6.24	18.65	0.1667	0.5625	30	7.64E-01	1.18E+01	2.55E-02	1.30E-02
		Recovery	Unconfined	Theis	NA	18.65	0.1667	0.5625	30	6.55E-01	1.01E+01	2.18E-02	1.11E-02
									Cooper-Jacob Distance-Drawdown	4.90E-01	7.59E+00	1.63E-02	8.28E-03
									Average	5.49E-01	8.50E+00	1.83E-02	9.30E-03
									Standard Deviation	2.02E-01	3.13E+00	6.73E-03	3.42E-03

Notes:

Q = Pump test pumping rate

r = Radial distance from test well to observation well

rc = Well casing radius

rw = Well boring radius

b = Aquifer thickness

NA = Not Applicable

TABLE 13
AS/SVE and MPX Pilot Test Results Summary - July 2006
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Test	Vacuum		Pressure		Airflow Rate		Soil Permability to Airflow		OVM Average (ppm)	Lab TVOC (ppm)	Mass Removal (kg/day)	Dissolved Oxygen		Radius of Influence (ft)
	Range (in H_2O)	Optimum (in H_2O)	Range (psi)	Optimum (psi)	Range (scfm)	Optimum (scfm)	Range (cm^2)	Average (cm^2)				Average (ppm)	% Increase	
AS	NA	NA	5.5 - 7	7	1.8 - 10.8	10.8	NA	NA	NA	NA	NA	8.275	719	20
SVE	23 - 100	56	NA	NA	41 - 68	55	1.29E-07 - 4.10E-07	2.43E-07	1,228	198	975	NS	NS	34
AS/SVE	55 - 75	70	7.5 - 8.5	7.5	51 - 55	55	1.49E-07 - 1.92E-07	1.67E-07	557	NA	NA	NS	NS	20 / 34
MPX	272	272	NA	NA	9 - 10	9	3.59E-08 - 4.20E-08	3.76E-08	673	187	150	NS	NS	37

Notes:
NS = Not Sampled
NA = Not Applicable

TABLE 14
Air Sparge/SVE Pilot Study Data (Phase Three) December 2023
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Date: 12/12/2023

Time	Time Interval (Min.)	ASI-2 AS Well Pressure (psi)	ASI-2 AS Well Flow (scfm)	System Vacuum (inWC)	SVE-5 Wellhead Vacuum (inWC)	Off-Gas		Pre-Carbon Influent OVA (ppm)	Post Carbon Effluent OVA (ppm)	Extracted GW Collected (gal)
						Temp. (C^o)	Flow (scfm)			
Baseline										
14:55	20	10.5	7.5	79	75	67	8.60	54	18	0
15:15	40	10.5	7.5	79	75	65	9.20	6.7	51	0
16:20	105	10.5	7.5	79	75	64	8.85	13.2	75	0
16:55	140	10.5	7.5	79	75	63	8.81	14.1	81	0

MONITORING DATA

OW-1 Dist. 12 ft					OW-2 Dist. 24 ft					OW-3 Dist. 36 ft					OW-4 Dist. 48 ft					B113 Dist. 55 ft				
Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)	Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)	Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)	Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)	Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)
10.89	11.85	6.28	79.5	Y	0.35	13.73	4.48	397	N	No measurements were taken during Phase 3 because of groundwater surfacing during Phase 2.					0	13.97	0.16	27		No measurements were taken during Phase 3 because no influence was observed during Phase1 or Phase 2.				
22.59	11.70	7.09	118.2	Y	0.53	13.94	4.72	404	N						0	14.10	0.29	58.1	N					
30.57	11.65	6.70	161	Y	0.87	13.97	4.58	642.9	N						0	14.12	0.15	51.2	N					
28.74	11.60	6.72	182	Y	1.10	13.98	4.86	673.2	N						0.1	14.14	0.17	68.2	N					

NOTES:
Targeting AS 5 scfm @ ~ 5-10 psi (est. breakout pressure ~ 9-10 psi) & SVE @ 75-100 inWC)
Collect Lab Air Sample 1 for TO-15 Analysis (Initial part of Phase)
Collect Lab Air Sample 2 for TO-15 Analysis (End of Phase)
Plan to run AS and SVE at optimized and constant rate

psi = pound per square inch
DTW = depth to water (approximate, when bubbling present in well)
inWC = inches water column vacuum
^oC = degrees Celsius
min = minutes
gal = gallons
scfm = standard cubic feet per minte
ppm = parts per million
ft =feet
BTOC = below top of casing

TABLE 15

Soil Remedial Screening Alternatives

Post-Closure Care Plan

Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Remedial Alternative		Effectiveness	Implementability	Relative Estimated Cost (Capital and Long-Term Monitoring and O&M Cost)	Advantages and Limitations
Excavation	Offsite Disposal	High – Source material is permanently removed	Low – excavation in areas where there are existing pads will require operational coordination. Depth of excavations may require engineering controls.	Very High	PROS -- Immediately removes source contaminated soil. Rapid remediation of impacted soil and groundwater. CONS -- Expensive to excavate soils. Expensive to treat or dispose of excavated soil. Interruption of facility operations.
	Onsite Ex-Situ SVE Treatment	High – Source material is permanently removed	Low – excavation in areas where there are existing pads will require operational coordination. Depth of excavations may require engineering controls.	Very High	PROS -- Immediately removes source contaminated soil. Rapid remediation of impacted soil and groundwater. CONS -- Expensive to excavate soils. Little to no room on site for ex-situ soil remediation. Interruption of facility operations.
Multiphase Extraction Wells	Multiphase Extraction Wells	Low to High – Addresses DNAPL. Removes VOCs in smear zone, but has limited effectiveness in vadose zone since it is primarily a smear zone/saturated zone technology.	High – Fewer wells are required than conventional groundwater recovery or SVE.	Moderate	PROS -- MPX addresses both soil and groundwater in the source area. Remediates smear zone above water table. Can address residual DNAPL. CONS -- Regular maintenance is required to keep operating properly. Increased costs to treat and dispose of both air and groundwater.
In-Situ Biological Reactors (ISBRs)	ISBRs or In-situ Bio-enhancement	Low in DNAPL areas; high in moderate VOC concentration areas.	Moderate – Must work around operations with infrastructure.	Moderate	PROS -- Effective for suite of site contaminants without buildup of daugher products. Aerobic environment allows for mineralzation of any vinyl chloride present. Does not require significant change of existing redox environment. Low O&M cost. Treatment zone can extend downgradient. CONS -- Cannot address DNAPL in source areas - toxic to microorganisms. Requires a large number of injection points.
Vapor Extraction	In-Situ Soil Vapor Extraction	High – Soils have sufficient sand to allow for good airflow.	High - Facility is inactive. No contraints due to facility operations for implementation of SVE in on-site SWMUs	Low	PROS -- AS/SVE addresses both source area and dissolved VOCs through SVE component. Remediates smear zone above water table. Integrates with bioremediation/bioventing. CONS -- Lack of hydraulic control
	Air Sparging and Soil Vapor Extraction	High – Soils have sufficient sand to allow for good airflow.	High - Facility is inactive. No contraints due to facility operations for implementation of AS/SVE in on-site SWMUs	Low	PROS -- Addresses both soil and groundwater source area and dissolved VOCs through AS and SVE components. Can address residual DNAPL. Remediates smear zone above water table. Site lithology favorable to AS/SVE. Integrates with bioremediation. CONS -- Lack of hydraulic control

TABLE 16

Groundwater Remediation Alternatives - On-Site Source Control

Post-Closure Care Plan

Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Remedial Alternative	Effectiveness	Implementability	Relative Estimated Cost (Capital and Long-Term Monitoring and O&M Cost)	Advantages and Limitations
Groundwater Recovery Trench	High – Only if trench can be keyed into low permeability layer.	Low – excavation in areas where there are existing pads will require operational coordination. Depth of excavations may require engineering controls.	Very High	PROS -- Allows for interception of preferential contaminant flow paths, but most effective in low conductivity materials. CONS -- Limited implementability due to lack of available space. No confining layer in which to set trench. Prohibitively expensive.
In-Situ Chemical Oxidation	Moderate – Natural oxidant demand (NOD) consumes chemicals. If dosage is not correct, VOCs may be mobilized. Does not effectively work on NAPL.	Moderate – A high number of injection points may be required. Chemical storage concerns. Chemical reaction concerns. Must work around operations with infrastructure.	Very High	PROS -- Effective for dissolved phase VOCs. CONS -- Not considered an effective treatment for the source area. Rebound effects limit effectiveness. Generally high cost due to multiple applications to address rebound effects. Increased thermal desorption of VOCs with associated temperature increases.
Groundwater Recovery Wells	Low – Does not address DNAPL nor contaminants in the smear zone. A very long treatement time would be expected.	Moderate – Must work around operations with infrastructure.	Very High	PROS -- Provides hydraulic containment. Prevents downgradient migration of source area contaminants. CONS -- Limited effectiveness in treating DNAPL source and limited VOC mass removal due to lack of SVE component. Also, limited effectiveness in smear zone above water table. Increased costs associated with groundwater treatment and disposal.
In-Situ Biological Reactors (ISBRs) or In-Situ Bio-enhancement	Low – Areas with a strong presence of DNAPL may be toxic to microorganisms	Moderate – Must work around operations with infrastructure.	Moderate	PROS -- Effective for dissolved phase VOCs. Favorable in low concentration source areas and for perimeter control. CONS -- Not considered an effective treatment for the source area. Perimeter control does not include hydraulic containment, but treats groundwater as it migrates offsite. An initial increase in dissolved VOC concentrations may occur during microbial colonization.
Air Sparging and Soil Vapor Extraction	Moderate to High – AS should allow for stripping of contaminated groundwater from source area. DO increase will aid biological activity.	High - Facility is inactive. No contraints due to facility operations for implementation of AS/SVE in on-site SWMUs	Low	PROS -- Addresses both soil and groundwater source area and dissolved VOCs through AS and SVE components. Can address residual DNAPL. Remediates smear zone above water table. Site lithology favorable to AS/SVE. CONS -- Lack of hydraulic control

TABLE 17
AS/SVE System Monitoring Plan
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Parameter	Measurement Method	Location	Frequency/Interval
VOC Total Vapor Concentration	Field Meter (OVM)	• Each SVE Well at manifold individual sample port. • At the pre GAC influent, midGAC, and final (postGAC) effluent sample streams.	• At startup, and at 4 hour daylight intervals during day 1. • At 4 hour daylight intervals during days 2-3. • Weeks 1-3 of operation • Monthly after first month of operation
VOC Vapor Concentration	Laboratory analysis	• Total system influent (preGAC), midGAC and final effluent samples.	• At startup • Within 24-48 hours of operation • Weeks 1-3 of operation • Monthly for first year of operation
System Operating Parameters			
Operational Parameters (Flow, Runtime)	Field Gauges	At location of gauge or over SCADA	• At startup • Days 1-3 • Weeks 1-3 of operation • Monthly after first month of operation
Vacuum or Pressure	Field Gauge	Each AS and SVE well	
Vacuum, vapor, and water level	Field Gauge	MW-7S, 8S, 9S, 10S, 13S, 24S, B106, B108, B113, B114, MP-8	
Treatment Wells Status	Valve position for wells with applied vacuum or injection pressure	Each treatment well	
Discharge Temperature	Field Gauge	Blower Discharge	
Discharge Pressure	Field Gauge	Blower Discharge	
Inlet Temperature	Field Gauge	Compressor Inlets	
Inlet Pressure	Field Gauge	Compressor Inlets	

TABLE 18
Proposed Remediation Groundwater Monitoring Program-Baseline Event and Fourth Quarters
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Location	Well	Depth to Groundwater (ft BTOC)	Well Total Depth (ft BTOC)	VOCs (mg/L)	Appendix IX	Field Parameters[2]	Well Inspection
On-Site Monitoring Wells							
Shallow Zone	Designated Background Well						
	MW-3	X	X	X		X	X
	Designated Point of Compliance (POC) Wells						
	MW-1S	X	X	X	X (One POC Well Sampled Annually)	X	X
	MW-4S	X	X	X		X	X
	MW-5S	X	X	X		X	X
	MW-12S	X	X	X		X	X
	MW-13S	X	X	X		X	X
	Monitoring Wells						
	MW-2S	X	X	X		X	X
	MW-6S	X	X	X		X	X
	MW-7S	X	X	X		X	X
	MW-8S	X	X	X		X	X
	MW-9S	X	X	X		X	X
	MW-10S	X	X	X		X	X
	MW-11S	X	X	X		X	X
	MW-24S	X	X	X		X	X
	MW103	X	X	X		X	X
	Remediation Wells[1]						
	B-106	X	X				X
	B-108	X	X				X
	B-113	X	X				X
	B-114	X	X				X
	MP-8	X	X				X
Deep Zone	MW-1D	X	X	X		X	X
	MW-2DR	X	X	X		X	X
	MW-4D	X	X	X		X	X
	MW-5D	X	X	X		X	X
	MW-6D	X	X	X		X	X
	MW-7D	X	X	X		X	X
	MW-8DR	X	X	X		X	X
	MW-9D	X	X	X		X	X
	MW-10D	X	X	X		X	X
	MW-11D	X	X	X		X	X
	MW-12D	X	X	X		X	X
	MW-13D	X	X	X		X	X
	MW-13DD	X	X	X		X	X
	MW-13D3	X	X	X		X	X
	MW-24D	X	X	X		X	X
Off-Site Monitoring Wells							
Shallow Zone	MW-14S	X	X	X		X	X
	MW-16	X	X	X		X	X
	MW-17	X	X	X		X	X
	MW-18	X	X	X		X	X
	MW-19DR	X	X	X		X	X
	MW-20S	X	X	X		X	X
	MW-21S	X	X	X		X	X
	MW-25S	X	X	X		X	X
	MW-26	X	X	X		X	X
	MW-27	X	X	X		X	X
Deep Zone	MW-14D	X	X	X		X	X
	MW-15	X	X	X		X	X
	MW-20	X	X	X		X	X
	MW-21	X	X	X		X	X
	MW-22	X	X	X		X	X
	MW-23	X	X	X		X	X
	MW-29	X	X	X		X	X
Total Number		**52**	**52**	**47**	**1**	**47**	**52**

Notes: Quarterly remediation sampling for eight events and semi-annual thereafter.

[1] Remediation wells are not part of the compliance groundwater monitoring program and are used to evaluated effectiveness of remedial actions.

[2] Field Parameters include: pH, temperature (degrees Celsius), conductivity (millisiemens per centimeter [mS/cm]), dissolved oxygen (mg/L), oxidation reduction potential (millivolts [mv]), and turbidity (NTU).

ft BTOC - Feet Below Top of Casing

VOC - Volatile Organic Compound (Method 8260D), Permit list III.B, Table 1

mg/L-milligram per liter

TABLE 18
Proposed Remediation Groundwater Monitoring Program-First, Second, and Third Quarters during First Two Years and Second Quarter Thereafter
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Location	Well	Depth to Groundwater (ft BTOC)	Well Total Depth (ft BTOC)	VOCs (mg/L)	Appendix IX	Field Parameters[2]	Well Inspection
On-Site Monitoring Wells							
Shallow Zone	Designated Background Well						
	MW-3	X		X		X	X
	Designated Point of Compliance (POC) Wells						
	MW-1S	X		X		X	X
	MW-4S	X		X		X	X
	MW-5S	X		X		X	X
	MW-12S	X		X		X	X
	MW-13S	X		X		X	X
	Monitoring Wells						
	MW-2S	X					X
	MW-6S	X					X
	MW-7S	X					X
	MW-8S	X					X
	MW-9S	X		X		X	X
	MW-10S	X					X
	MW-11S	X					X
	MW-24S	X					X
	MW103	X					X
	Remediation Wells[1]						
	B-106	X					X
	B-108	X					X
	B-113	X					X
	B-114	X					X
	MP-8	X					X
Deep Zone	MW-1D	X		X		X	X
	MW-2DR	X					X
	MW-4D	X					X
	MW-5D	X					X
	MW-6D	X					X
	MW-7D	X					X
	MW-8DR	X					X
	MW-9D	X					X
	MW-10D	X					X
	MW-11D	X		X		X	X
	MW-12D	X					X
	MW-13D	X		X		X	X
	MW-13DD	X		X		X	X
	MW-13D3	X		X		X	X
	MW-24D	X					X
Off-Site Monitoring Wells							
Shallow Zone	MW-14S	X		X		X	X
	MW-16	X					X
	MW-17	X					X
	MW-18	X					X
	MW-19DR	X					X
	MW-20S	X					X
	MW-21S	X					X
	MW-25S	X					X
	MW-26	X					X
	MW-27	X					X
Deep Zone	MW-14D	X		X		X	X
	MW-15	X		X		X	X
	MW-20	X		X		X	X
	MW-21	X		X		X	X
	MW-22	X		X		X	X
	MW-23	X					X
	MW-29	X					X
Total Number		**52**	**0**	**18**	**1**	**18**	**52**

Notes: Quarterly remediation sampling for eight events and semi-annual thereafter.

[1] Remediation wells are not part of the compliance groundwater monitoring program and are used to evaluated effectiveness of remedial actions.

[2] Field Parameters include: pH, temperature (degrees Celsius), conductivity (millisiemens per centimeter [mS/cm]), dissolved oxygen (mg/L), oxidation reduction potential (millivolts [mv]), and turbidity (NTU).

ft BTOC - Feet Below Top of Casing

VOC - Volatile Organic Compound (Method 8260D), Permit list III.B, Table 1

mg/L-milligram per liter

FIGURES

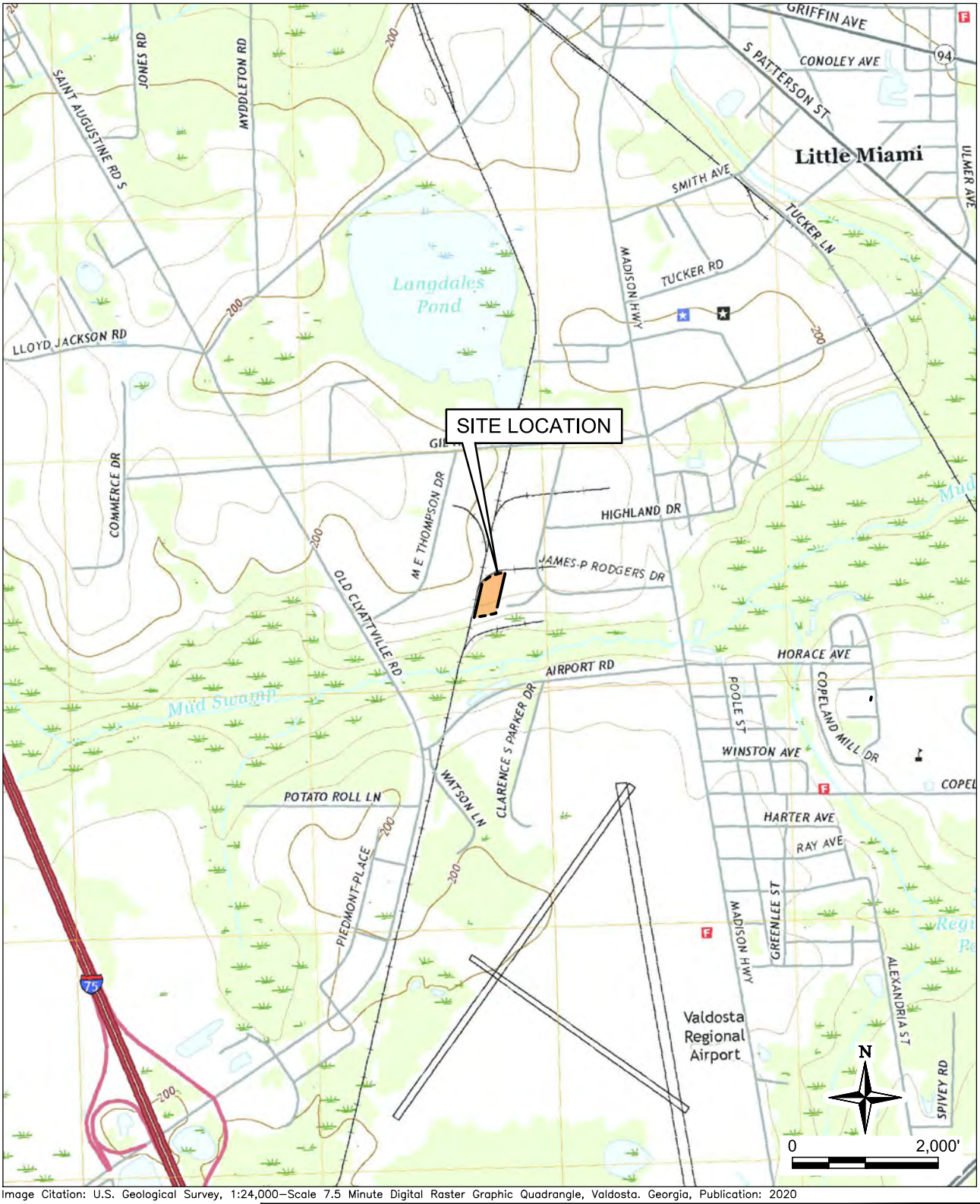


Image Citation: U.S. Geological Survey, 1:24,000–Scale 7.5 Minute Digital Raster Graphic Quadrangle, Valdosta. Georgia, Publication: 2020

QUADRANGLE LOCATION

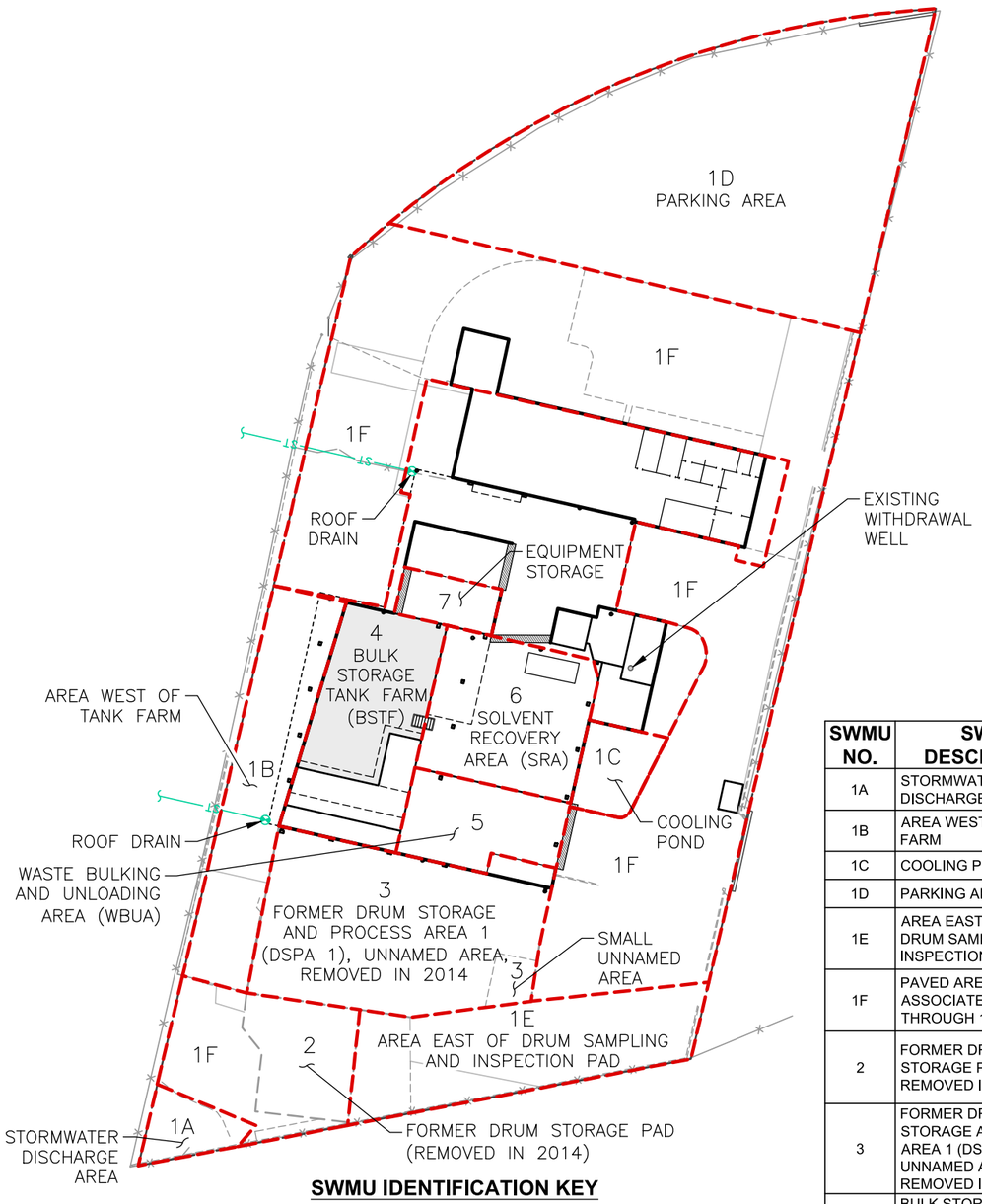
GeoSouth
Environmental Solutions
11250 Old St Augustine Rd
Ste 15 PMP 333
Jacksonville, FL 32257
904.328.0585

Scale: 1"=2000' | 1/13/2025

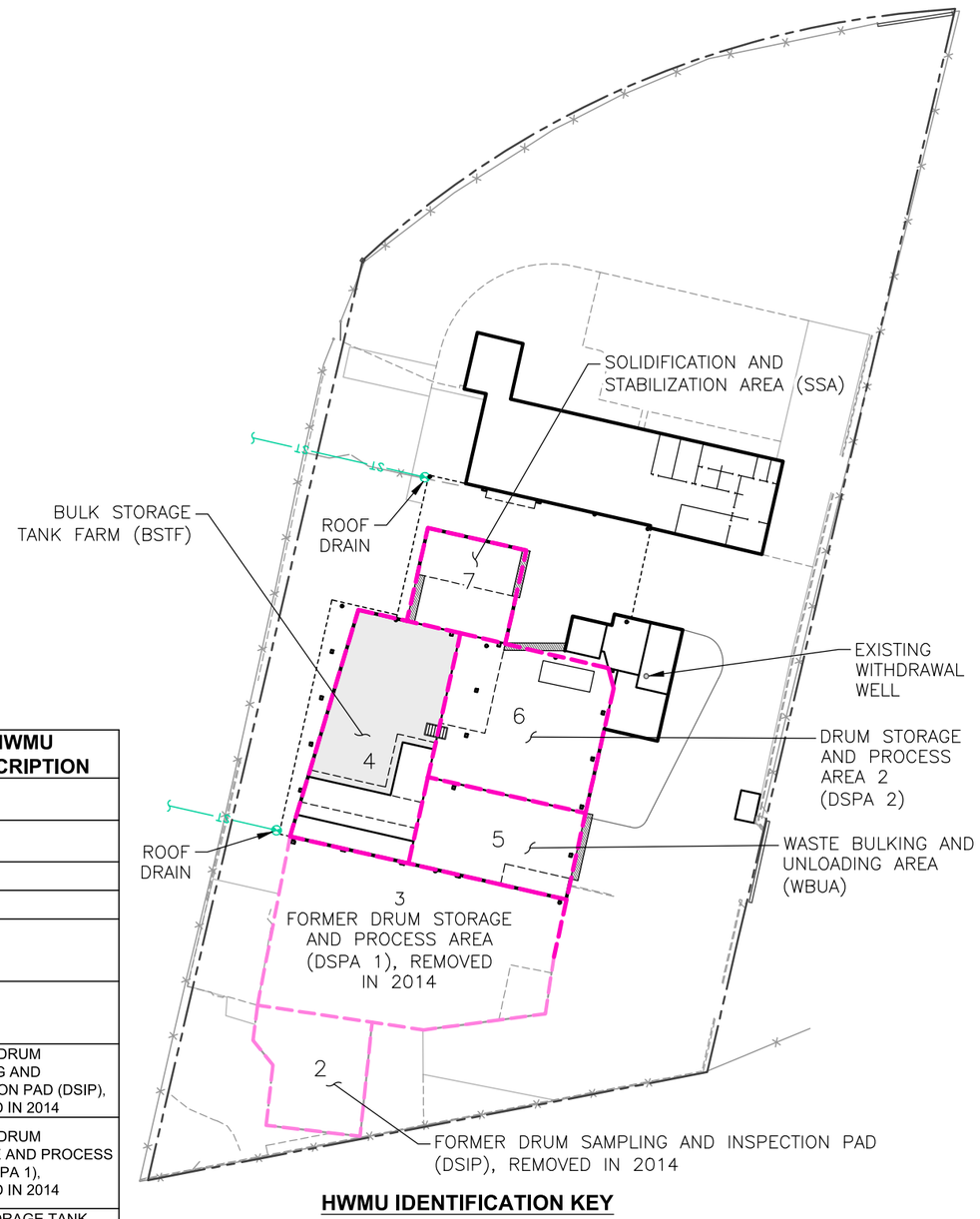
FIGURE 1

SITE LOCATION MAP

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



SWMU IDENTIFICATION KEY



HWMU IDENTIFICATION KEY

SWMU NO.	SWMU DESCRIPTION	HWMU NO.	HWMU DESCRIPTION
1A	STORMWATER DISCHARGE AREA		NA
1B	AREA WEST OF TANK FARM		NA
1C	COOLING POND		NA
1D	PARKING AREA		NA
1E	AREA EAST OF FORMER DRUM SAMPLING AND INSPECTION PAD		NA
1F	PAVED AREAS NOT ASSOCIATED WITH 1A THROUGH 1E		NA
2	FORMER DRUM STORAGE PAD, REMOVED IN 2014	2	FORMER DRUM SAMPLING AND INSPECTION PAD (DSIP), REMOVED IN 2014
3	FORMER DRUM STORAGE AND PROCESS AREA 1 (DSPA 1) AND UNNAMED AREA, REMOVED IN 2014	3	FORMER DRUM STORAGE AND PROCESS AREA (DSPA 1), REMOVED IN 2014
4	BULK STORAGE TANK FARM (BSTF)	4	BULK STORAGE TANK FARM (BSTF)
5	WASTE BULKING AND UNLOADING AREA (WBUA)	5	WASTE BULKING AND UNLOADING AREA (WBUA)
6	SOLVENT RECOVERY AREA (SRA)	6	DRUM STORAGE AND PROCESS AREA 2 (DSPA 2)
7	EQUIPMENT STORAGE AND DECON AREA	7	SOLIDIFICATION AND STABILIZATION AREA (SSA)

EXPLANATION

SOLID WASTE MANAGEMENT UNIT (SWMU)

HAZARDOUS WASTE MANAGEMENT UNIT (HWMU)

HWMU REMOVED IN 2014

N

0 80'

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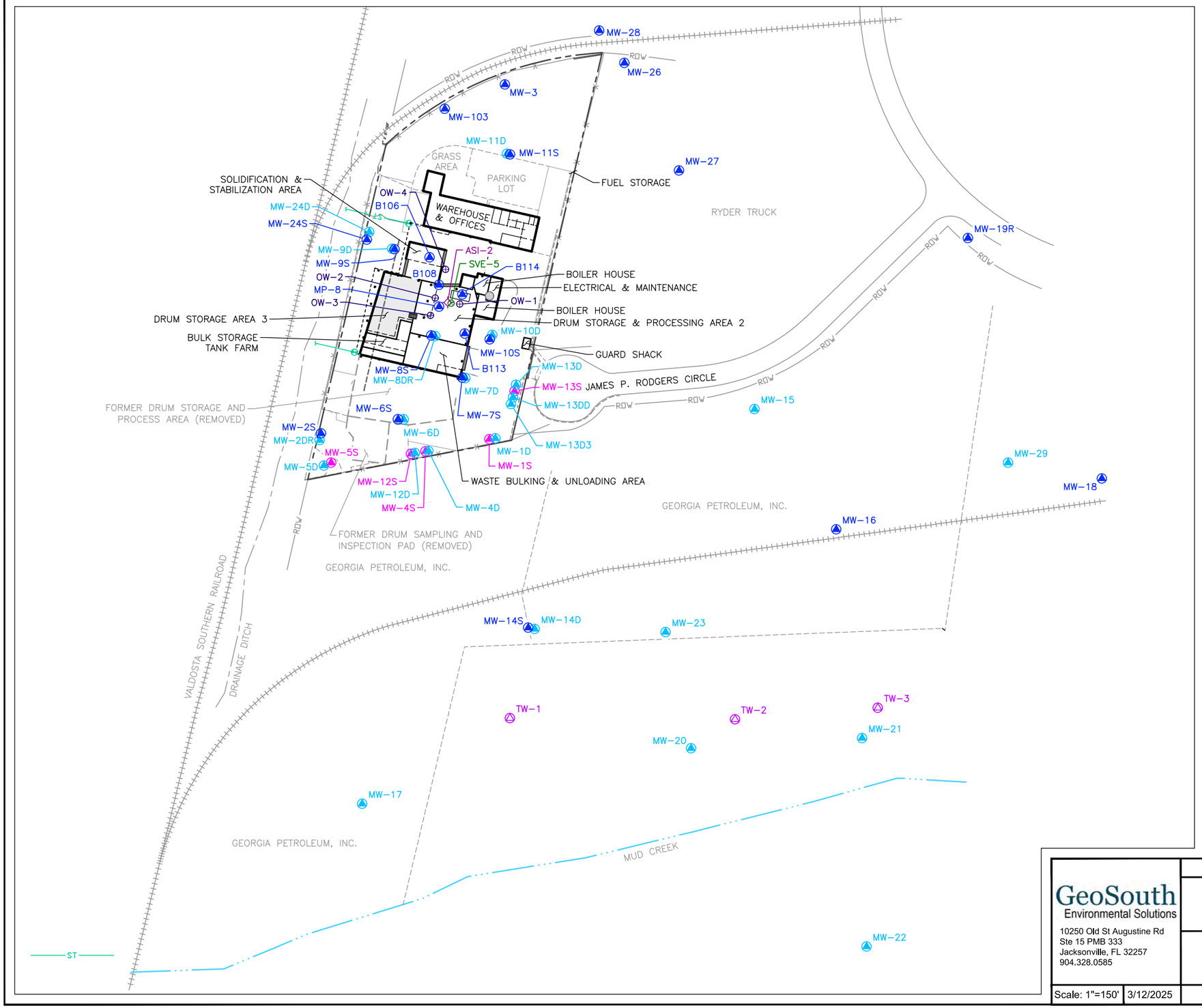
FIGURE 2

SWMU/HWMU IDENTIFICATION KEY

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

Scale: 1"=80' | 1/13/2025



EXPLANATION

- MW-27 — SHALLOW MONITORING WELL
- MW-13D — DEEP MONITORING WELL
- MW-13S — POC MONITORING WELL
- TW-3 — TEMPORARY SHALLOW MONITORING WELL
- AIR SPARGE WELL
- SVE WELL
- OBSERVATION WELL
- WITHDRAWAL WELL
- ROOF DRAIN
- DRAINAGE LINE
- PROPERTY BOUNDARY
- FENCE
- RIGHT-OF-WAY
- BUILDING OUTER WALL
- DRAINAGE DITCH
- MUD CREEK
- ROOF LINE
- ROAD/CURB & GUTTER EDGE
- EXISTING STRUCTURE (REMOVED)
- OTHER EXISTING FEATURE
- VALDOSTA SOUTHERN RAILROAD

N

0 150'

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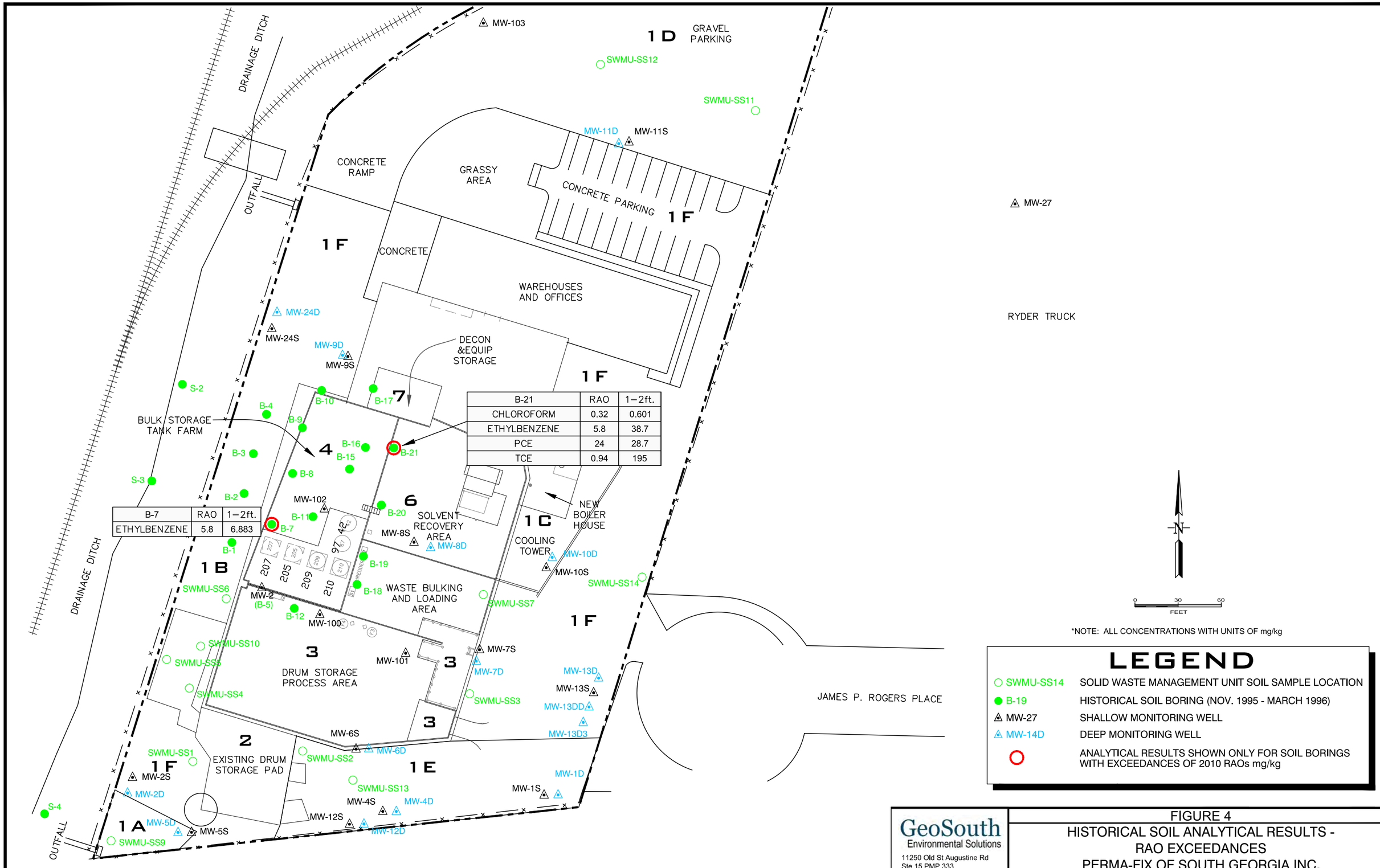
FIGURE 3

SITE LAYOUT AND GROUNDWATER MONITORING WELL LOCATIONS

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

Scale: 1"=150' | 3/12/2025



B-21	RAO	1–2ft.
CHLOROFORM	0.32	0.601
ETHYLBENZENE	5.8	38.7
PCE	24	28.7
TCE	0.94	195

B-7	RAO	1–2ft.
ETHYLBENZENE	5.8	6.883

*NOTE: ALL CONCENTRATIONS WITH UNITS OF mg/kg

LEGEND

SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION
B-19	HISTORICAL SOIL BORING (NOV. 1995 - MARCH 1996)
MW-27	SHALLOW MONITORING WELL
MW-14D	DEEP MONITORING WELL
	ANALYTICAL RESULTS SHOWN ONLY FOR SOIL BORINGS WITH EXCEEDANCES OF 2010 RAOs mg/kg

Ref: Cameron-Cole 2022

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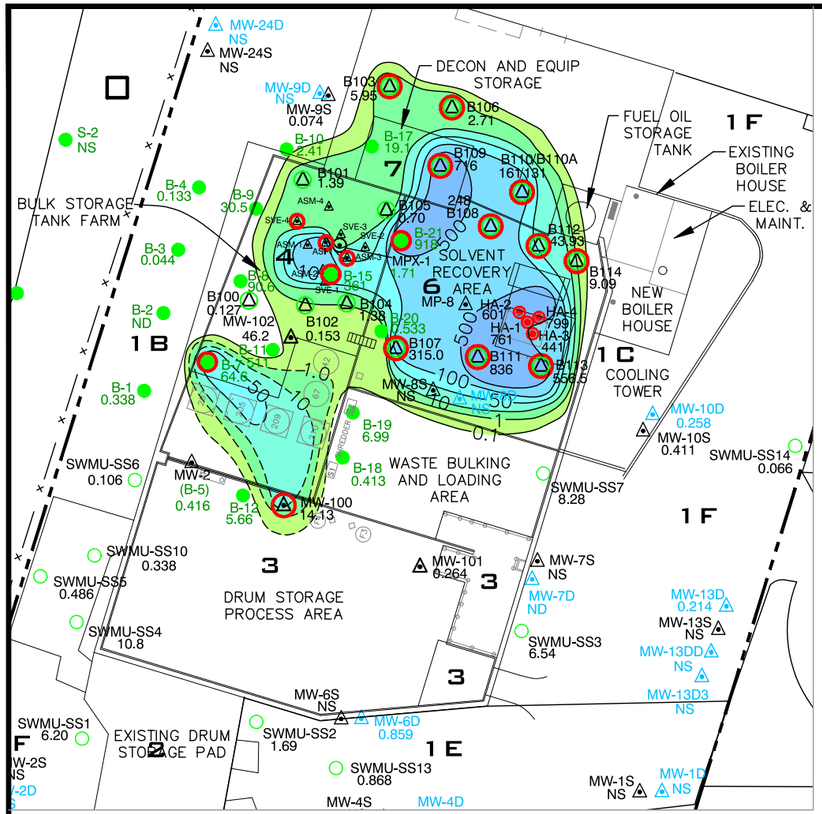
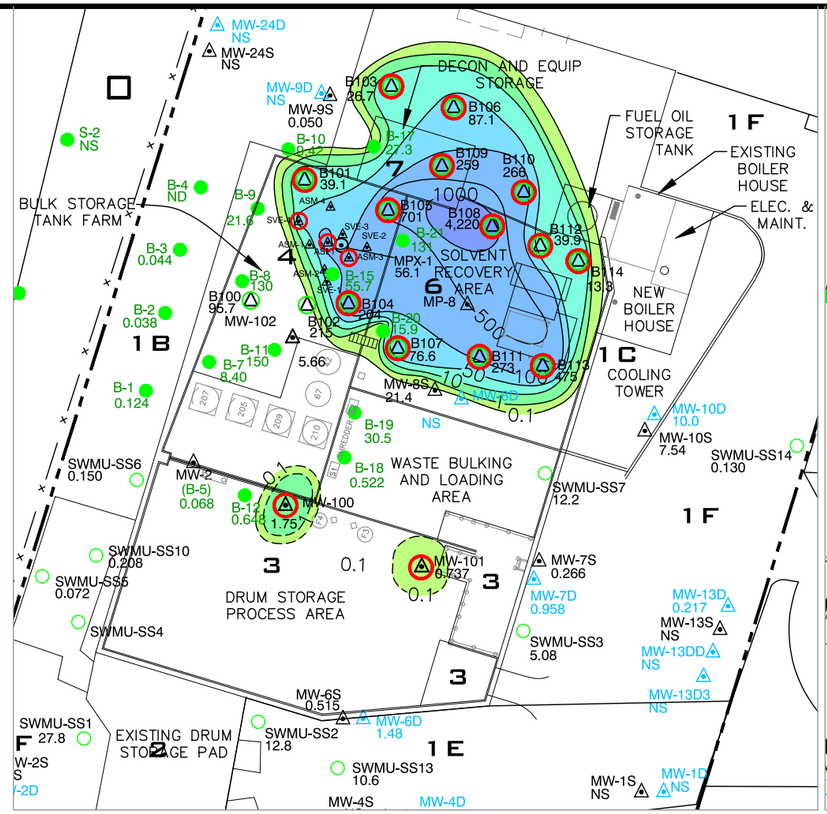
FIGURE 4
HISTORICAL SOIL ANALYTICAL RESULTS - RAO EXCEEDANCES
PERMA-FIX OF SOUTH GEORGIA INC.

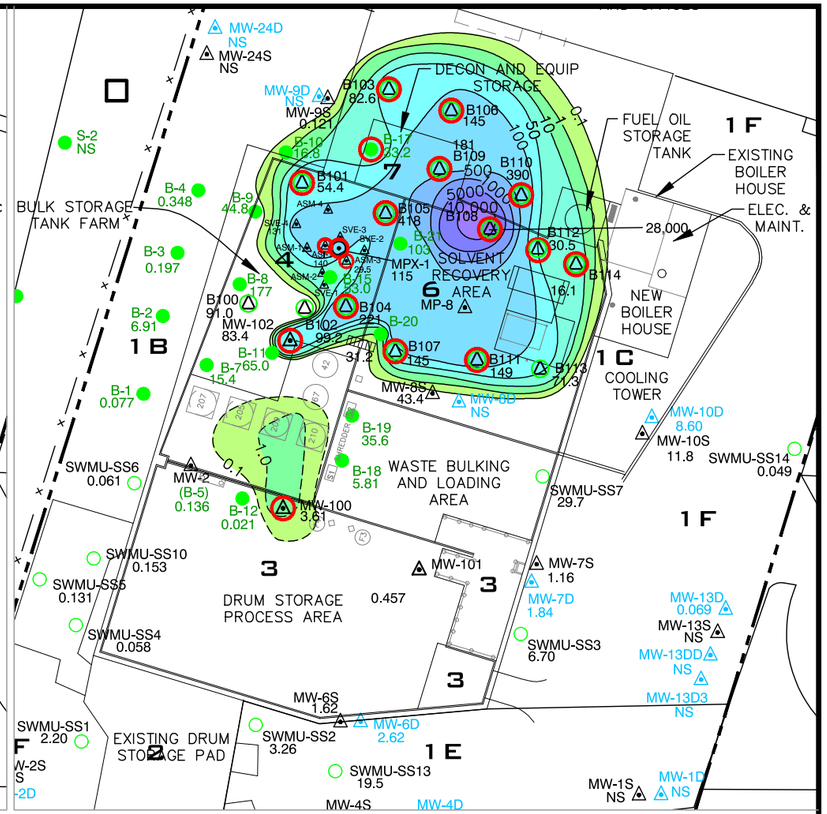
SCALE: 1" = 60'



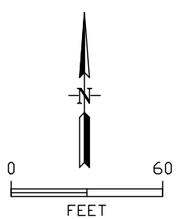
1-2 ft BGS



5-7 ft BGS



10-12 ft BGS



LEGEND

SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION (MARCH, 1996)
B-19	HISTORICAL SOIL BORING (OCT 1995, MARCH 1996, JUNE 1997)
B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
MW-27	SHALLOW MONITORING WELL
MW-5D	DEEP MONITORING WELL
MPX-1	MPX SHALLOW TEST WELL
	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)
SVE-1	SVE SHALLOW TEST WELL
ASI-1	AS SHALLOW TEST WELL
HA-1	HAND-AUGER SOIL BORING
19.1	TOTAL VOCs SOIL CONCENTRATION IN mg/kg
NS	NOT SAMPLED
ND	NO VOC's DETECTED
	TOTAL VOCs CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)
	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

Ref: Cameron-Cole 2022

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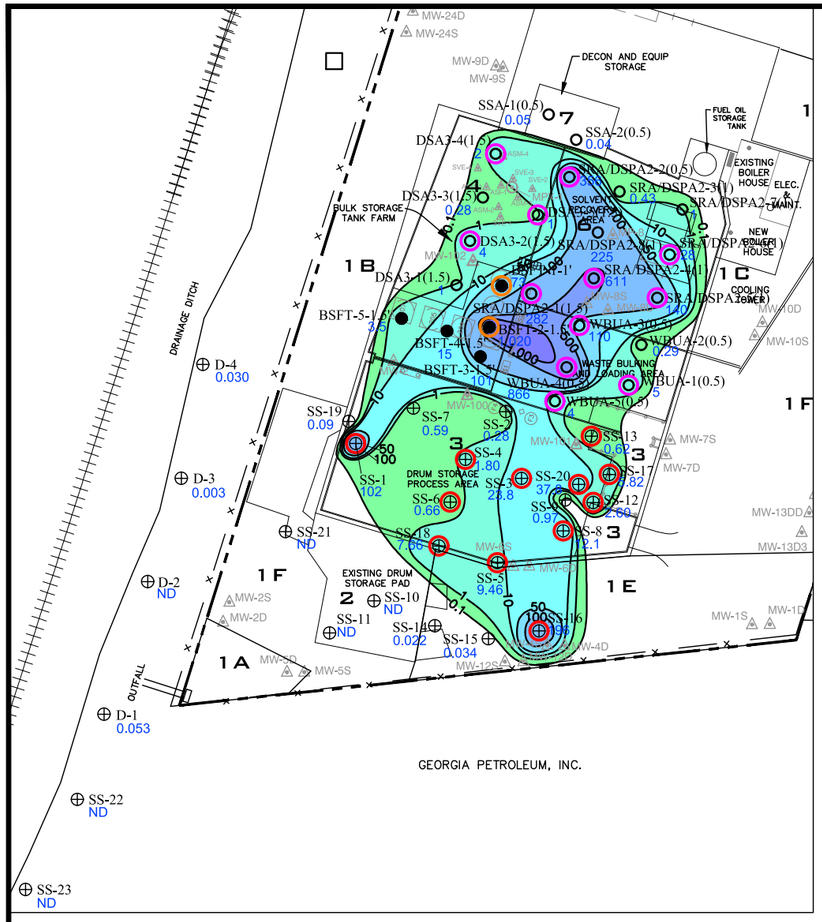
904.328.0585

FIGURE 5

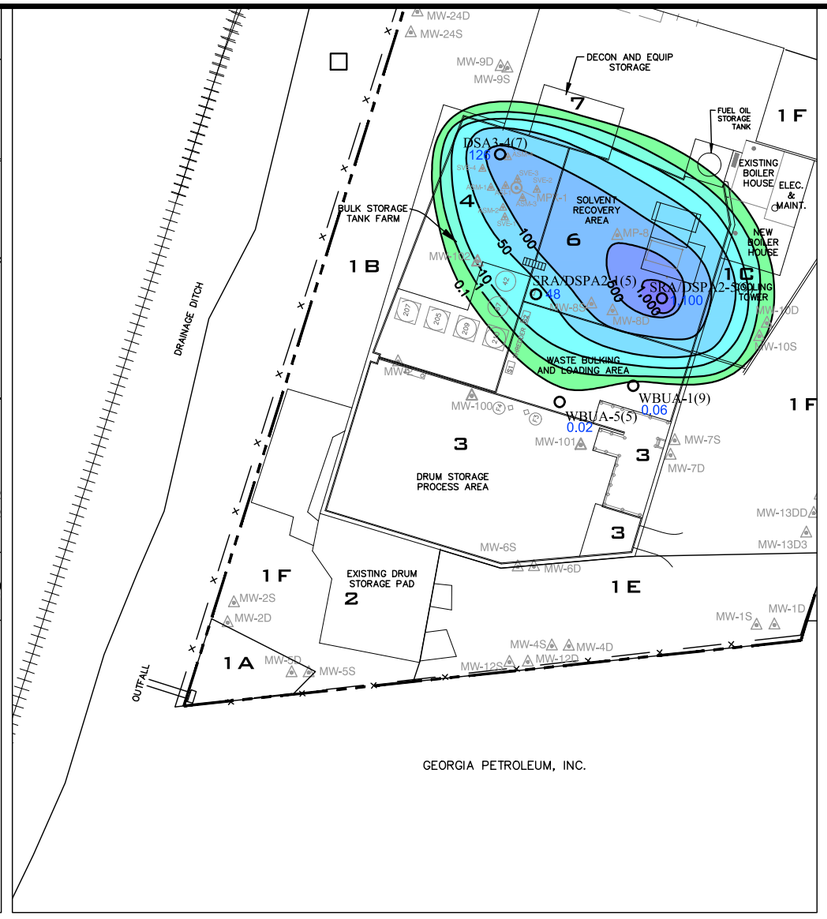
TOTAL VOCs IN SOIL - JUNE 2006
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: 1" = 60'



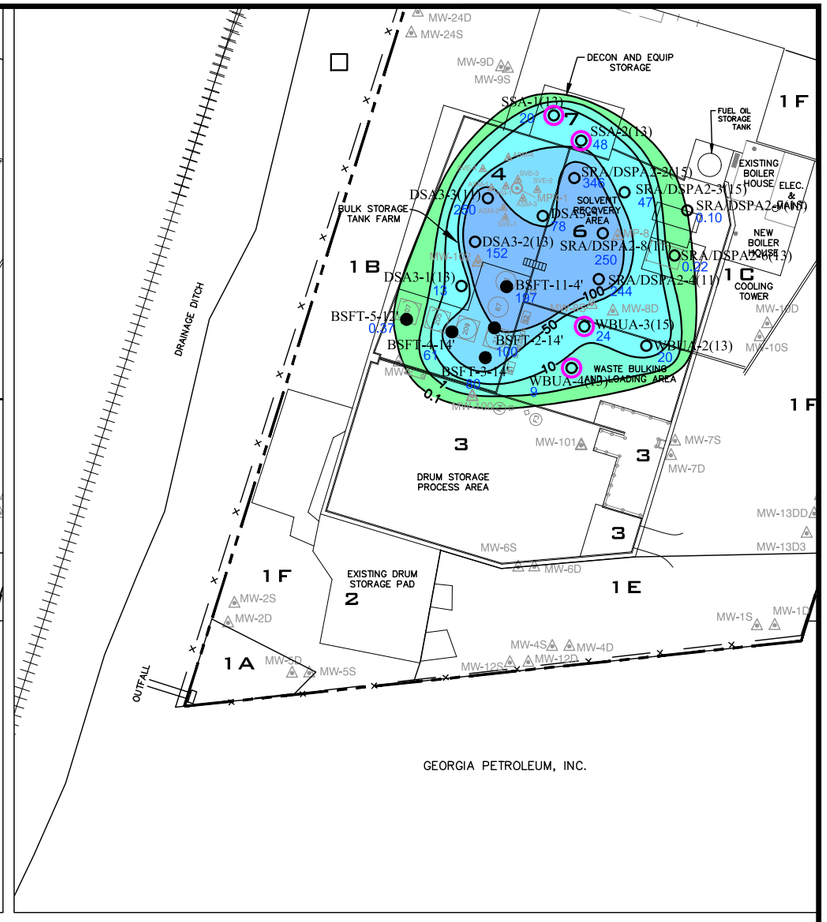
GEORGIA PETROLEUM, INC.

0-2.5 ft BGS



GEORGIA PETROLEUM, INC.

4-9 ft BGS



GEORGIA PETROLEUM, INC.

10-15 ft BGS

NOTE: WHERE DUPLICATES WERE COLLECTED THE HIGHER OF THE PRIMARY OR DUPLICATE RESULT WERE USED FOR CONTOURING

LEGEND

MW-27	SHALLOW MONITORING WELL	⊕	SURFICIAL SOIL SAMPLE (2014)
MW-5D	DEEP MONITORING WELL	●	SOIL BORING LOCATION (2015)
MPX-1	MPX SHALLOW TEST WELL	○	SOIL BORING LOCATION (2016)
SVE-1	SVE SHALLOW TEST WELL	19.1	TOTAL VOVs SOIL CONCENTRATION IN mg/kg
ASI-1	AS SHALLOW TEST WELL	ND	NO TOTAL VOCs DETECTED
○○○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)	J	RESULT IS ESTIMATED BELOW THE REPORTING LIMIT
			TOTAL VOCs CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)
○ DATA COLLECTED 2014 (JAN-MAR) ○ DATA COLLECTED 2015 (SEPT) ○ DATA COLLECTED 2016 (FEB)			CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

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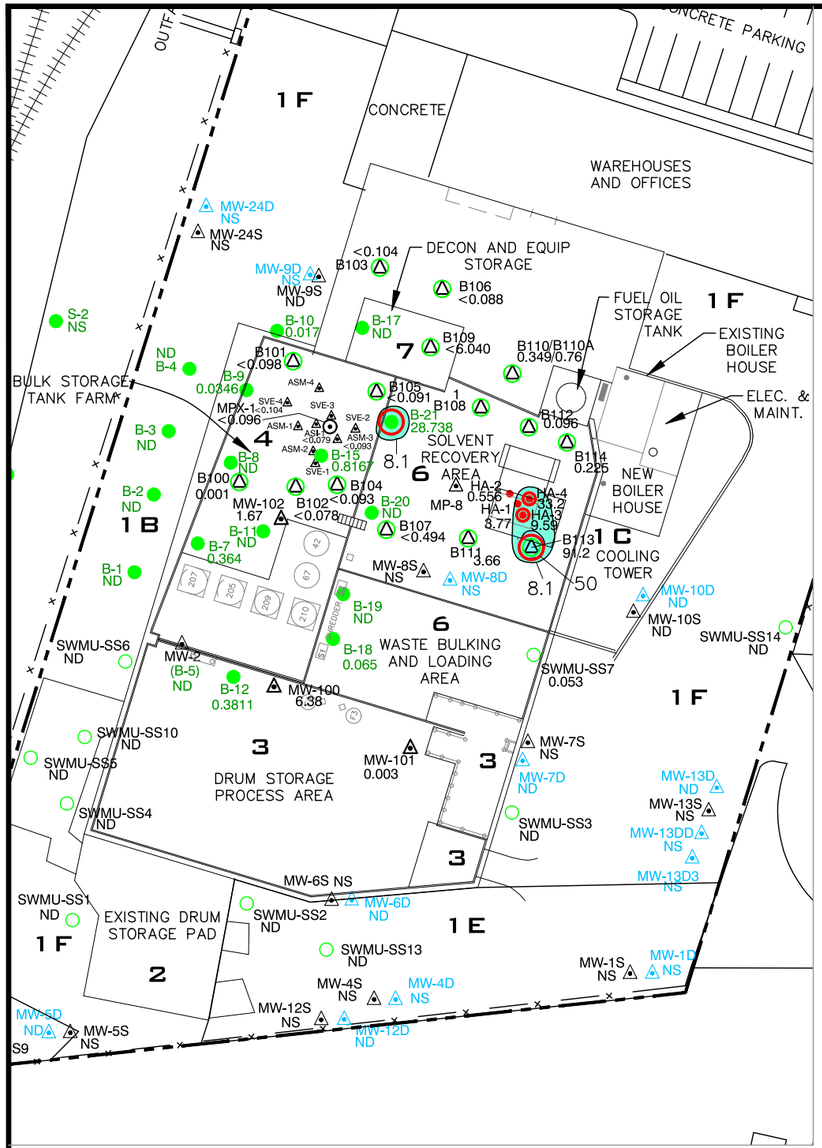
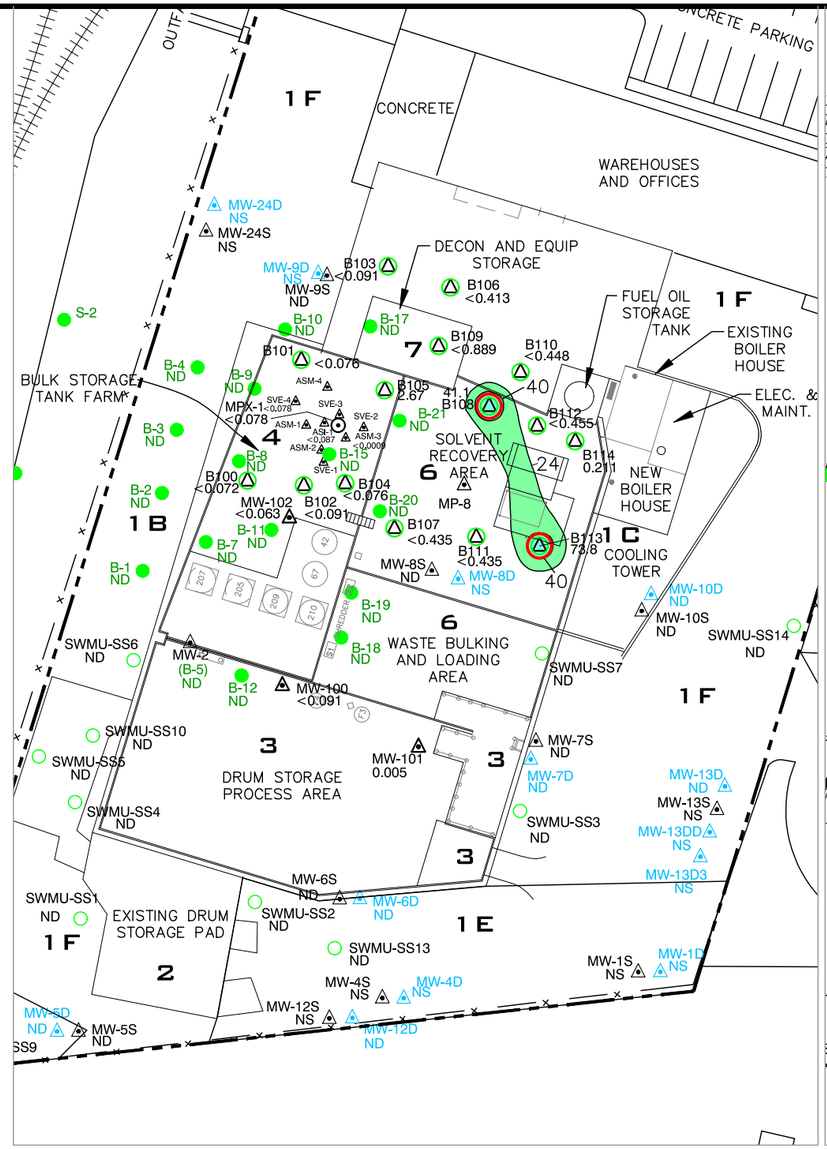
FIGURE 6

TOTAL VOCs IN SOIL (mg/Kg)
JANUARY - MARCH 2014, SEPTEMBER 2015, FEBRUARY 2016
PERMA-FIX OF SOUTH GEORGIA, INC.

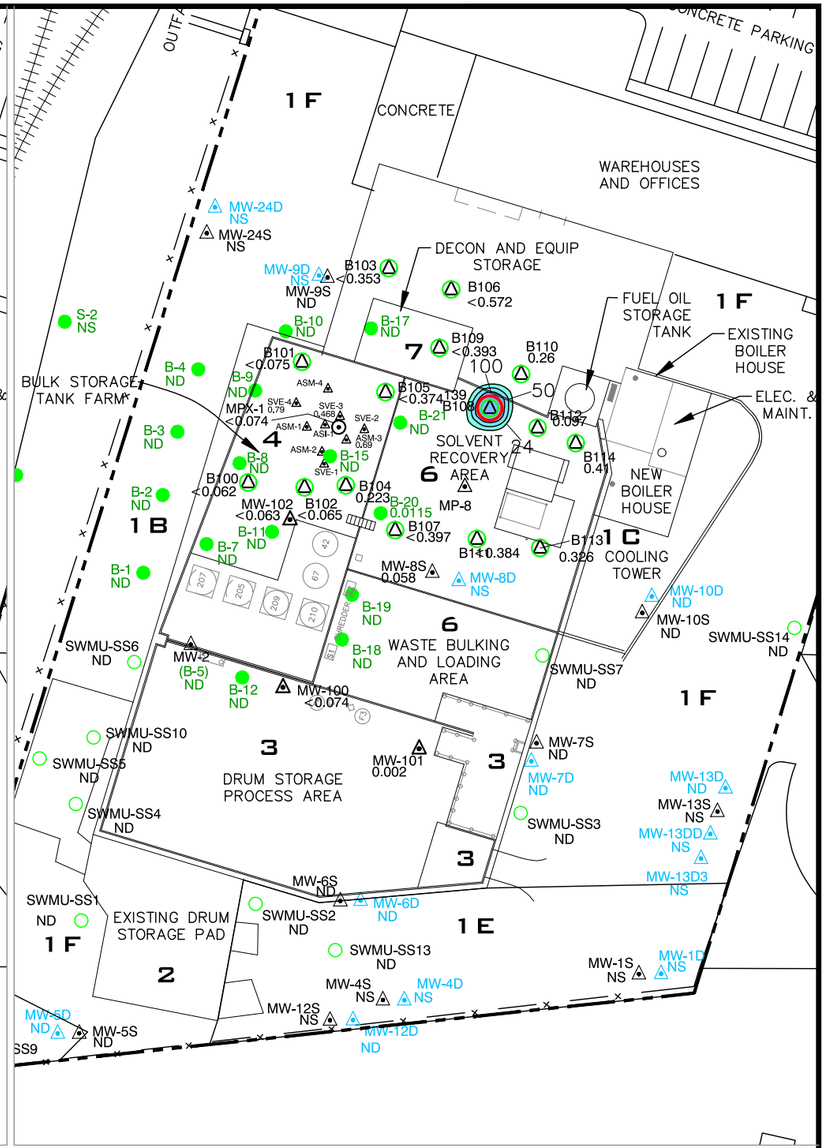
SCALE: 1" = 60'



1-2 ft BGS



5-7 ft BGS



10-12 ft BGS

LEGEND

○ SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION (MARCH, 1996)
● B-19	HISTORICAL SOIL BORING (OCT 1995, MARCH 1996, JUNE 1997)
△ B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
◬ MW-27	SHALLOW MONITORING WELL
◬ MW-5D	DEEP MONITORING WELL
⊙ MPX-1	MPX SHALLOW TEST WELL
◯	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)
◬ SVE-1	SVE SHALLOW TEST WELL
◬ ASI-1	AS SHALLOW TEST WELL
• HA-1	HAND-AUGER SOIL BORING
6.38	PCE SOIL CONCENTRATION IN mg/kg
NS	NOT SAMPLED
ND	NO PCE DETECTED
	PCE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED
	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

Ref: Cameron-Cole 2022

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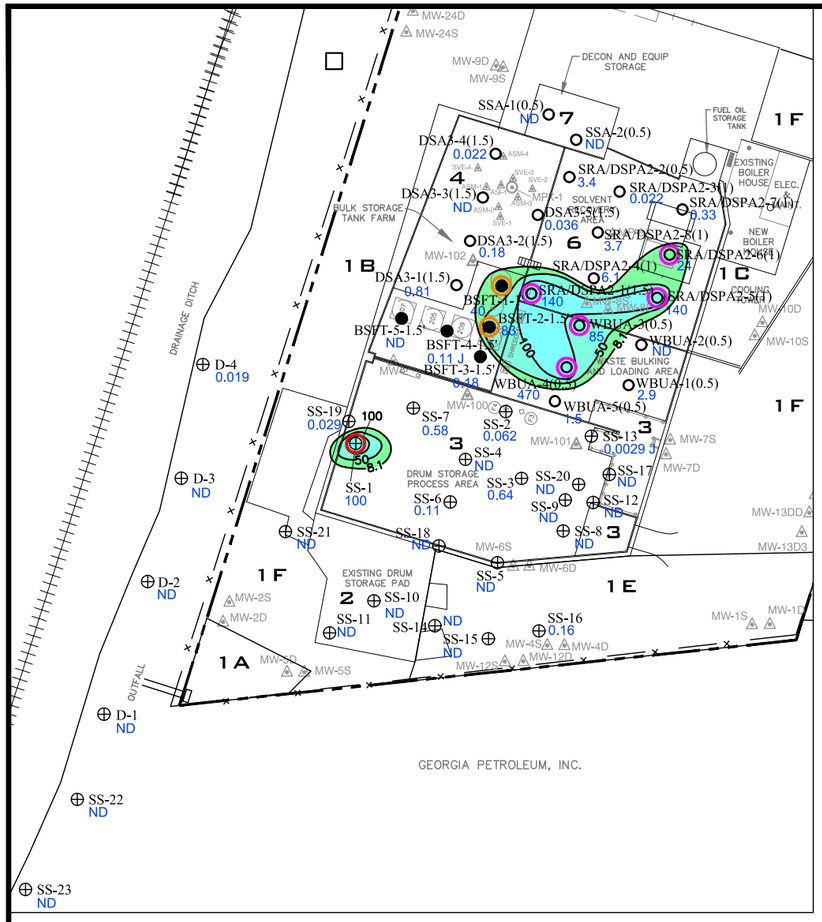
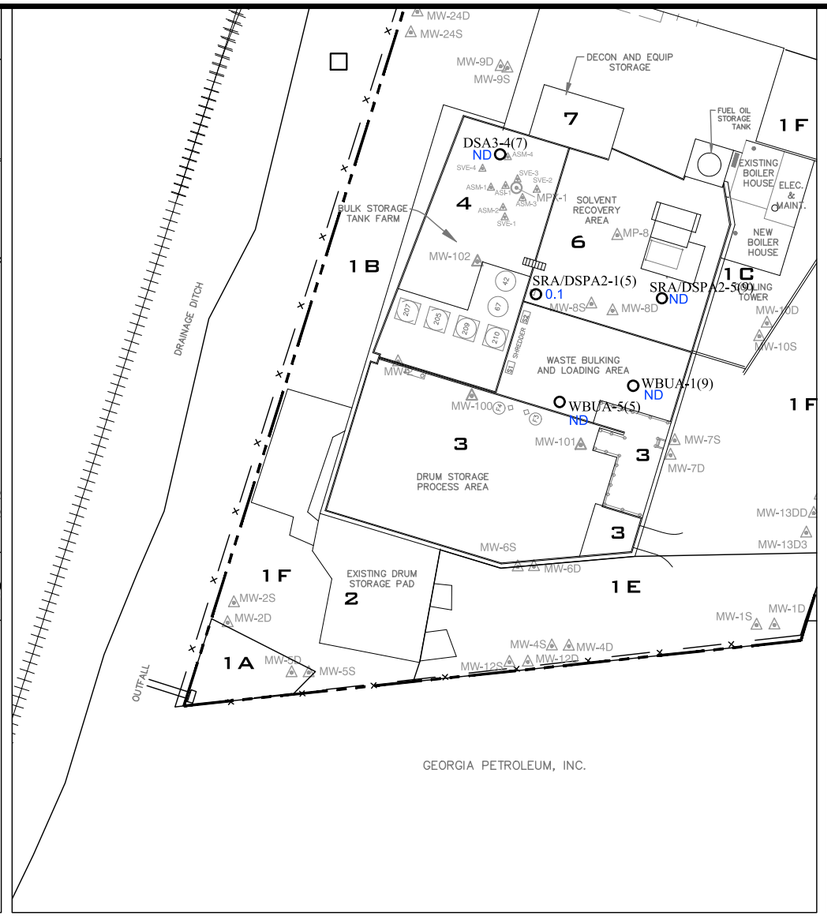
FIGURE 7

TETRACHLOROETHENE IN SOIL - JUNE 2006
PERMA-FIX OF SOUTH GEORGIA, INC.

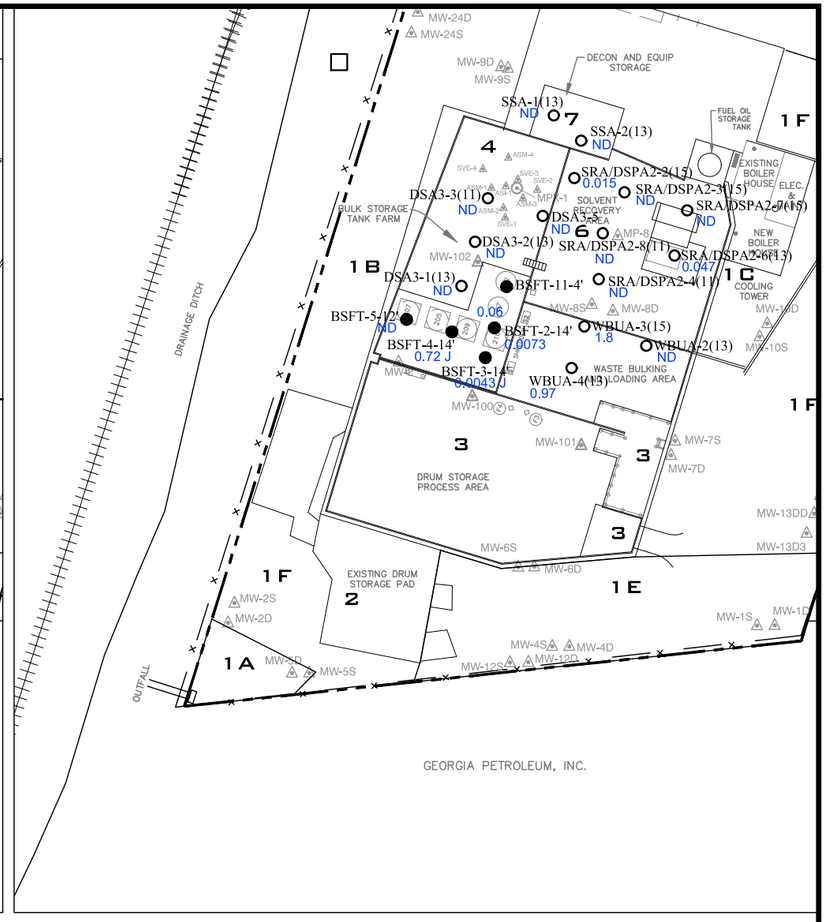
SCALE: 1" = 60'



0-2.5 ft BGS



4-9 ft BGS



10-15 ft BGS

NOTE: WHERE DUPLICATES WERE COLLECTED THE HIGHER OF THE PRIMARY OR DUPLICATE RESULT WERE USED FOR CONTOURING

LEGEND

MW-27	SHALLOW MONITORING WELL	⊕	SURFICIAL SOIL SAMPLE (2014)
MW-5D	DEEP MONITORING WELL	●	SOIL BORING LOCATION (2015)
MPX-1	MPX SHALLOW TEST WELL	○	SOIL BORING LOCATION (2016)
SVE-1	SVE SHALLOW TEST WELL	19.1	PCE SOIL CONCENTRATION IN mg/kg
ASI-1	AS SHALLOW TEST WELL	ND	NO PCE DETECTED
○○○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)	J	RESULT IS ESTIMATED BELOW THE REPORTING LIMIT
			PCE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)
			CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

○ DATA COLLECTED 2014 (JAN-MAR) ○ DATA COLLECTED 2015 (SEPT) ○ DATA COLLECTED 2016 (FEB)

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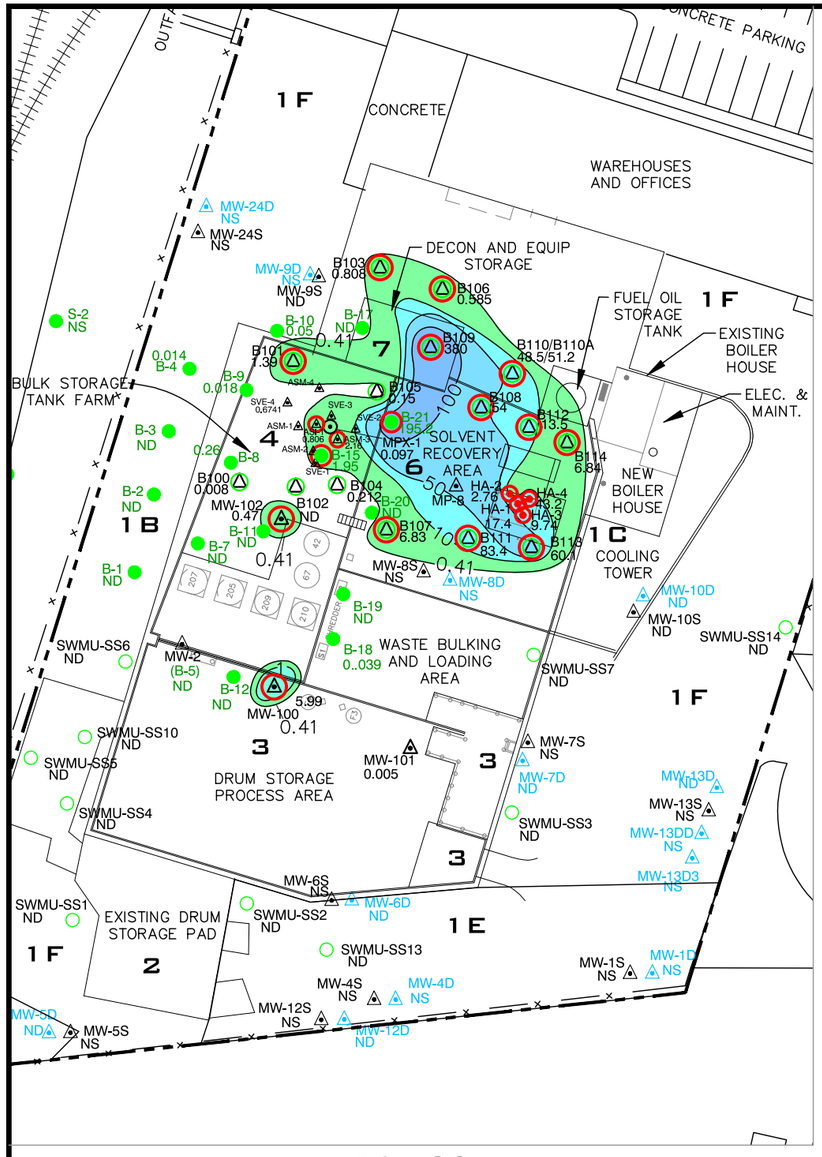
FIGURE 8

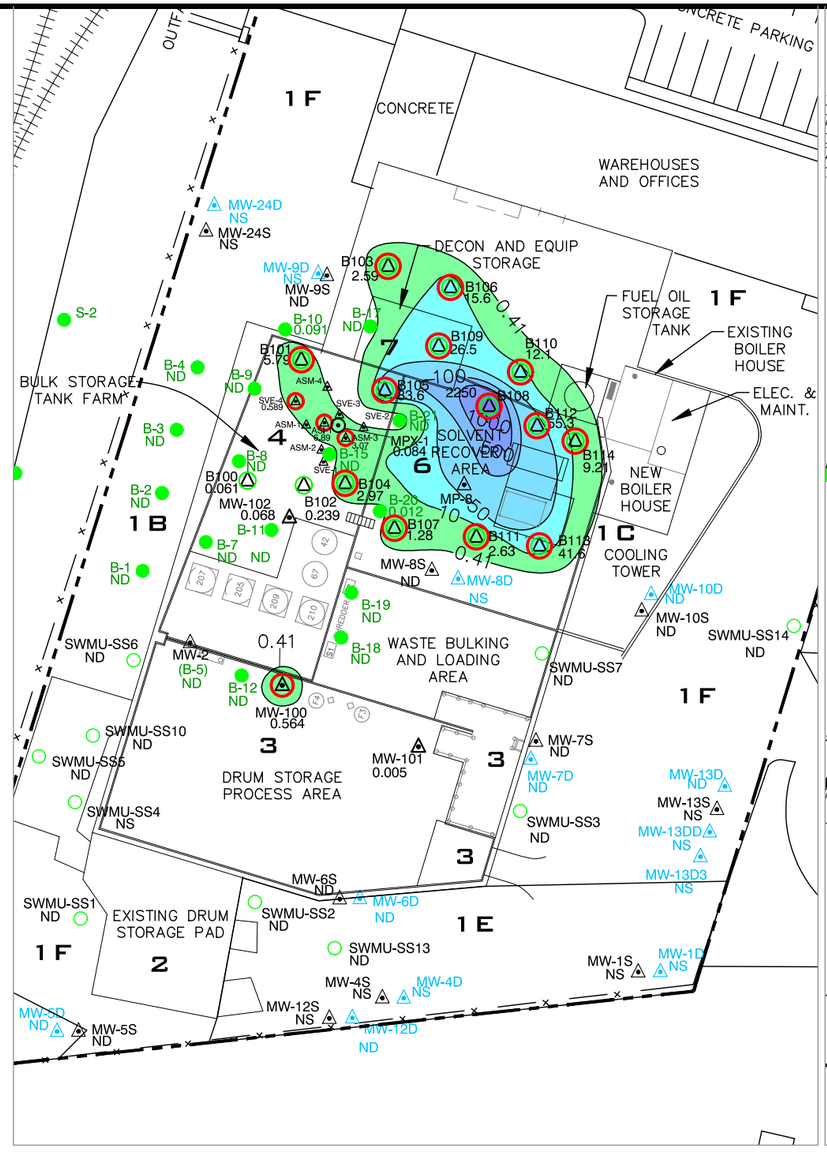
TETRACHLOROETHENE IN SOIL
JANUARY - MARCH 2014, SEPTEMBER 2015, FEBRUARY 2016
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: 1" = 60'

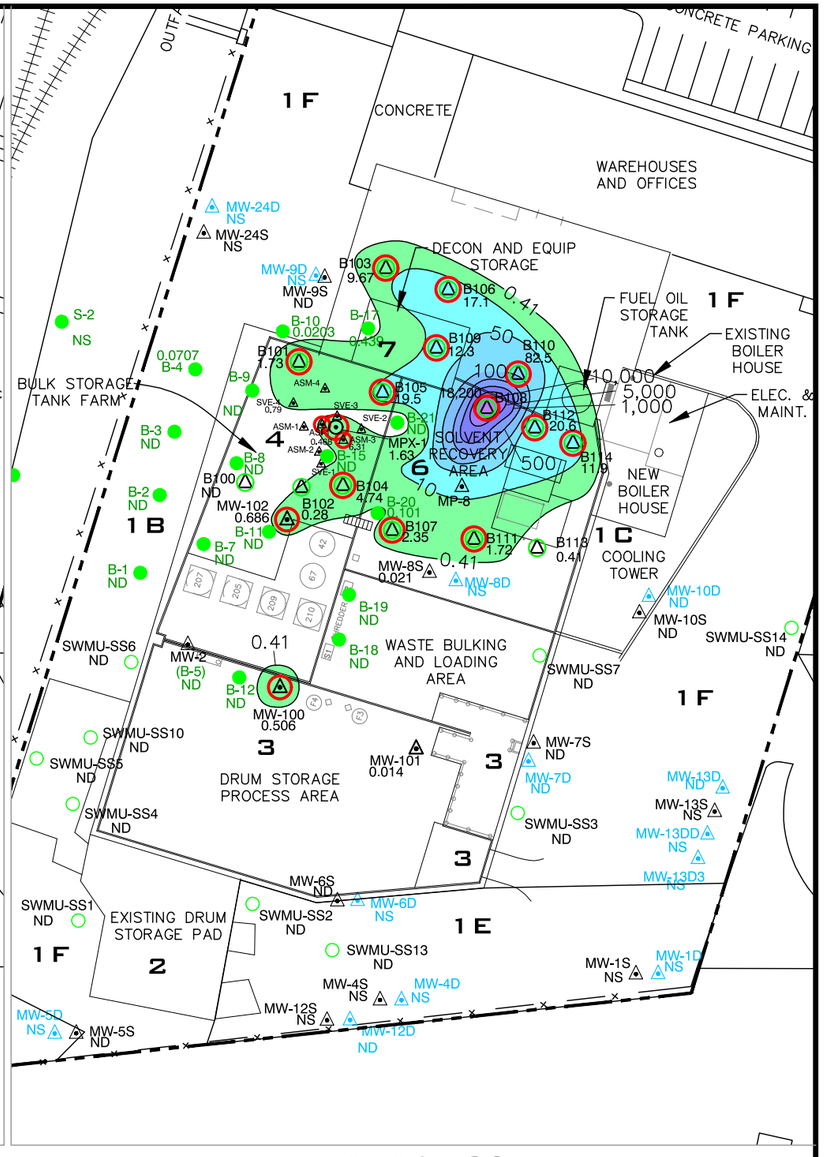
PROJECT:



1-2 ft BGS



5-7 ft BGS



10-12 ft BGS

LEGEND

○ SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION (MARCH, 1996)
● B-19	HISTORICAL SOIL BORING (OCT 1995, MARCH 1996, JUNE 1997)
△ B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
◬ MW-27	SHALLOW MONITORING WELL
◬ MW-5D	DEEP MONITORING WELL
⊙ MPX-1	MPX SHALLOW TEST WELL
○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)
◬ SVE-1	SVE SHALLOW TEST WELL
◬ ASI-1	AS SHALLOW TEST WELL
● HA-1	HAND-AUGER SOIL BORING
19.1	TCE SOIL CONCENTRATION IN mg/kg
NS	NOT SAMPLED
ND	NO TCE DETECTED
	TCE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED
	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

Ref: Cameron-Cole 2022

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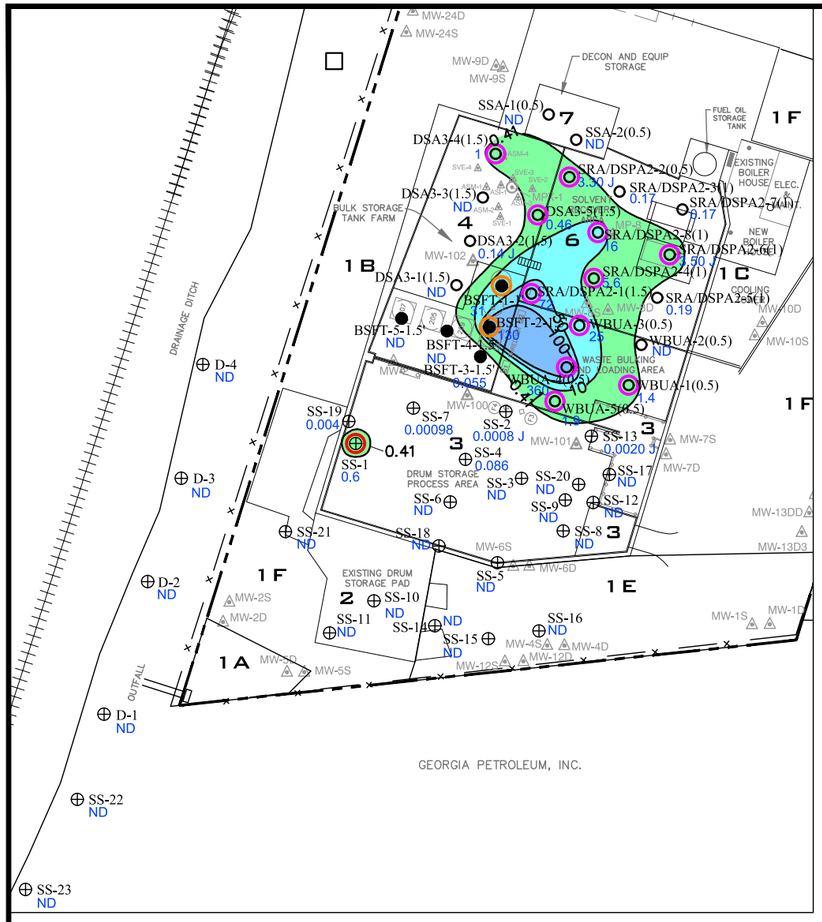
FIGURE 9

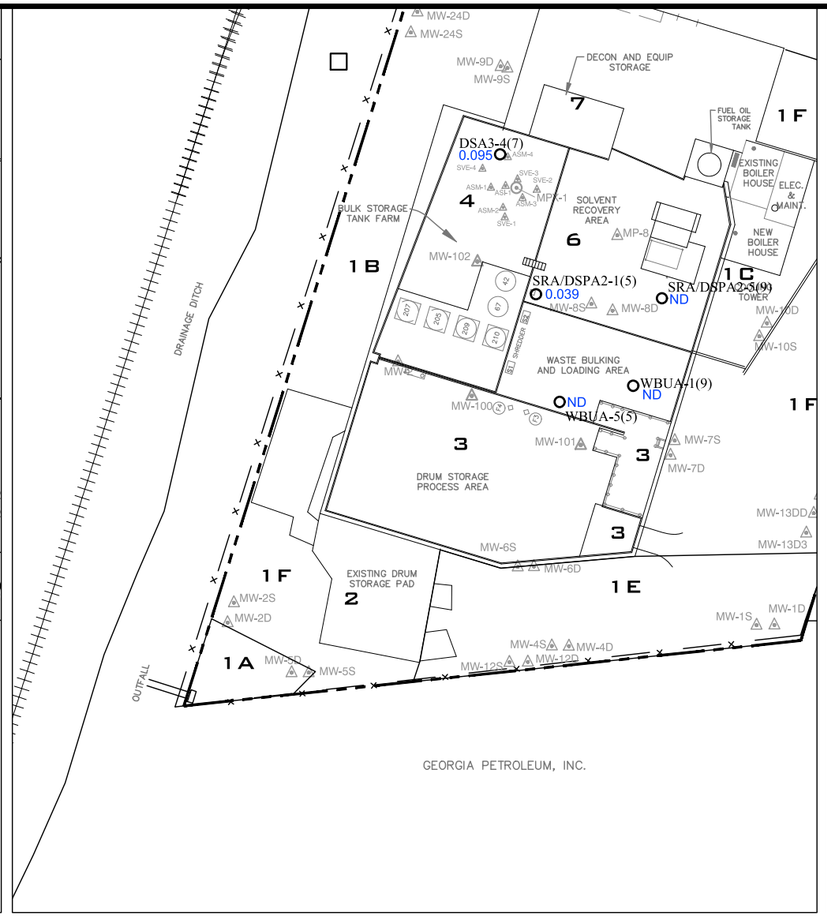
TRICHLOROETHENE IN SOIL - JUNE 2006
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: 1" = 60'



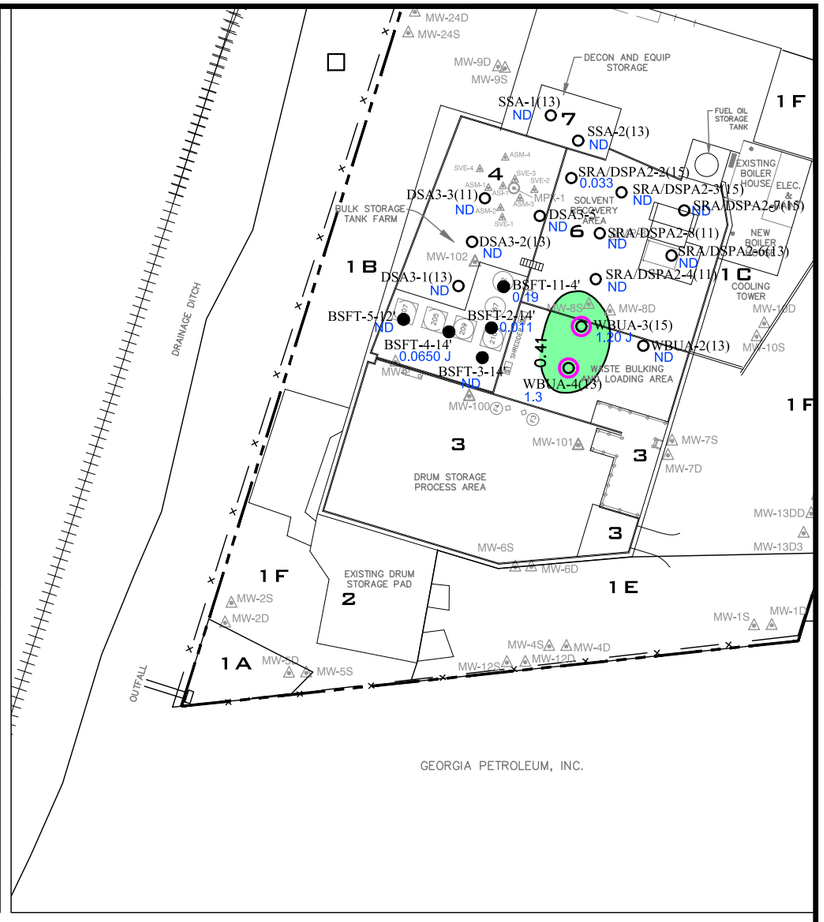
GEORGIA PETROLEUM, INC.

0-2.5 ft BGS



GEORGIA PETROLEUM, INC.

4-9 ft BGS



GEORGIA PETROLEUM, INC.

10-15 ft BGS

NOTE: WHERE DUPLICATES WERE COLLECTED THE HIGHER OF THE PRIMARY OR DUPLICATE RESULT WERE USED FOR CONTOURING

LEGEND

MW-27	SHALLOW MONITORING WELL	⊕	SURFICIAL SOIL SAMPLE (2014)
MW-5D	DEEP MONITORING WELL	●	SOIL BORING LOCATION (2015)
MPX-1	MPX SHALLOW TEST WELL	○	SOIL BORING LOCATION (2016)
SVE-1	SVE SHALLOW TEST WELL	19.1	TCE SOIL CONCENTRATION IN mg/kg
ASI-1	AS SHALLOW TEST WELL	ND	NO TCE DETECTED
○○○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)	J	RESULT IS ESTIMATED BELOW THE REPORTING LIMIT
			TCE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)

○ DATA COLLECTED 2014 (JAN-MAR) ○ DATA COLLECTED 2015 (SEPT) ○ DATA COLLECTED 2016 (FEB)

CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

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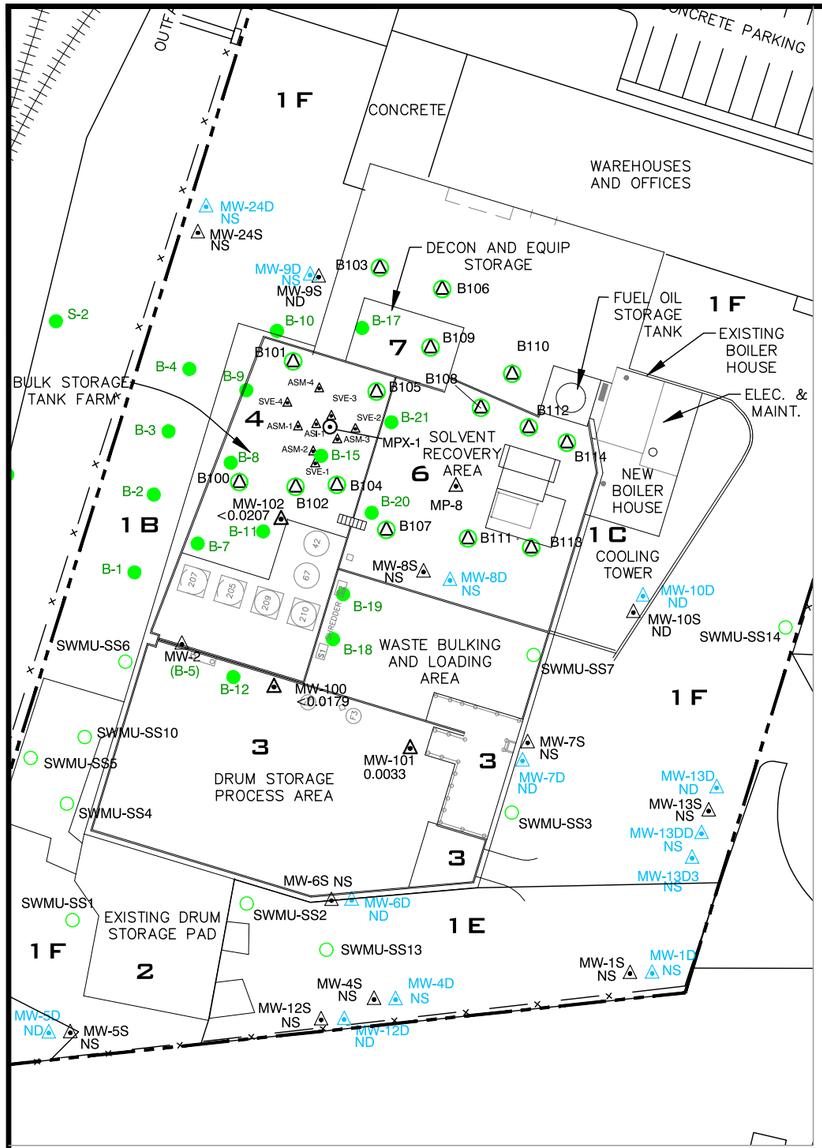
FIGURE 10

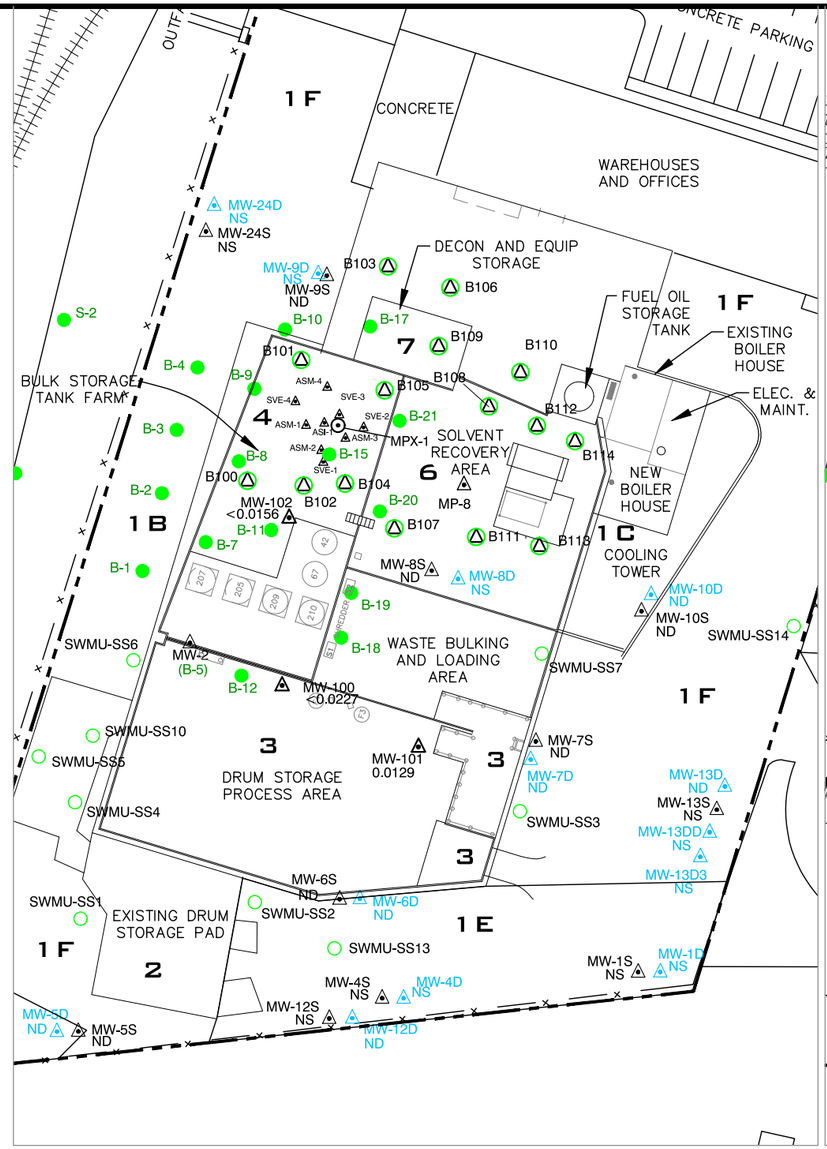
TRICHLOROETHENE IN SOIL
JANUARY - MARCH 2014, SEPTEMBER 2015, FEBRUARY 2016
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: 1" = 60'

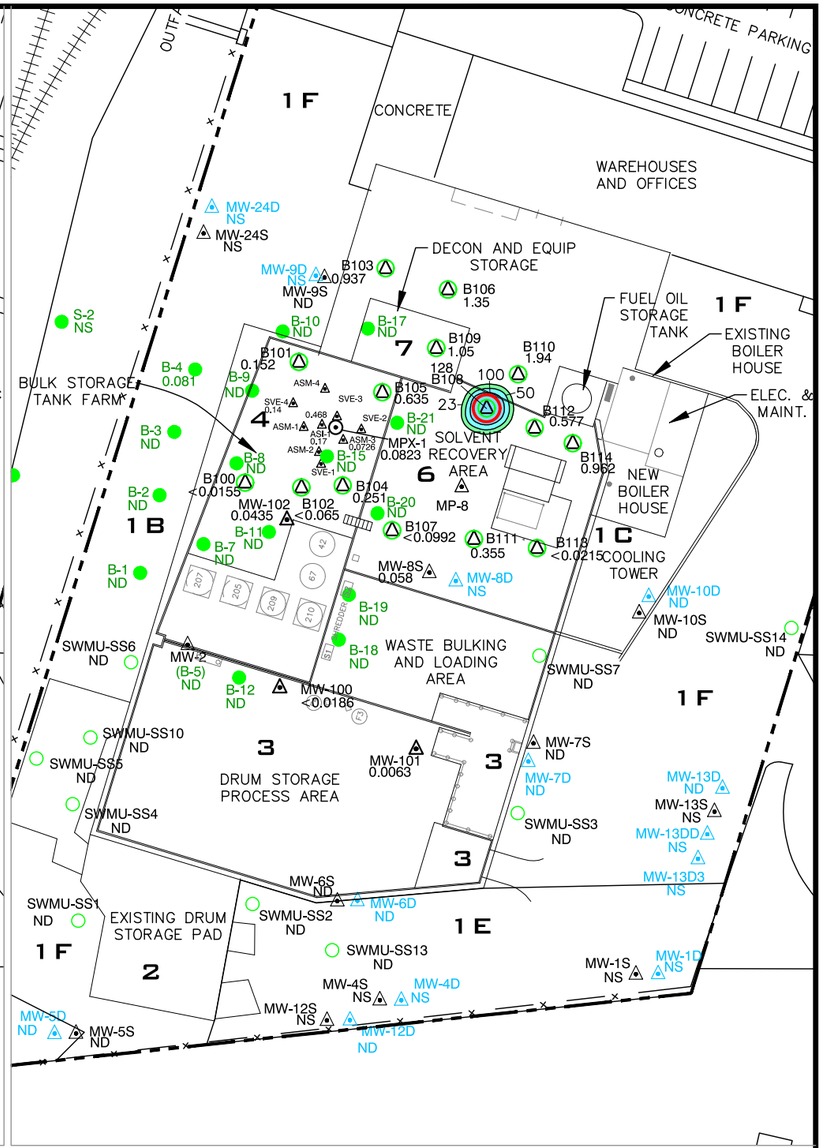
PROJECT:



1-2 ft BGS



5-7 ft BGS



10-12 ft BGS

LEGEND

SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION (MARCH, 1996)
B-19	HISTORICAL SOIL BORING (OCT 1995, MARCH 1996, JUNE 1997)
B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
MW-27	SHALLOW MONITORING WELL
MW-5D	DEEP MONITORING WELL
MPX-1	MPX SHALLOW TEST WELL
	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)
SVE-1	SVE SHALLOW TEST WELL
ASI-1	AS SHALLOW TEST WELL
HA-1	HAND-AUGER SOIL BORING
6.38	1,1-DCE SOIL CONCENTRATION IN mg/kg
NS	NOT SAMPLED
ND	NO 1,1-DCE DETECTED
	1,1-DCE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED
	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

Ref: Cameron-Cole 2022

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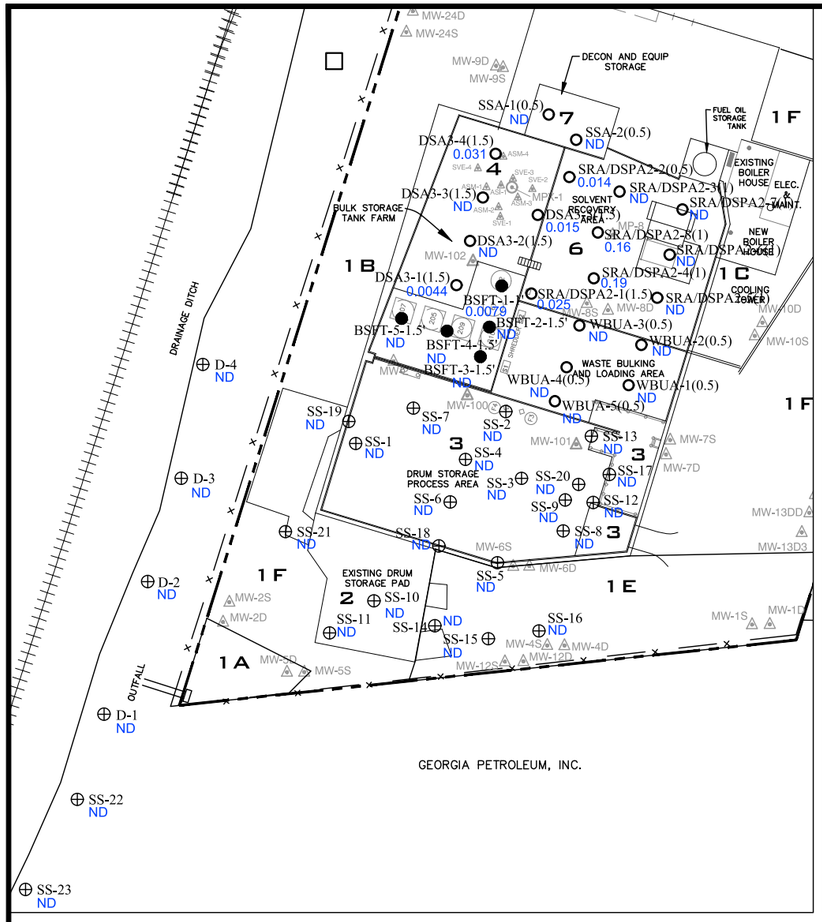
FIGURE 11

1,1-DICHLOROETHENE IN SOIL - JUNE 2006
PERMA-FIX OF SOUTH GEORGIA, INC.

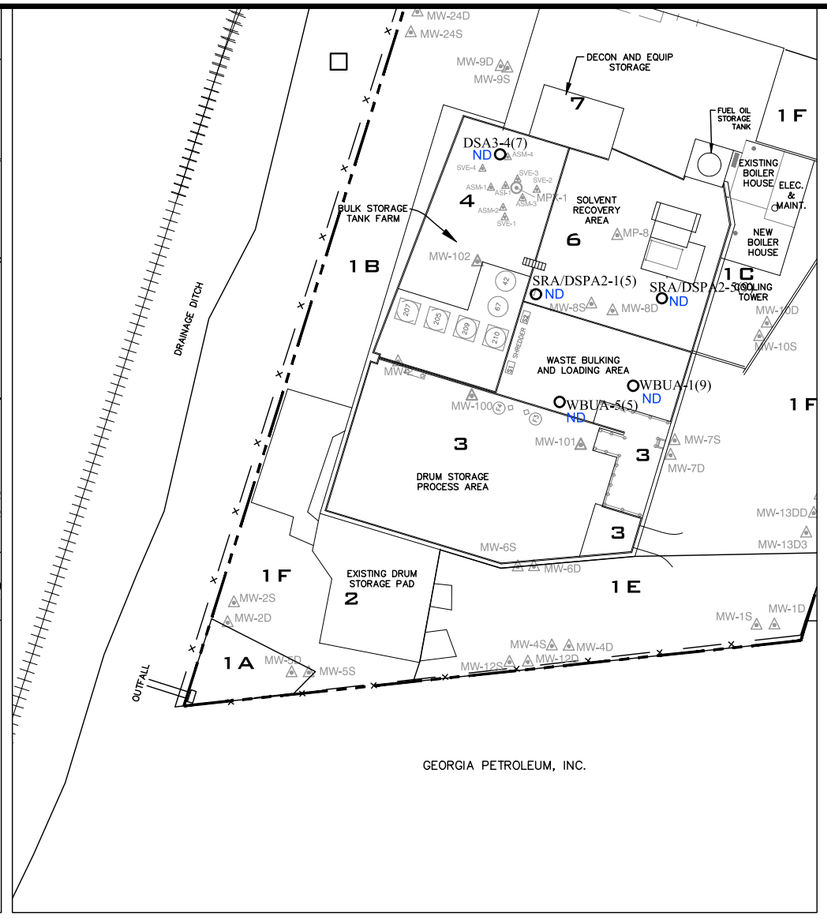
SCALE: 1" = 60'

PROJECT:



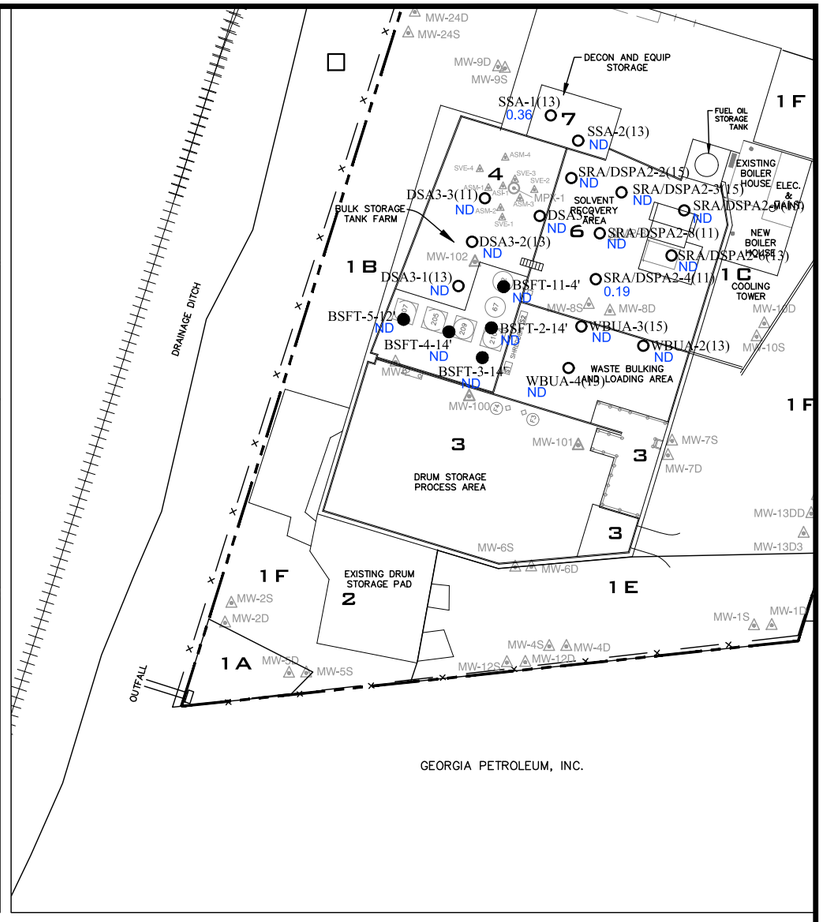
GEORGIA PETROLEUM, INC.

0-2.5 ft BGS



GEORGIA PETROLEUM, INC.

4-9 ft BGS



GEORGIA PETROLEUM, INC.

10-15 ft BGS

NOTE: WHERE DUPLICATES WERE COLLECTED THE HIGHER OF THE PRIMARY OR DUPLICATE RESULT WERE USED FOR CONTOURING

LEGEND

MW-27	SHALLOW MONITORING WELL	⊕	SURFICIAL SOIL SAMPLE (2014)
MW-5D	DEEP MONITORING WELL	●	SOIL BORING LOCATION (2015)
MPX-1	MPX SHALLOW TEST WELL	○	SOIL BORING LOCATION (2016)
SVE-1	SVE SHALLOW TEST WELL	19.1	DCE SOIL CONCENTRATION IN mg/kg
ASI-1	AS SHALLOW TEST WELL	ND	NO 1,1-DCE DETECTED
○○○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)	J	RESULT IS ESTIMATED BELOW THE REPORTING LIMIT
			1,1-DCE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)

○ DATA COLLECTED 2014 (JAN-MAR) ○ DATA COLLECTED 2015 (SEPT) ○ DATA COLLECTED 2016 (FEB)

CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

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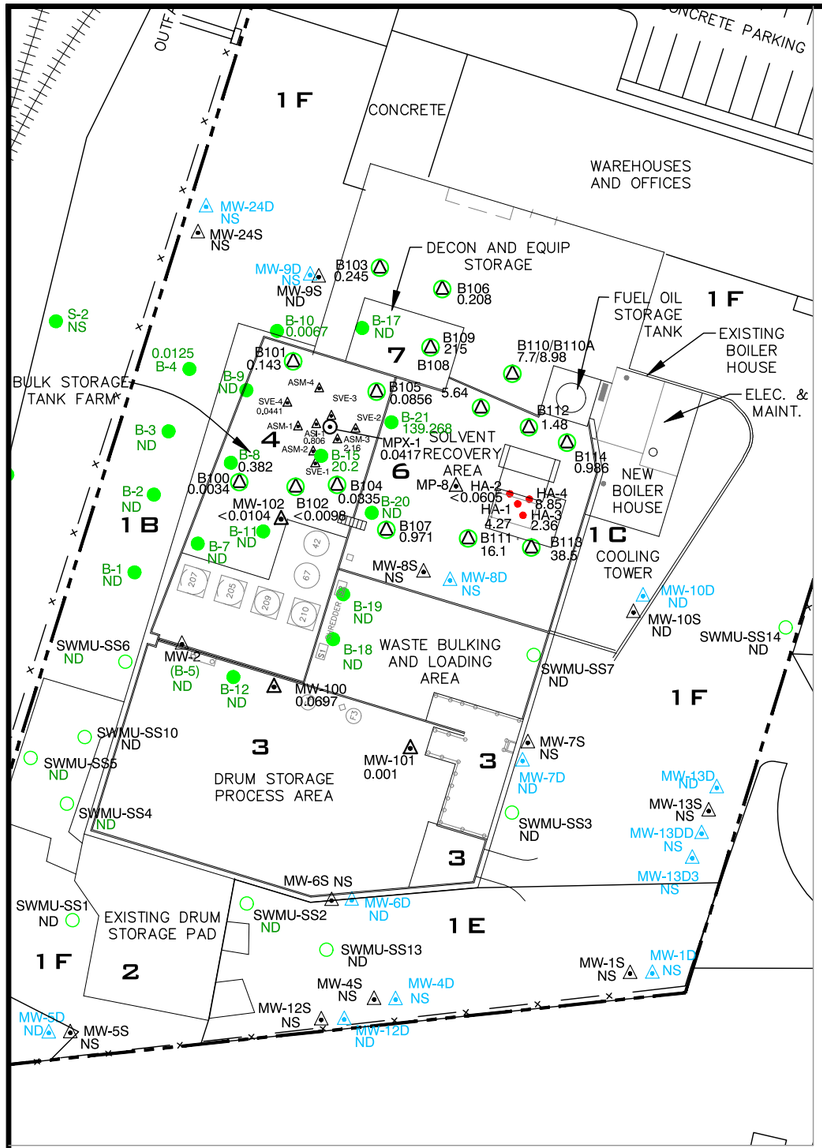
FIGURE 12

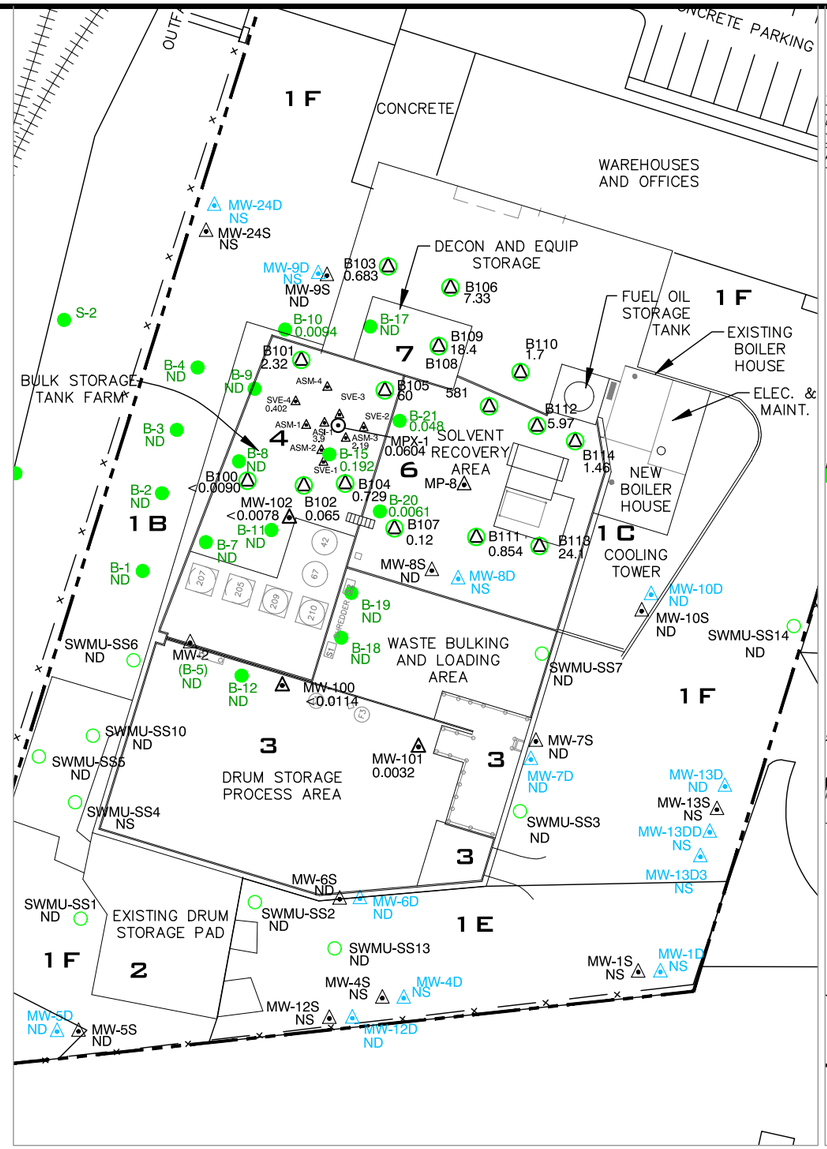
1,1-DICHLOROETHENE IN SOIL
JANUARY - MARCH 2014, SEPTEMBER 2015, FEBRUARY 2016
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: 1" = 60'

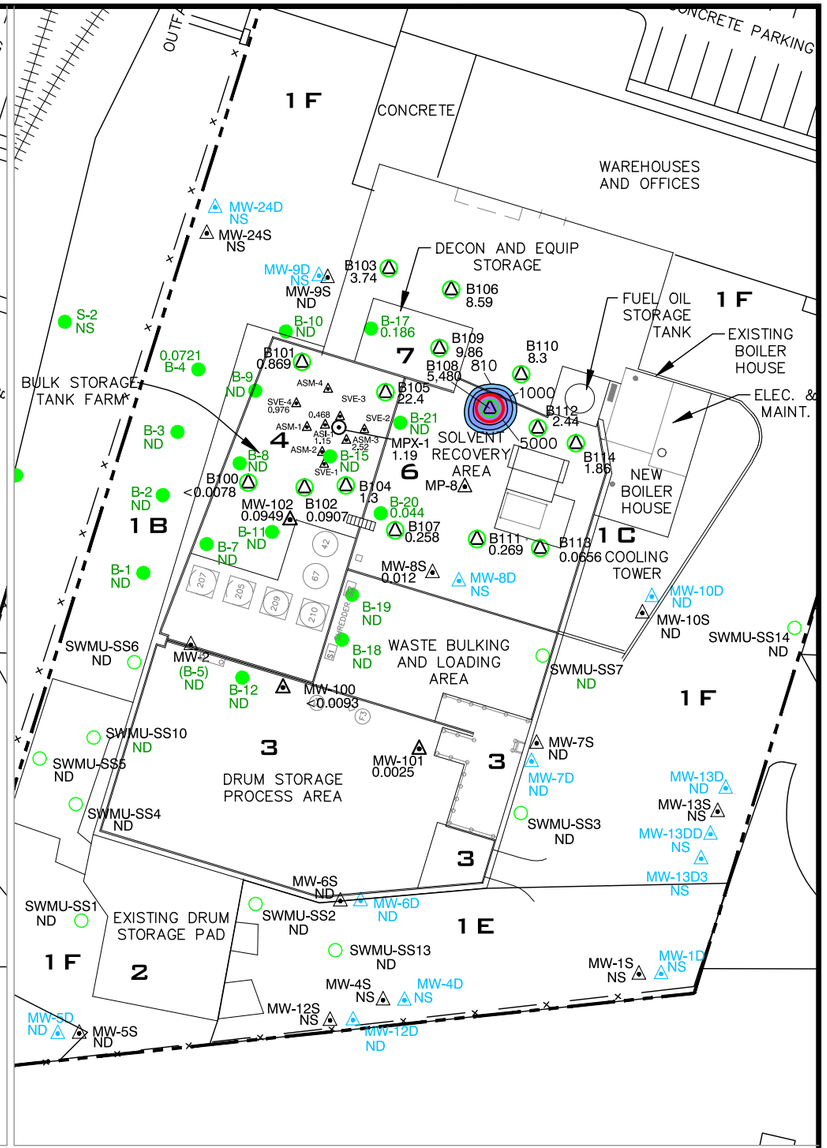
PROJECT:



1-2 ft BGS



5-7 ft BGS



10-12 ft BGS

LEGEND

SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION (MARCH, 1996)
B-19	HISTORICAL SOIL BORING (OCT 1995, MARCH 1996, JUNE 1997)
B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
MW-27	SHALLOW MONITORING WELL
MW-5D	DEEP MONITORING WELL
MPX-1	MPX SHALLOW TEST WELL
	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)
SVE-1	SVE SHALLOW TEST WELL
ASI-1	AS SHALLOW TEST WELL
HA-1	HAND-AUGER SOIL BORING
19.1	1,1,1-TCA SOIL CONCENTRATION IN mg/kg
NS	NOT SAMPLED
ND	NO 1,1,1-TCA DETECTED
	1,1,1-TCA CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED
	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

Ref: Cameron-Cole 2022

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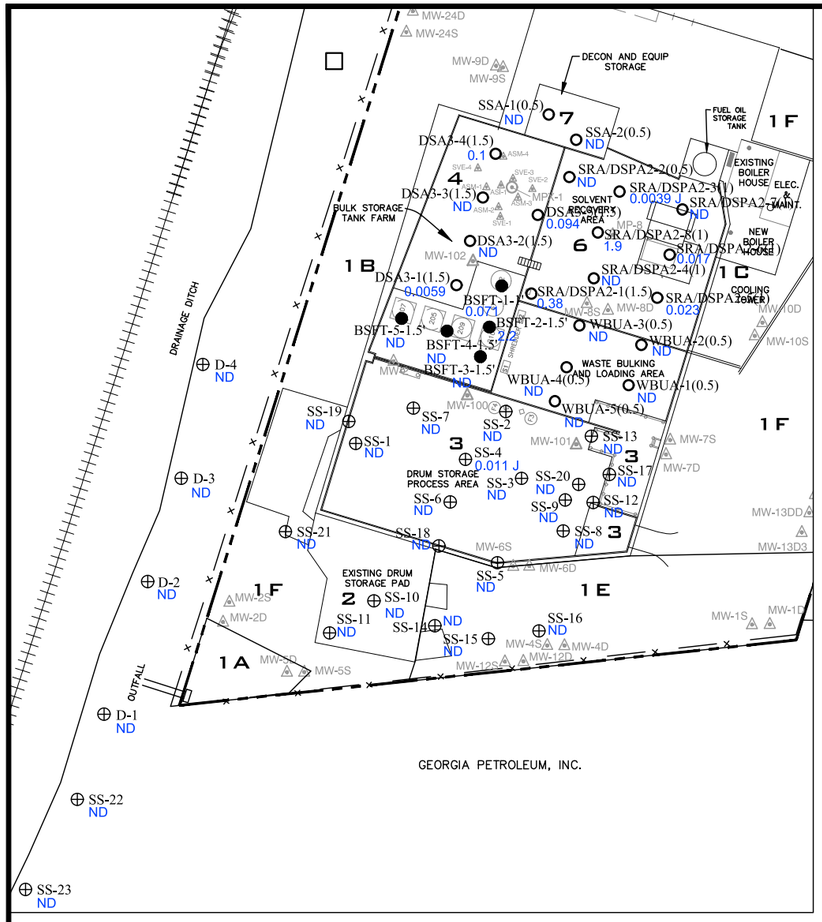
FIGURE 13

1,1,1-TRICHLOROETHANE IN SOIL - JUNE 2006
PERMA-FIX OF SOUTH GEORGIA, INC.

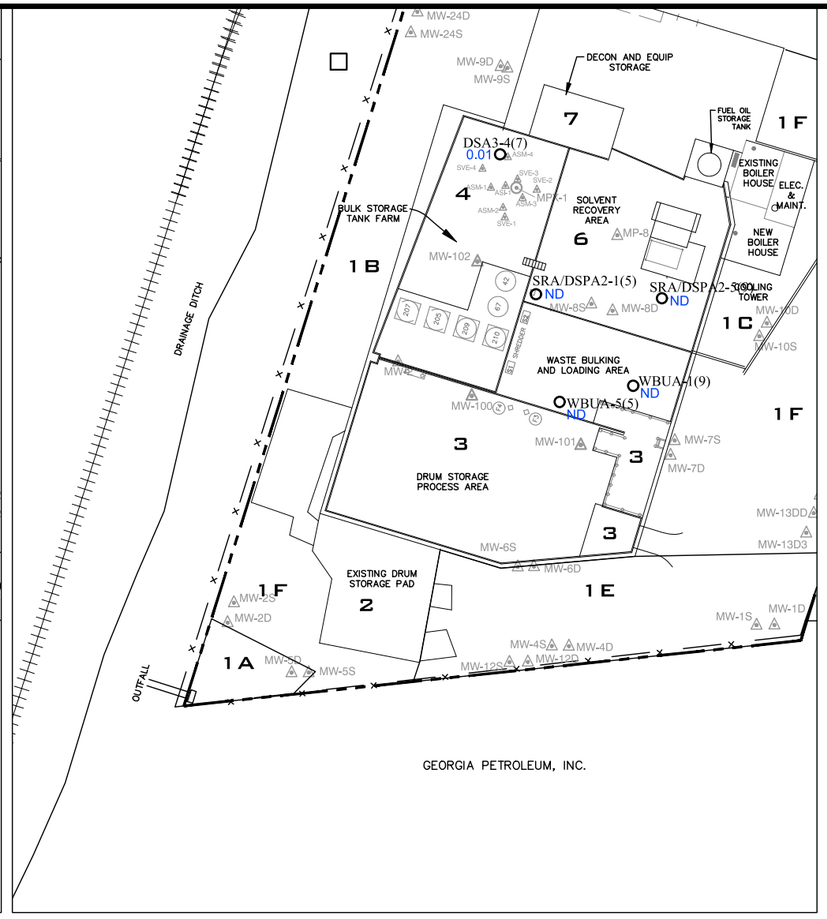
SCALE: 1" = 60'

PROJECT:



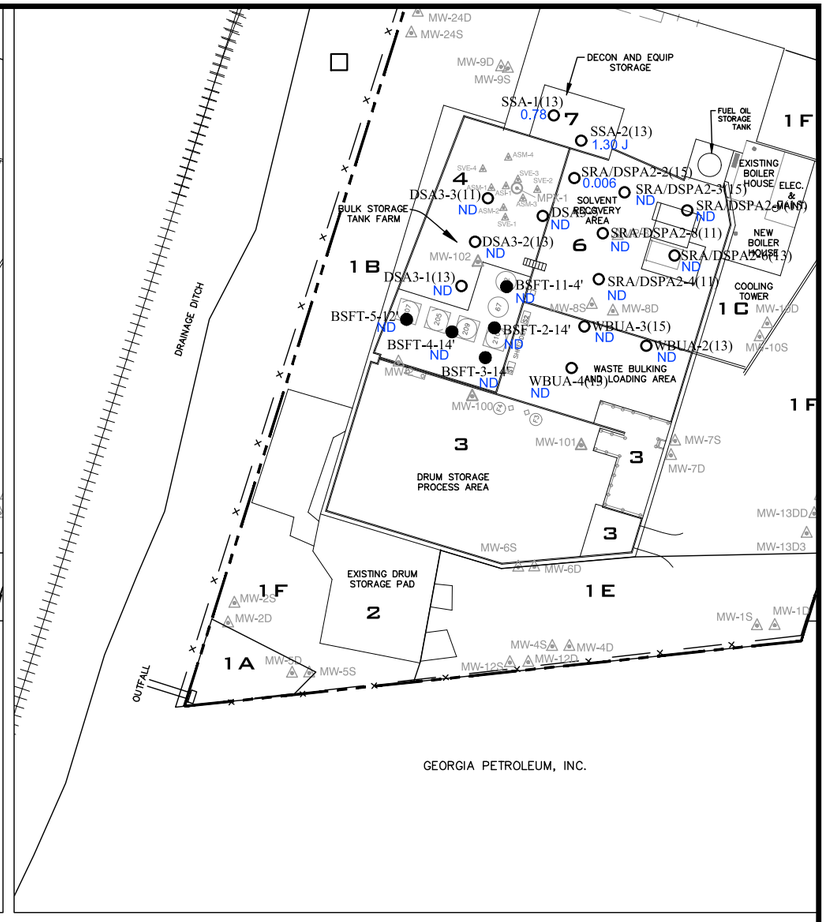
GEORGIA PETROLEUM, INC.

0-2.5 ft BGS



GEORGIA PETROLEUM, INC.

4-9 ft BGS



GEORGIA PETROLEUM, INC.

10-15 ft BGS

NOTE: WHERE DUPLICATES WERE COLLECTED THE HIGHER OF THE PRIMARY OR DUPLICATE RESULT WERE USED FOR CONTOURING

LEGEND

MW-27	SHALLOW MONITORING WELL	⊕	SURFICIAL SOIL SAMPLE (2014)
MW-5D	DEEP MONITORING WELL	●	SOIL BORING LOCATION (2015)
MPX-1	MPX SHALLOW TEST WELL	○	SOIL BORING LOCATION (2016)
SVE-1	SVE SHALLOW TEST WELL	19.1	1,1,1-TCA SOIL CONCENTRATION IN mg/kg
ASI-1	AS SHALLOW TEST WELL	ND	NO 1,1,1-TCA DETECTED
○○○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)	J	RESULT IS ESTIMATED BELOW THE REPORTING LIMIT
			1,1,1-TCA CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)

○ DATA COLLECTED 2014 (JAN-MAR) ○ DATA COLLECTED 2015 (SEPT) ○ DATA COLLECTED 2016 (FEB)

CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

Ref: Cameron-Cole 2022

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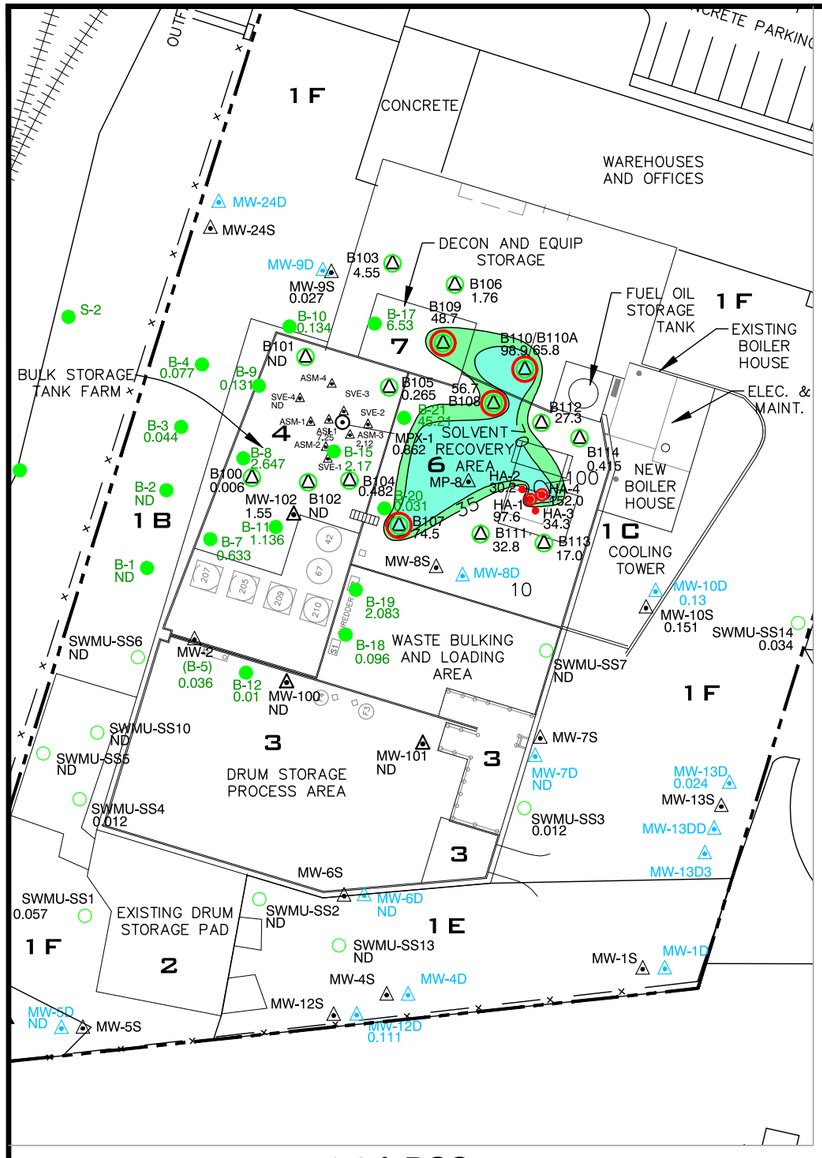
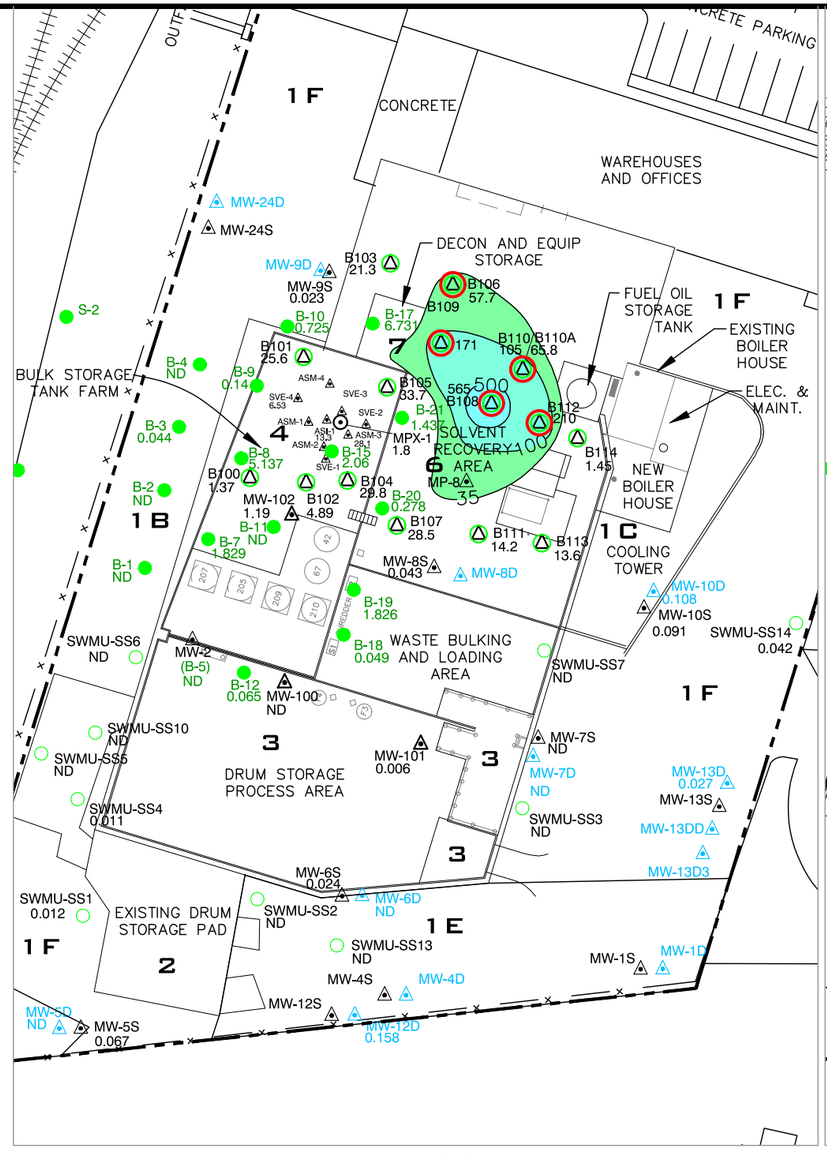
FIGURE 14

1,1,1-TRICHLOROETHANE IN SOIL
JANUARY - MARCH 2014, SEPTEMBER 2015, FEBRUARY 2016
PERMA-FIX OF SOUTH GEORGIA, INC.

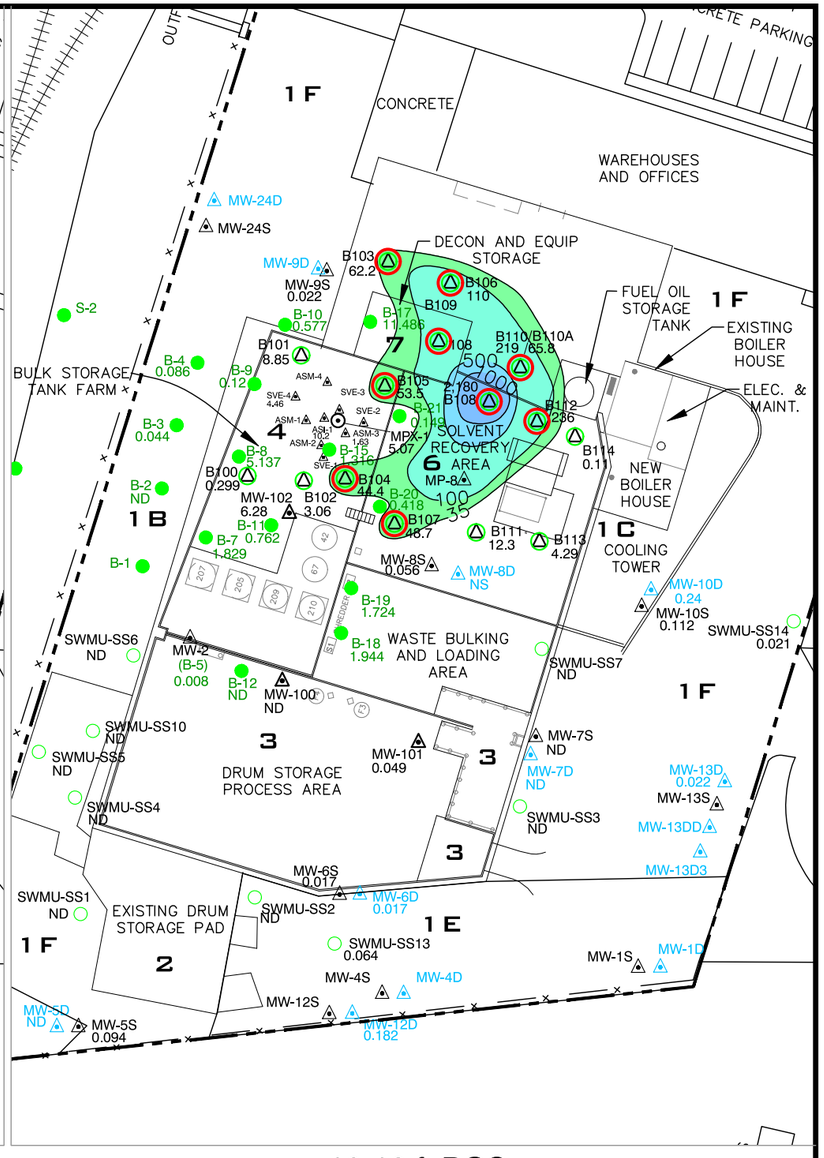
SCALE: 1" = 60'



1-2 ft BGS



5-7 ft BGS



10-12 ft BGS

LEGEND

○ SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION (MARCH, 1996)
● B-19	HISTORICAL SOIL BORING (OCT 1995, MARCH 1996, JUNE 1997)
△ B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
◬ MW-27	SHALLOW MONITORING WELL
◬ MW-5D	DEEP MONITORING WELL
⊙ MPX-1	MPX SHALLOW TEST WELL
○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)
◬ SVE-1	SVE SHALLOW TEST WELL
◬ ASI-1	AS SHALLOW TEST WELL
• HA-1	HAND-AUGER SOIL BORING
19.1	METHYLENE CHLORIDE SOIL CONCENTRATION IN mg/kg
NS	NOT SAMPLED
ND	NO METHYLENE CHLORIDE DETECTED
	METHYLENE CHLORIDE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED
	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

Ref: Cameron-Cole 2022

N

0 60

FEET

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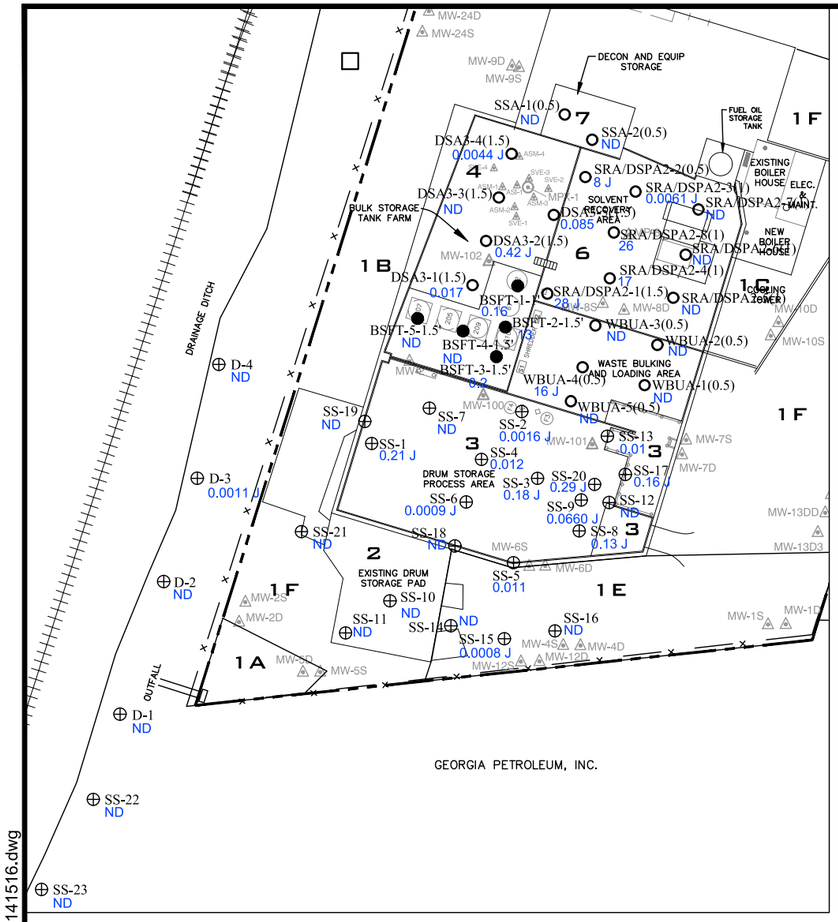
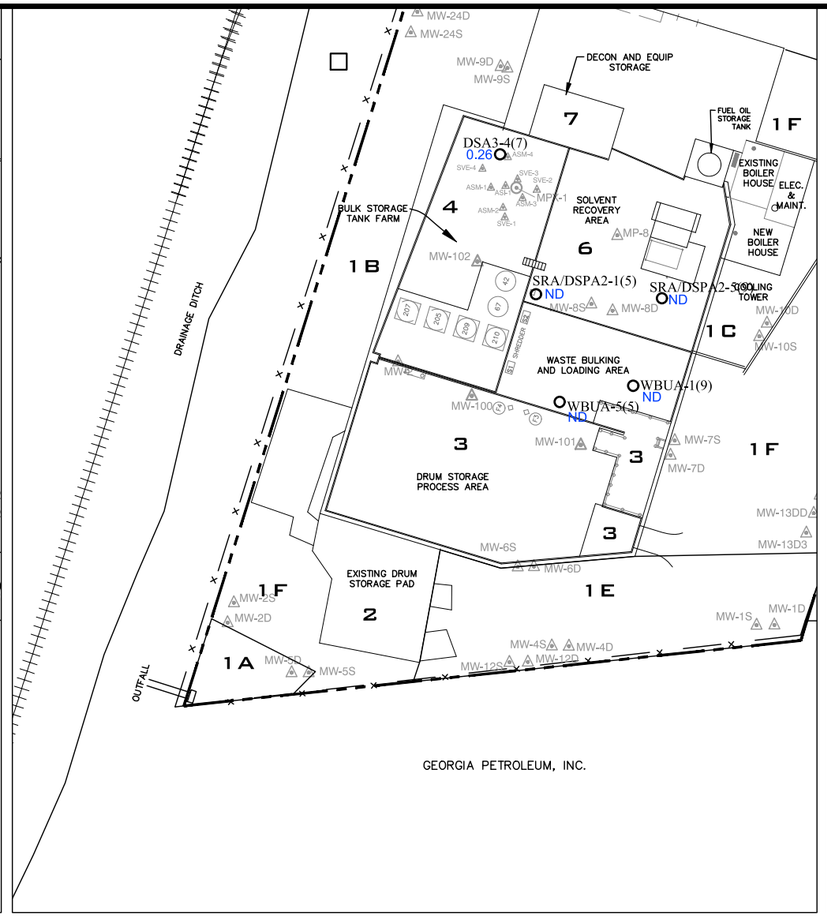
FIGURE 15

METHYLENE CHLORIDE IN SOIL - JUNE 2006
PERMA-FIX OF SOUTH GEORGIA, INC.

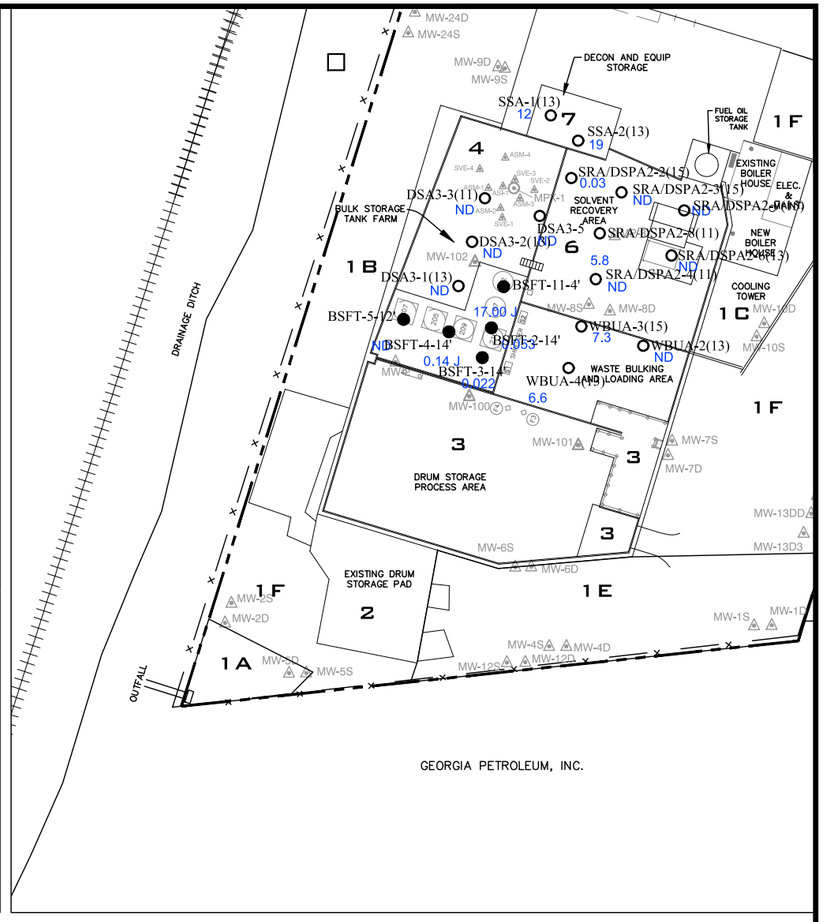
SCALE: 1" = 60'



0-2.5 ft BGS



4-9 ft BGS



10-15 ft BGS

LEGEND

MW-27	SHALLOW MONITORING WELL	⊕	SURFICIAL SOIL SAMPLE (2014)
MW-5D	DEEP MONITORING WELL	●	SOIL BORING LOCATION (2015)
MPX-1	MPX SHALLOW TEST WELL	○	SOIL BORING LOCATION (2016)
SVE-1	SVE SHALLOW TEST WELL	19.1	METHYLENE CHLORIDE SOIL CONCENTRATION IN mg/kg
ASI-1	AS SHALLOW TEST WELL	ND	NO METHYLENE CHLORIDE DETECTED
○○○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)	J	RESULT IS ESTIMATED BELOW THE REPORTING LIMIT
			METHYLENE CHLORIDE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)
○ DATA COLLECTED 2014 (JAN-MAR)	○ DATA COLLECTED 2015 (SEPT)	○ DATA COLLECTED 2016 (FEB)	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

N

0 75

FEET

Ref: Cameron-Cole 2022

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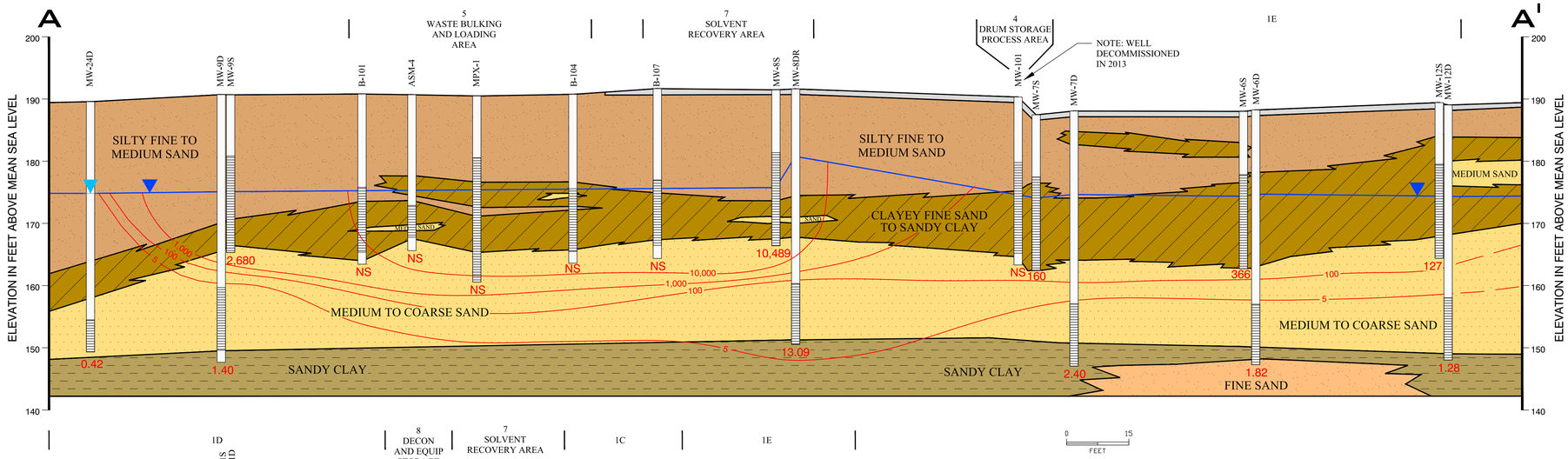
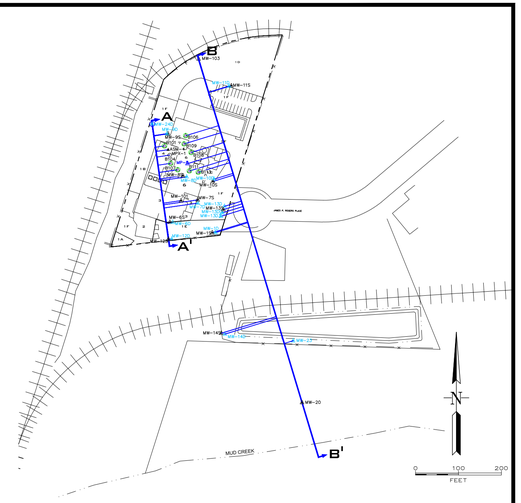
FIGURE 16

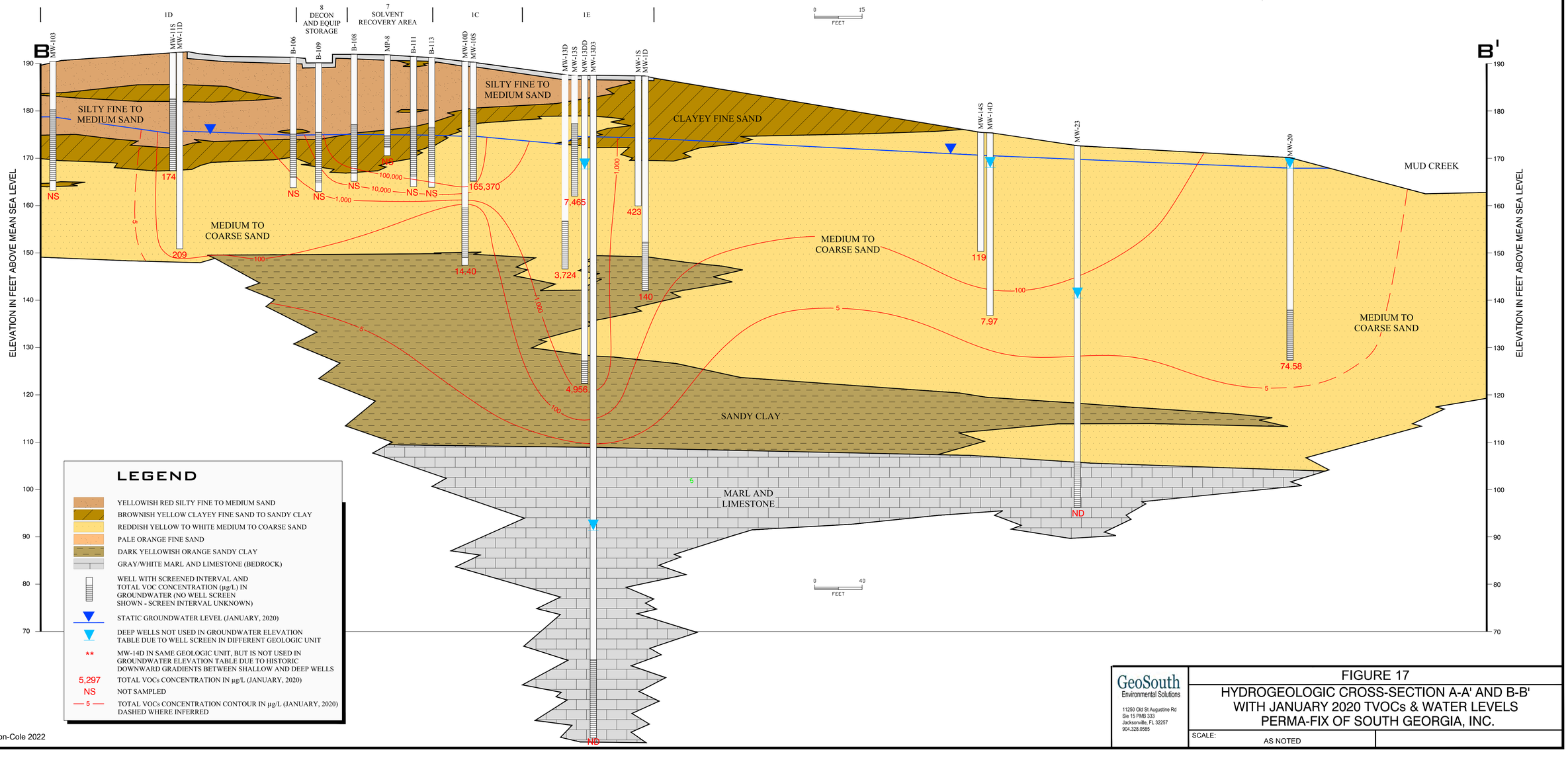
METHYLENE CHLORIDE IN SOIL
JANUARY - MARCH 2014, SEPTEMBER 2015, FEBRUARY 2016
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: 1" = 60'

M:\clients\Cameron-Cole\1004-Perma-Fix-Valdosta\2020\Closure\Val-FIG 16-MC-Soil-141516.dwg







LEGEND

- YELLOWISH RED SILTY FINE TO MEDIUM SAND
- BROWNISH YELLOW CLAYEY FINE SAND TO SANDY CLAY
- REDDISH YELLOW TO WHITE MEDIUM TO COARSE SAND
- PALE ORANGE FINE SAND
- DARK YELLOWISH ORANGE SANDY CLAY
- GRAY/WHITE MARL AND LIMESTONE (BEDROCK)
- WELL WITH SCREENED INTERVAL AND TOTAL VOC CONCENTRATION (µg/L) IN GROUNDWATER (NO WELL SCREEN SHOWN - SCREEN INTERVAL UNKNOWN)
- STATIC GROUNDWATER LEVEL (JANUARY, 2020)
- DEEP WELLS NOT USED IN GROUNDWATER ELEVATION TABLE DUE TO WELL SCREEN IN DIFFERENT GEOLOGIC UNIT
- ** MW-14D IN SAME GEOLOGIC UNIT, BUT IS NOT USED IN GROUNDWATER ELEVATION TABLE DUE TO HISTORIC DOWNWARD GRADIENTS BETWEEN SHALLOW AND DEEP WELLS
- 5,297 TOTAL VOCs CONCENTRATION IN µg/L (JANUARY, 2020)
- NS NOT SAMPLED
- — 5 — TOTAL VOCs CONCENTRATION CONTOUR IN µg/L (JANUARY, 2020) DASHED WHERE INFERRED

Ref: Cameron-Cole 2022

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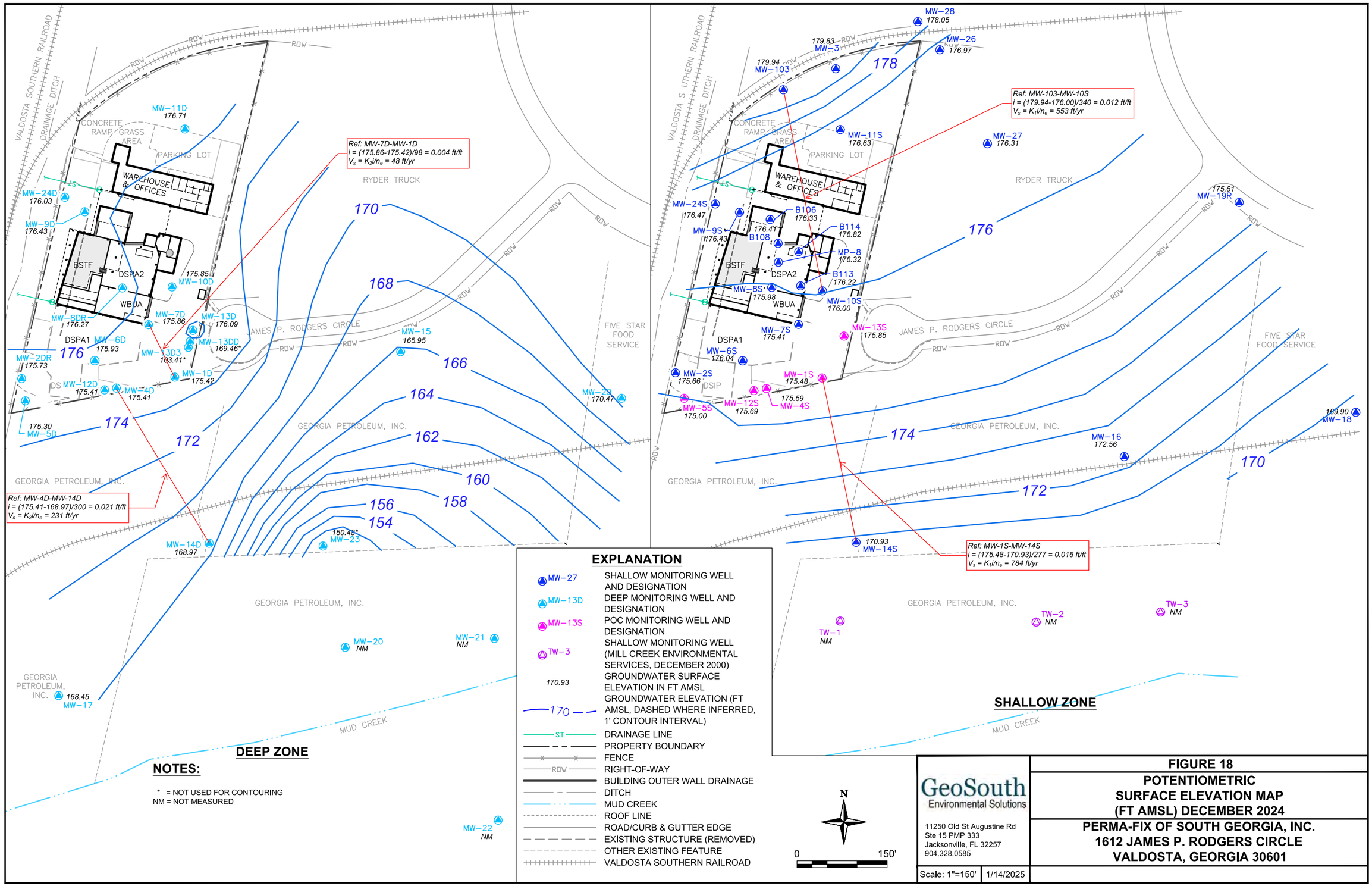
FIGURE 17

HYDROGEOLOGIC CROSS-SECTION A-A' AND B-B' WITH JANUARY 2020 TVOCs & WATER LEVELS PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: AS NOTED



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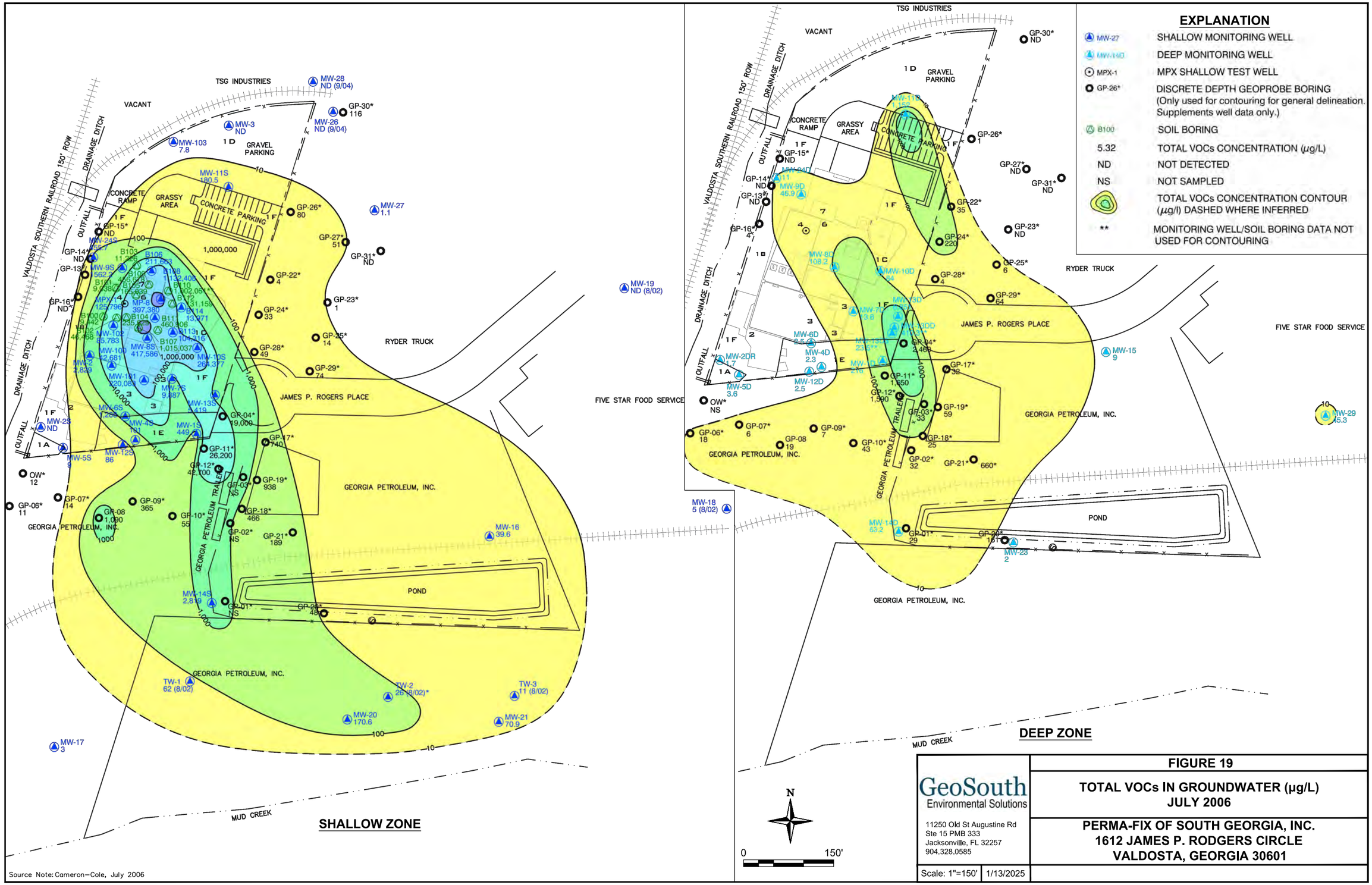
Scale: 1"=150' | 1/14/2025

FIGURE 18
POTENTIOMETRIC SURFACE ELEVATION MAP (FT AMSL) DECEMBER 2024
PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



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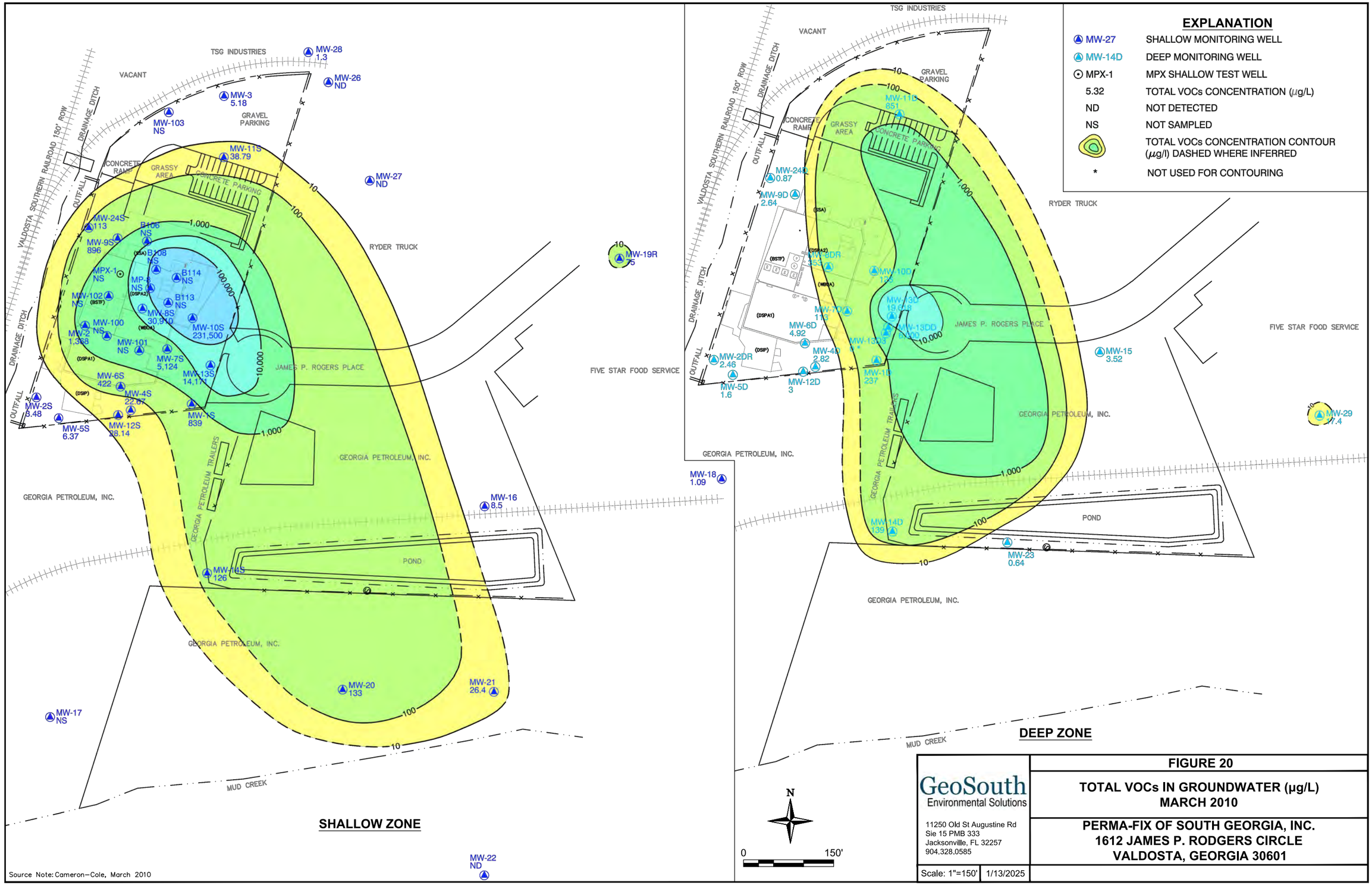
Scale: 1"=150' | 1/13/2025

FIGURE 19

TOTAL VOCs IN GROUNDWATER (µg/L)
JULY 2006

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



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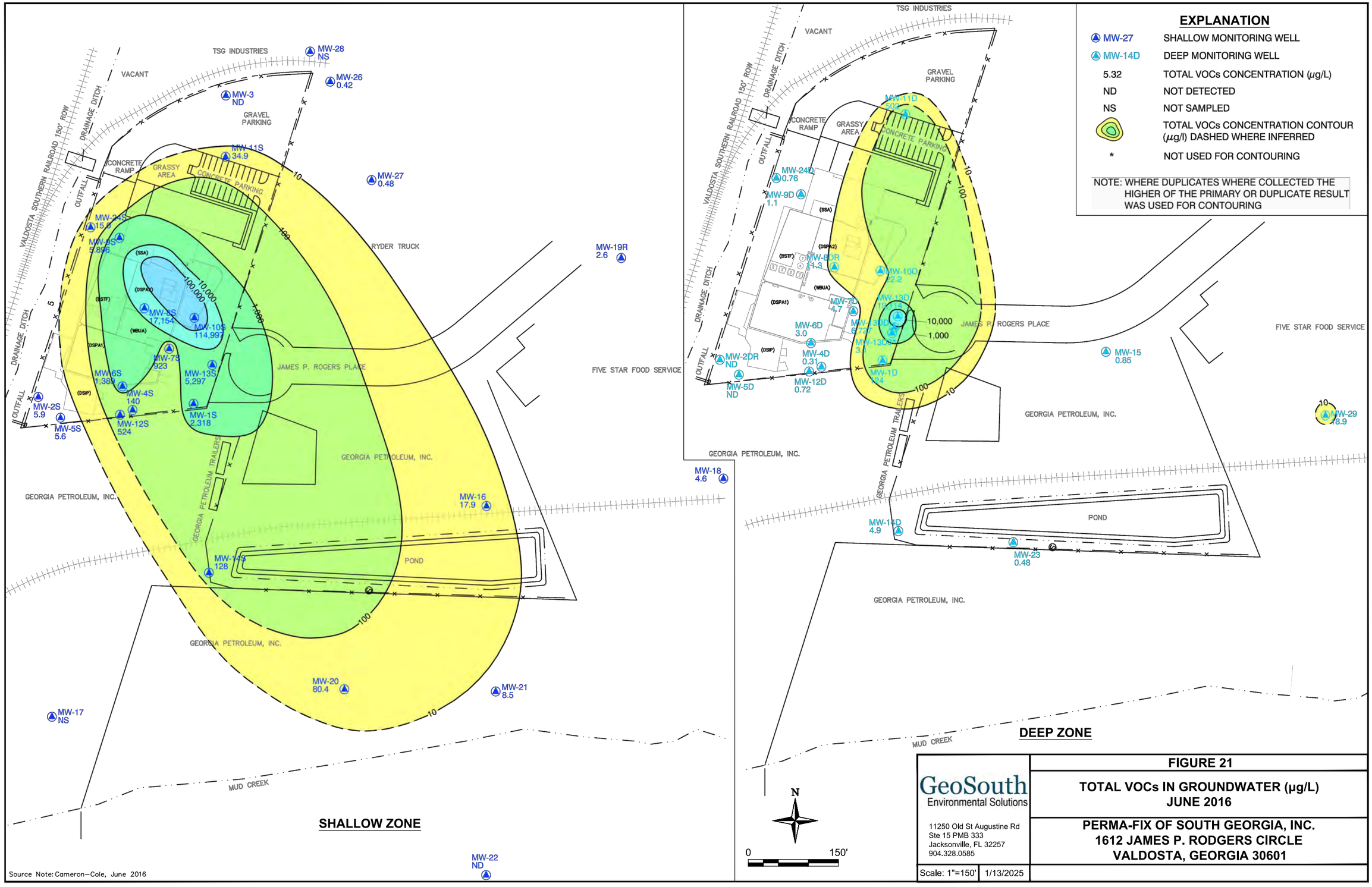
Scale: 1"=150' | 1/13/2025

FIGURE 20

TOTAL VOCs IN GROUNDWATER (µg/L)
MARCH 2010

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



EXPLANATION

MW-27	SHALLOW MONITORING WELL
MW-14D	DEEP MONITORING WELL
5.32	TOTAL VOCs CONCENTRATION (µg/L)
ND	NOT DETECTED
NS	NOT SAMPLED
	TOTAL VOCs CONCENTRATION CONTOUR (µg/l) DASHED WHERE INFERRED
*	NOT USED FOR CONTOURING

NOTE: WHERE DUPLICATES WHERE COLLECTED THE HIGHER OF THE PRIMARY OR DUPLICATE RESULT WAS USED FOR CONTOURING

Source Note: Cameron–Cole, June 2016

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Scale: 1"=150' | 1/13/2025

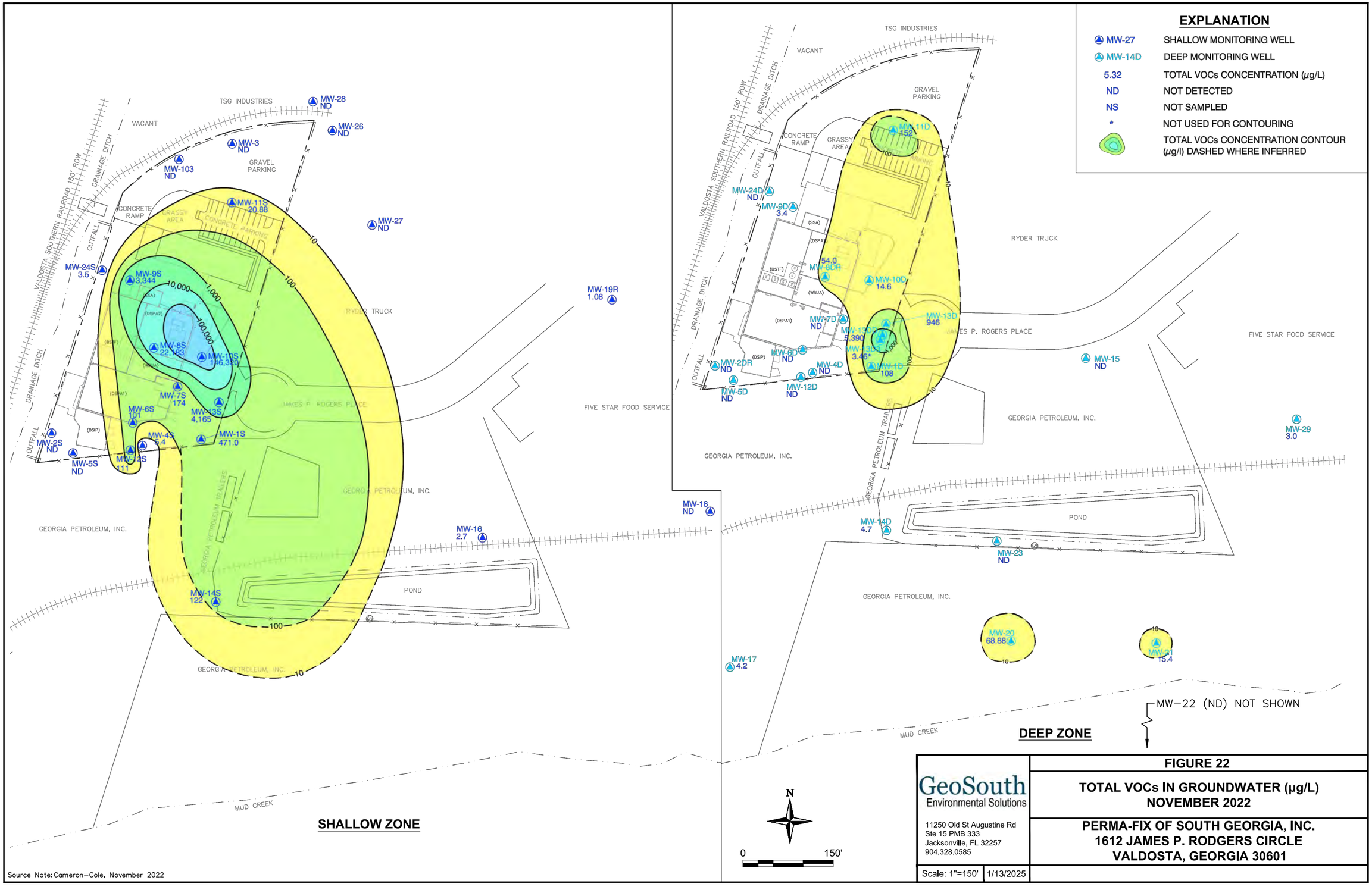
FIGURE 21

TOTAL VOCs IN GROUNDWATER (µg/L)
JUNE 2016

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

EXPLANATION

MW-27	SHALLOW MONITORING WELL
MW-14D	DEEP MONITORING WELL
5.32	TOTAL VOCs CONCENTRATION (µg/L)
ND	NOT DETECTED
NS	NOT SAMPLED
*	NOT USED FOR CONTOURING
	TOTAL VOCs CONCENTRATION CONTOUR (µg/l) DASHED WHERE INFERRED



Source Note: Cameron–Cole, November 2022

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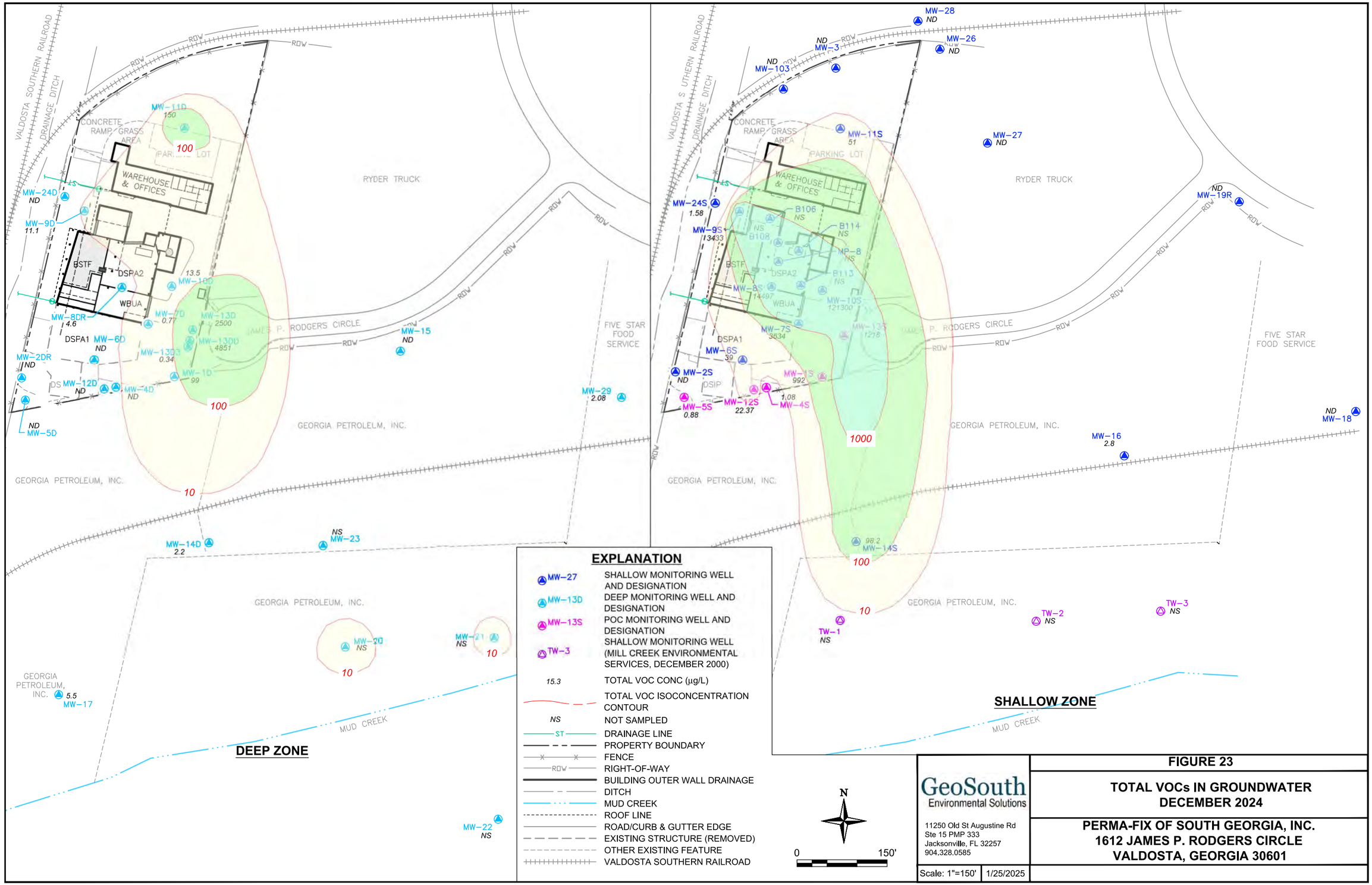
Scale: 1"=150' | 1/13/2025

FIGURE 22

TOTAL VOCs IN GROUNDWATER (µg/L)
NOVEMBER 2022

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



EXPLANATION

MW-27	SHALLOW MONITORING WELL AND DESIGNATION
MW-13D	DEEP MONITORING WELL AND DESIGNATION
MW-13S	POC MONITORING WELL AND DESIGNATION
TW-3	SHALLOW MONITORING WELL (MILL CREEK ENVIRONMENTAL SERVICES, DECEMBER 2000)
15.3	TOTAL VOC CONC (µg/L)
	TOTAL VOC ISOCONCENTRATION CONTOUR
NS	NOT SAMPLED
ST	DRAINAGE LINE
	PROPERTY BOUNDARY
X X	FENCE
ROW	RIGHT-OF-WAY
	BUILDING OUTER WALL DRAINAGE
	DITCH
	MUD CREEK
	ROOF LINE
	ROAD/CURB & GUTTER EDGE
	EXISTING STRUCTURE (REMOVED)
	OTHER EXISTING FEATURE
	VALDOSTA SOUTHERN RAILROAD

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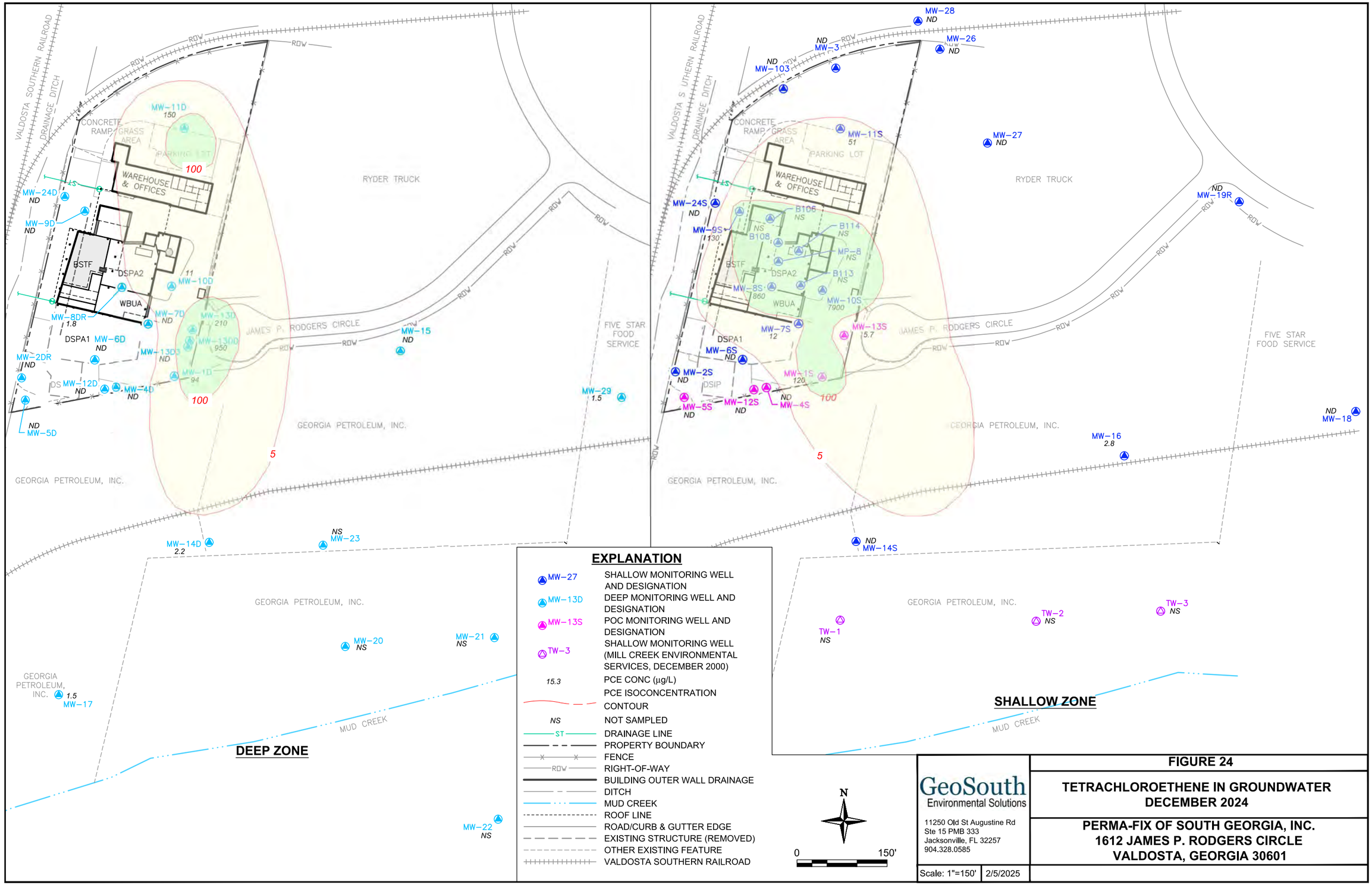
Scale: 1"=150' | 1/25/2025

FIGURE 23

TOTAL VOCs IN GROUNDWATER DECEMBER 2024

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



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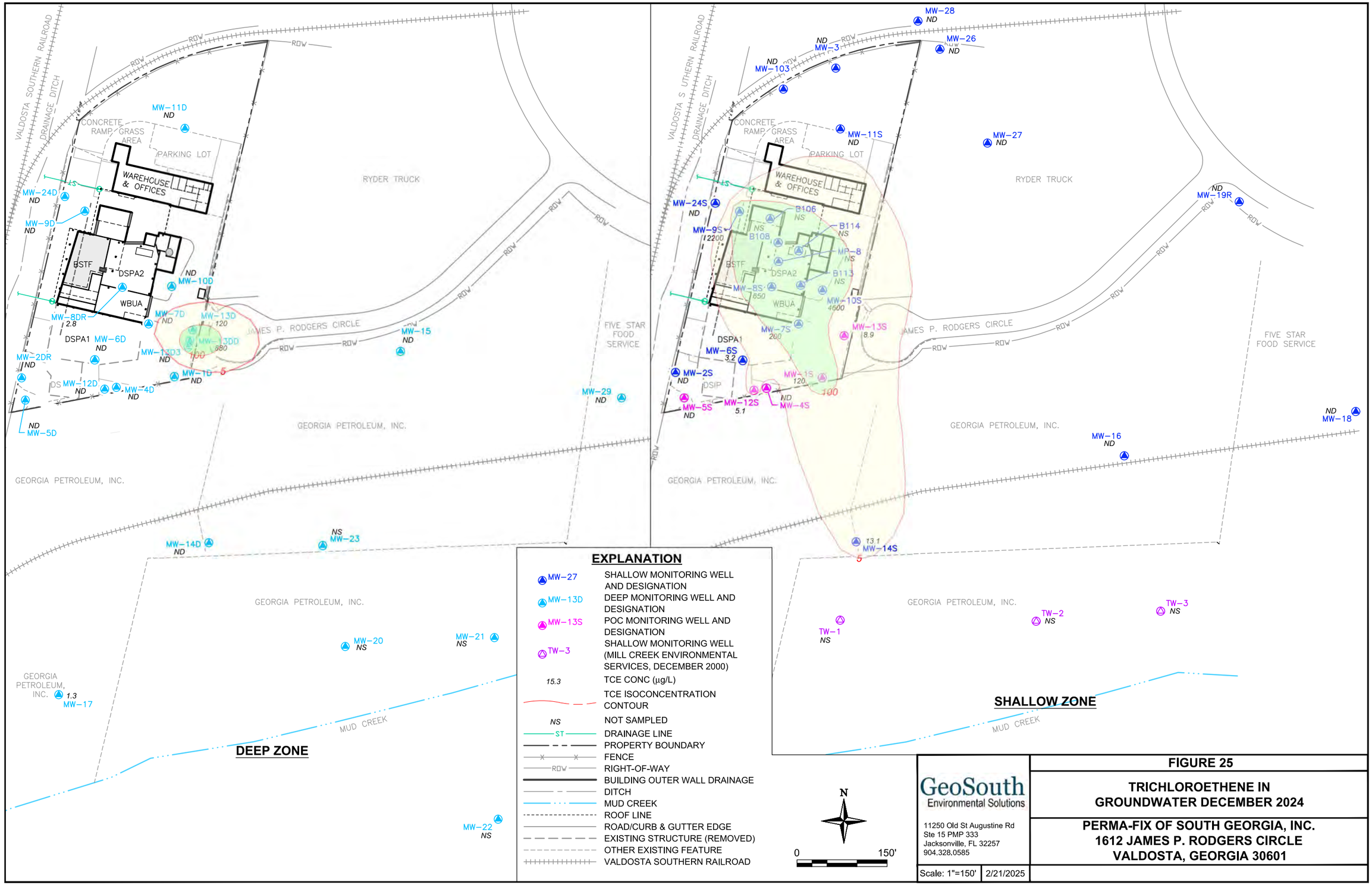
Scale: 1"=150' | 2/5/2025

FIGURE 24

TETRACHLOROETHENE IN GROUNDWATER
DECEMBER 2024

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



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Scale: 1"=150' | 2/21/2025

FIGURE 25

TRICHLOROETHENE IN GROUNDWATER DECEMBER 2024

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

VALDOSTA SOUTHERN RAILROAD

DRAINAGE DITCH

ROW

CONCRETE RAMP

GRASS AREA

PARKING LOT

WAREHOUSE & OFFICES

RYDER TRUCK

FIVE STAR FOOD SERVICE

JAMES P. RODGERS CIRCLE

GEORGIA PETROLEUM, INC.

BSTF

DSPA1

DSPA2

WBUA

DSIP

MUD CREEK

MW-11D ND

MW-24D ND

MW-9D ND

MW-8DR ND

MW-6D ND

MW-2DR ND

MW-5D ND

MW-12D ND

MW-4D ND

MW-10D 2.5

MW-7D ND

MW-13D 590

MW-13DD 2700

MW-13D3 ND

MW-1D 4.2

MW-15 ND

MW-29 ND

MW-14D ND

NS MW-23

NS MW-20

MW-21 NS

MW-22 NS

2.7 MW-17

MW-28 ND

MW-26 ND

ND MW-3

ND MW-103

MW-11S ND

MW-27 ND

MW-24S ND

MW-9S 580

B106 NS

B108 NS

B114 NS

MP-8 NS

B113 NS

MW-8S ND

MW-10S 5200

MW-7S 130

MW-13S 130

MW-6S 1.3

MW-2S ND

MW-5S ND

MW-12S 2.8

MW-1S 92

MW-4S ND

ND MW-19R

ND MW-18

MW-16 ND

4.7 MW-14S

TW-1 NS

TW-2 NS

TW-3 NS

7

100

EXPLANATION

- MW-27 — SHALLOW MONITORING WELL AND DESIGNATION
- MW-13D — DEEP MONITORING WELL AND DESIGNATION
- MW-13S — POC MONITORING WELL AND DESIGNATION
- TW-3 — SHALLOW MONITORING WELL (MILL CREEK ENVIRONMENTAL SERVICES, DECEMBER 2000)
- 15.3 — 1,1-DCE CONC (µg/L)
- 1,1-DCE ISOCONCENTRATION CONTOUR
- NS — NOT SAMPLED
- ST — DRAINAGE LINE
- PROPERTY BOUNDARY
- FENCE
- ROW — RIGHT-OF-WAY
- BUILDING OUTER WALL DRAINAGE
- DITCH
- MUD CREEK
- ROOF LINE
- ROAD/CURB & GUTTER EDGE
- EXISTING STRUCTURE (REMOVED)
- OTHER EXISTING FEATURE
- VALDOSTA SOUTHERN RAILROAD

N

0 150'

DEEP ZONE

SHALLOW ZONE

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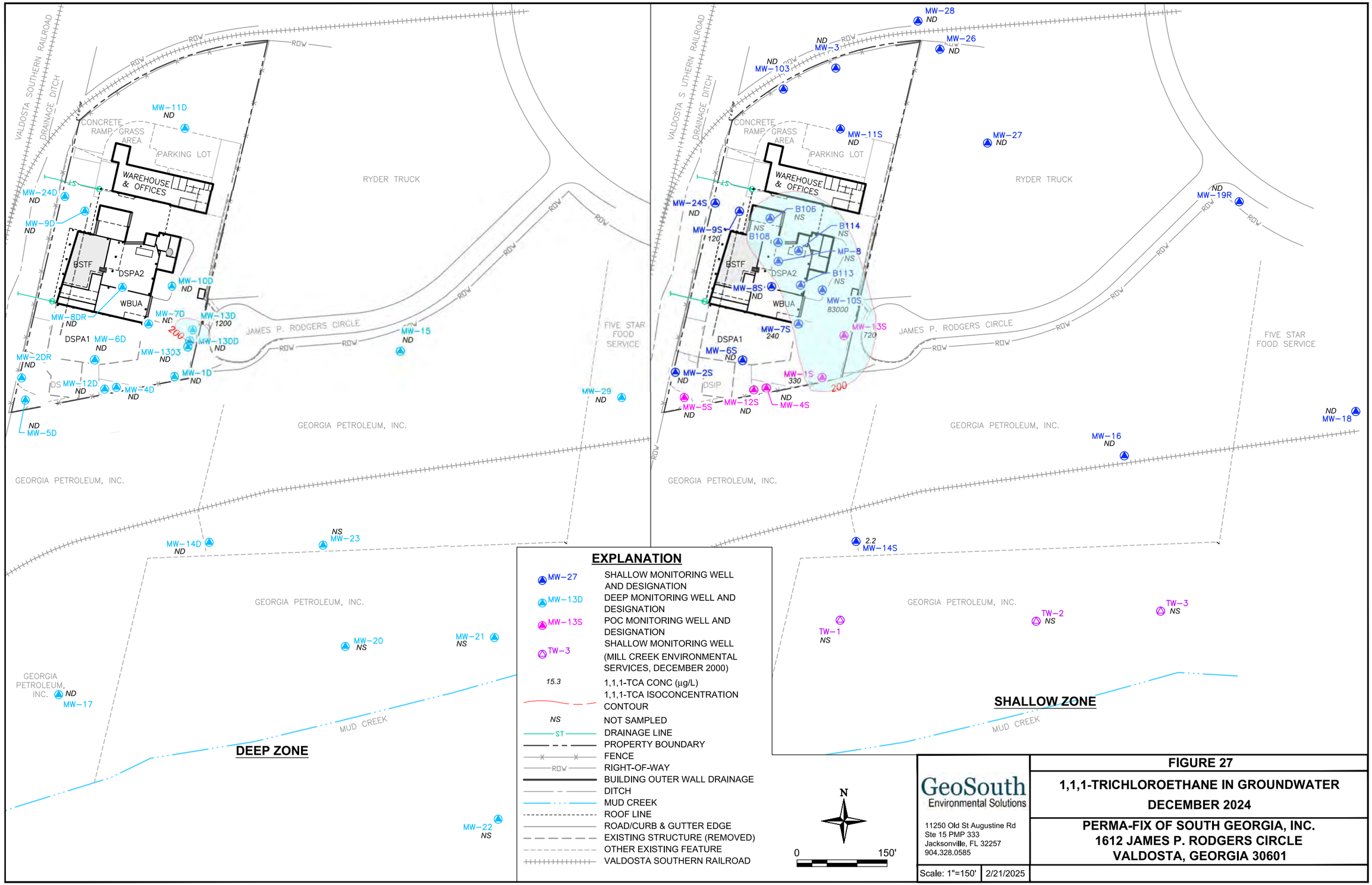
Scale: 1"=150' | 2/21/2025

FIGURE 26

1,1-DICHLOROETHENE IN GROUNDWATER DECEMBER 2024

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



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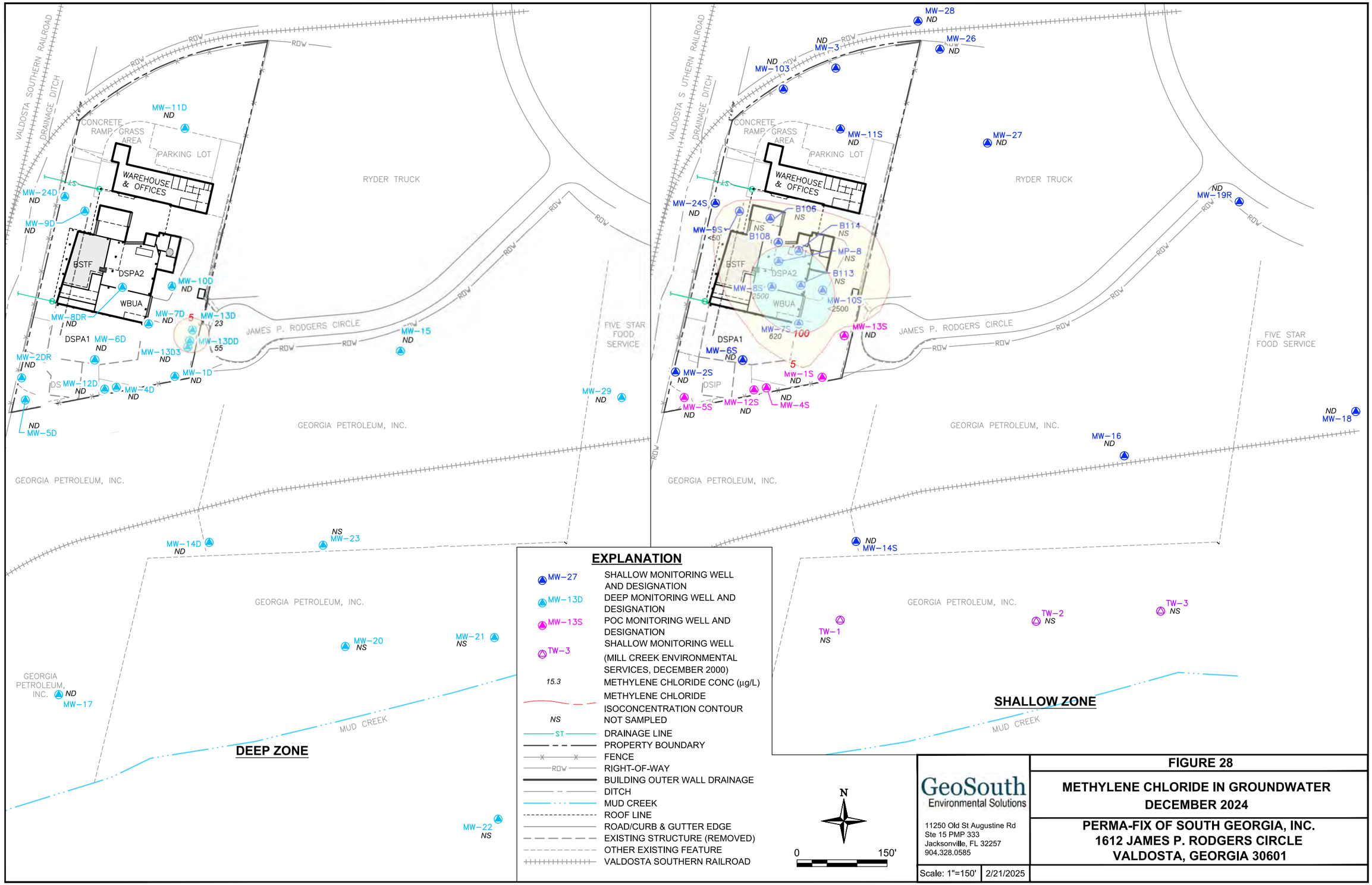
904.328.0585

Scale: 1"=150' | 2/21/2025

FIGURE 27

1,1,1-TRICHLOROETHANE IN GROUNDWATER
DECEMBER 2024

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



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Scale: 1"=150' | 2/21/2025

FIGURE 28

METHYLENE CHLORIDE IN GROUNDWATER DECEMBER 2024

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

VALDOSTA SOUTHERN RAILROAD
DRAINAGE DITCH
ROW
CONCRETE RAMP
GRASS AREA
PARKING LOT
WAREHOUSE & OFFICES
RYDER TRUCK
GSTF
DSPA2
WBUA
DSPA1
DSIP
JAMES P. RODGERS CIRCLE
FIVE STAR FOOD SERVICE
GEORGIA PETROLEUM, INC.
MUD CREEK

MW-11D ND
MW-24D ND
MW-9D ND
MW-10D ND
MW-8DR ND
MW-7D ND
MW-13D <5
MW-13DD <5
MW-13D3 ND
MW-6D ND
MW-2DR ND
MW-12D ND
MW-4D ND
MW-1D ND
MW-5D ND
MW-15 ND
MW-29 ND
MW-14D ND
NS MW-23
NS MW-20
NS MW-21
MW-17 ND
NS MW-22

MW-28 ND
MW-26 ND
ND MW-3
ND MW-103
MW-11S ND
MW-27 ND
MW-24S ND
B106 NS
B114 NS
B108 NS
MP-8 NS
B113 NS
MW-9S <10
MW-8S 840
MW-10S <500
100
MW-7S 930
MW-13S 41
MW-6S 8.4
MW-2S ND
MW-1S 80
MW-5S ND
MW-12S 6.0
ND MW-4S
2
ND MW-19R
ND MW-18
MW-16 ND
43 MW-14S
TW-1 NS
TW-2 NS
TW-3 NS

EXPLANATION

- MW-27 — SHALLOW MONITORING WELL AND DESIGNATION
- MW-13D — DEEP MONITORING WELL AND DESIGNATION
- MW-13S — POC MONITORING WELL AND DESIGNATION
- TW-3 — SHALLOW MONITORING WELL (MILL CREEK ENVIRONMENTAL SERVICES, DECEMBER 2000)
- 15.3 — VINYL CHLORIDE CONC (µg/L)
- VINYL CHLORIDE ISOCONCENTRATION CONTOUR
- NS — NOT SAMPLED
- ST — DRAINAGE LINE
- PROPERTY BOUNDARY
- FENCE
- ROW — RIGHT-OF-WAY
- BUILDING OUTER WALL DRAINAGE
- DITCH
- MUD CREEK
- ROOF LINE
- ROAD/CURB & GUTTER EDGE
- EXISTING STRUCTURE (REMOVED)
- OTHER EXISTING FEATURE
- VALDOSTA SOUTHERN RAILROAD

DEEP ZONE

SHALLOW ZONE

N

0 150'

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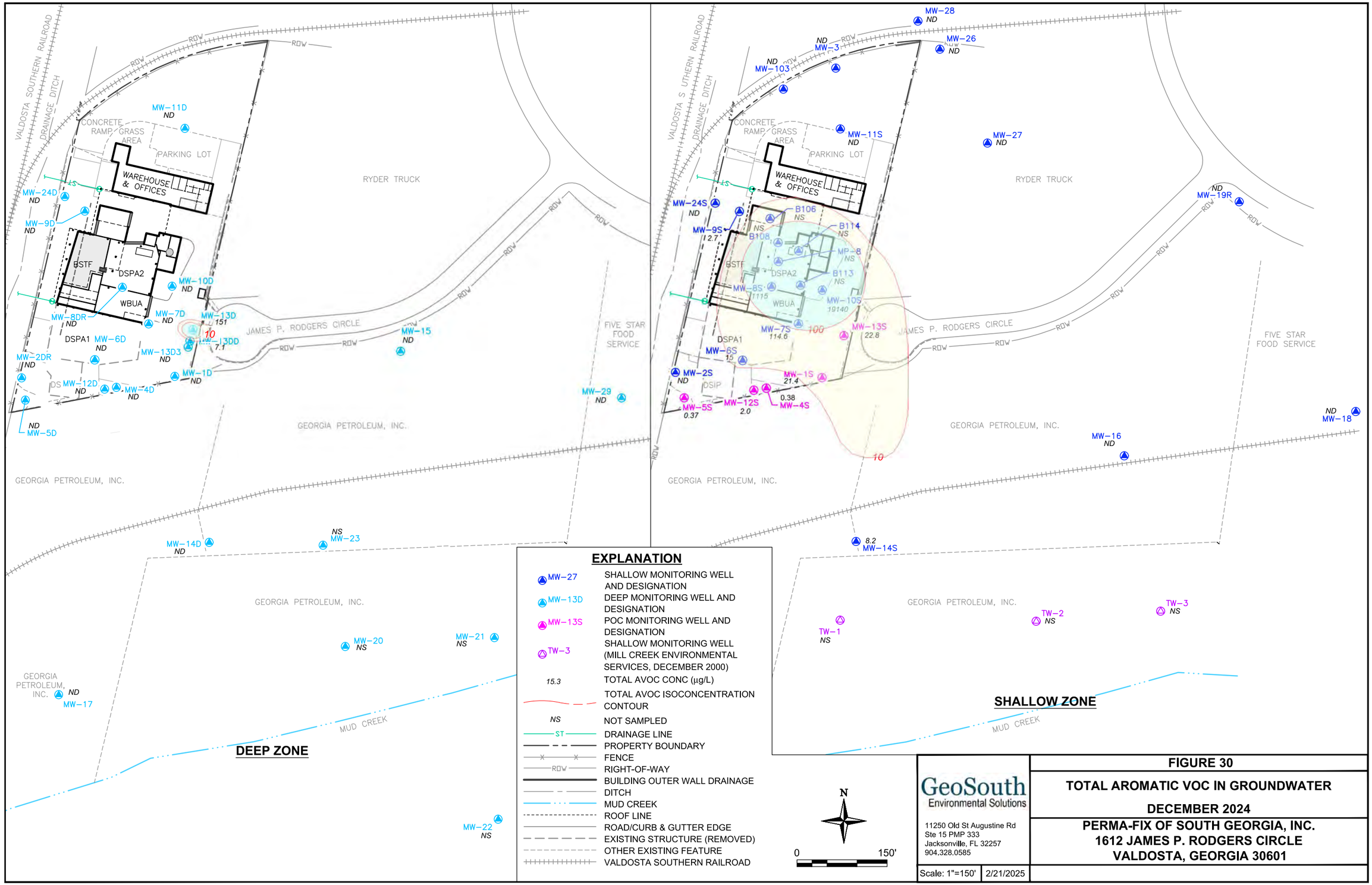
Scale: 1"=150' | 2/21/2025

FIGURE 29

VINYL CHLORIDE IN GROUNDWATER
DECEMBER 2024

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



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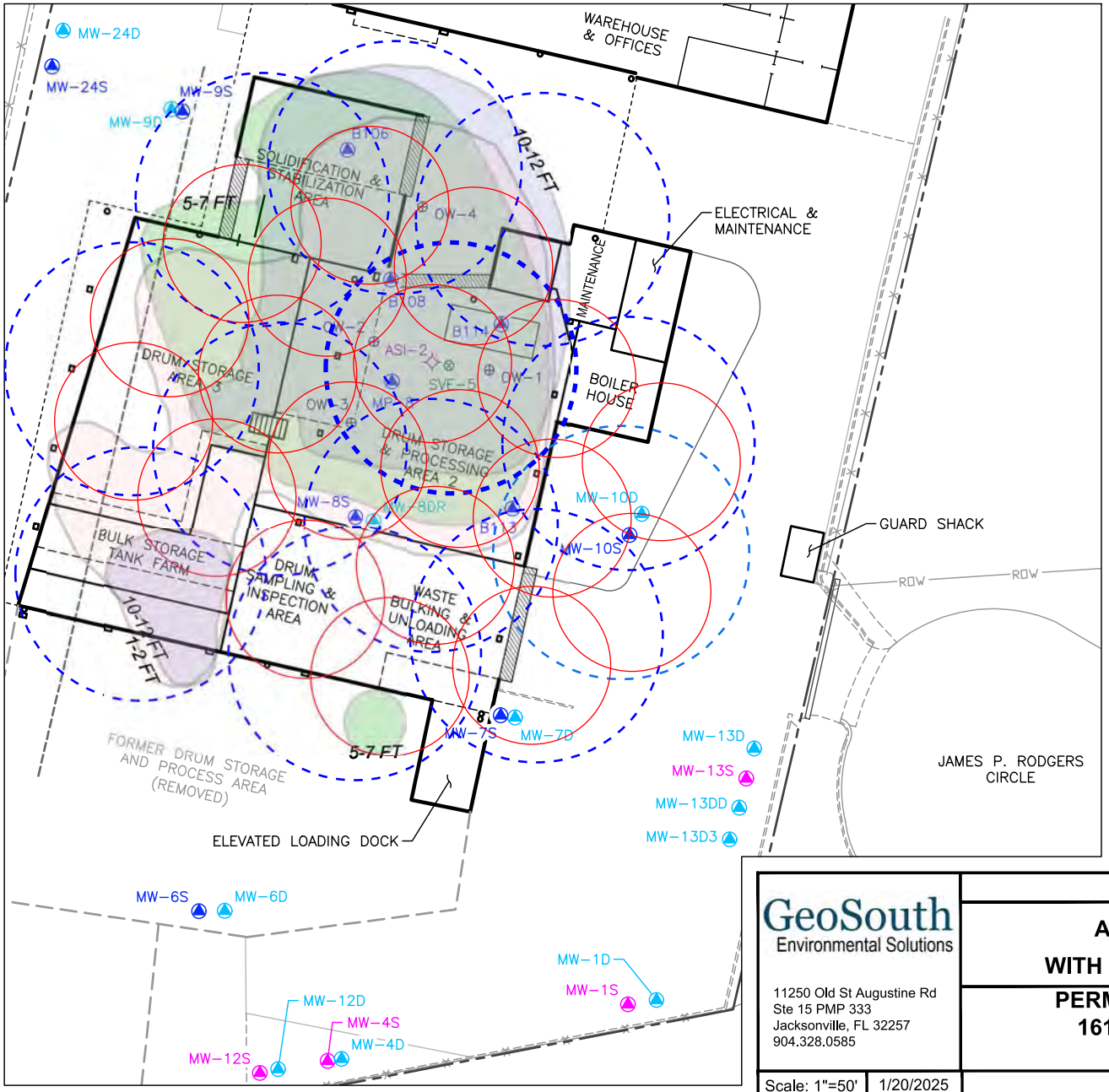
Scale: 1"=150' | 2/21/2025

FIGURE 30

TOTAL AROMATIC VOC IN GROUNDWATER

DECEMBER 2024

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



EXPLANATION

- ASI-2 — AIR SPARGE PILOT TEST WELL AND DESIGNATION
- SVE-5 — SOIL VAPOR EXTRACTION PILOT TEST WELL AND DESIGNATION
- OW-1 — PILOT TEST OBSERVATION WELL AND DESIGNATION
- MW-27 — SHALLOW MONITORING WELL AND DESIGNATION
- MW-13D — DEEP MONITORING WELL AND DESIGNATION
- MW-13S — POC MONITORING WELL AND DESIGNATION
- AS WELL ROI
- SVE WELL ROI
- PROPERTY BOUNDARY
- FENCE
- ROW — RIGHT-OF-WAY
- BUILDING OUTER WALL
- ROOF LINE
- ROAD/CURB & GUTTER EDGE
- EXISTING STRUCTURE (REMOVED)
- TREATMENT SYSTEM PIPING
- TOTAL VOA SOIL IMPACTS AREA WITH DEPTH INTERVALS

N

0 50'

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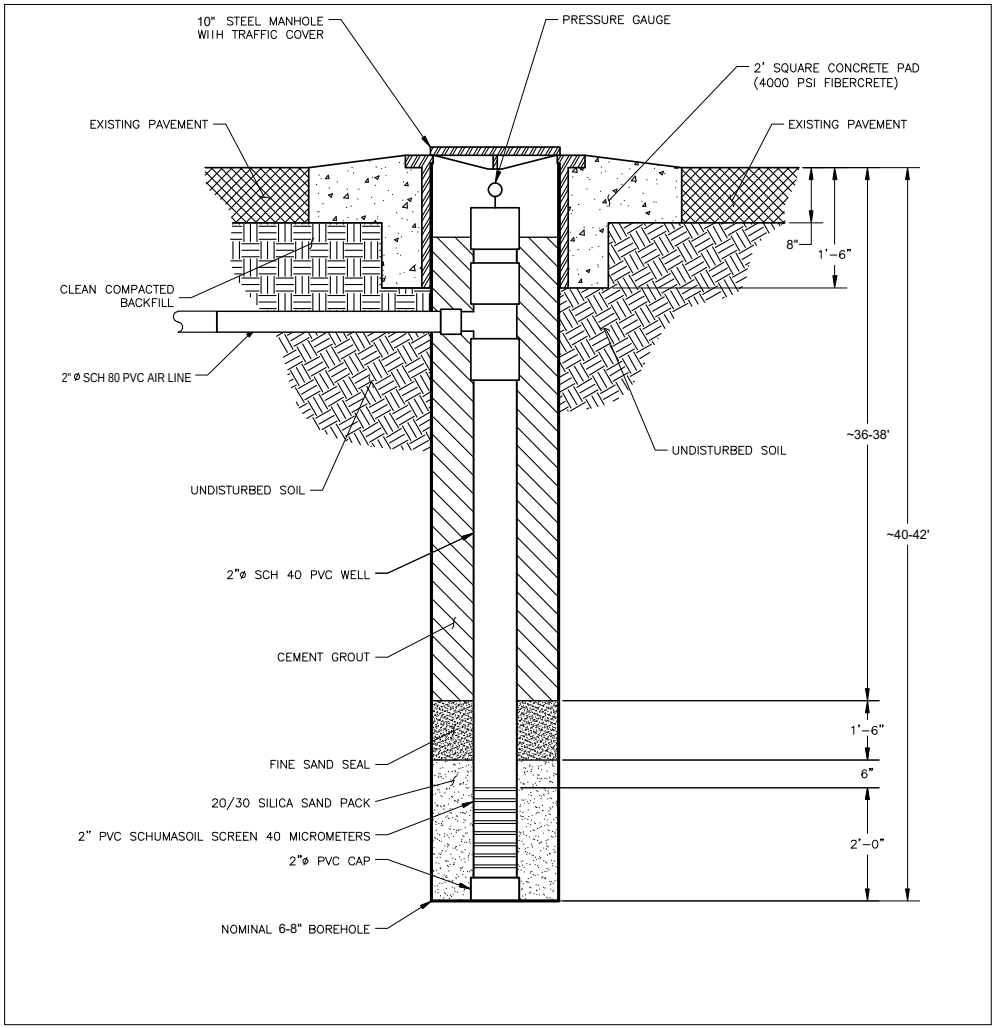
FIGURE 31

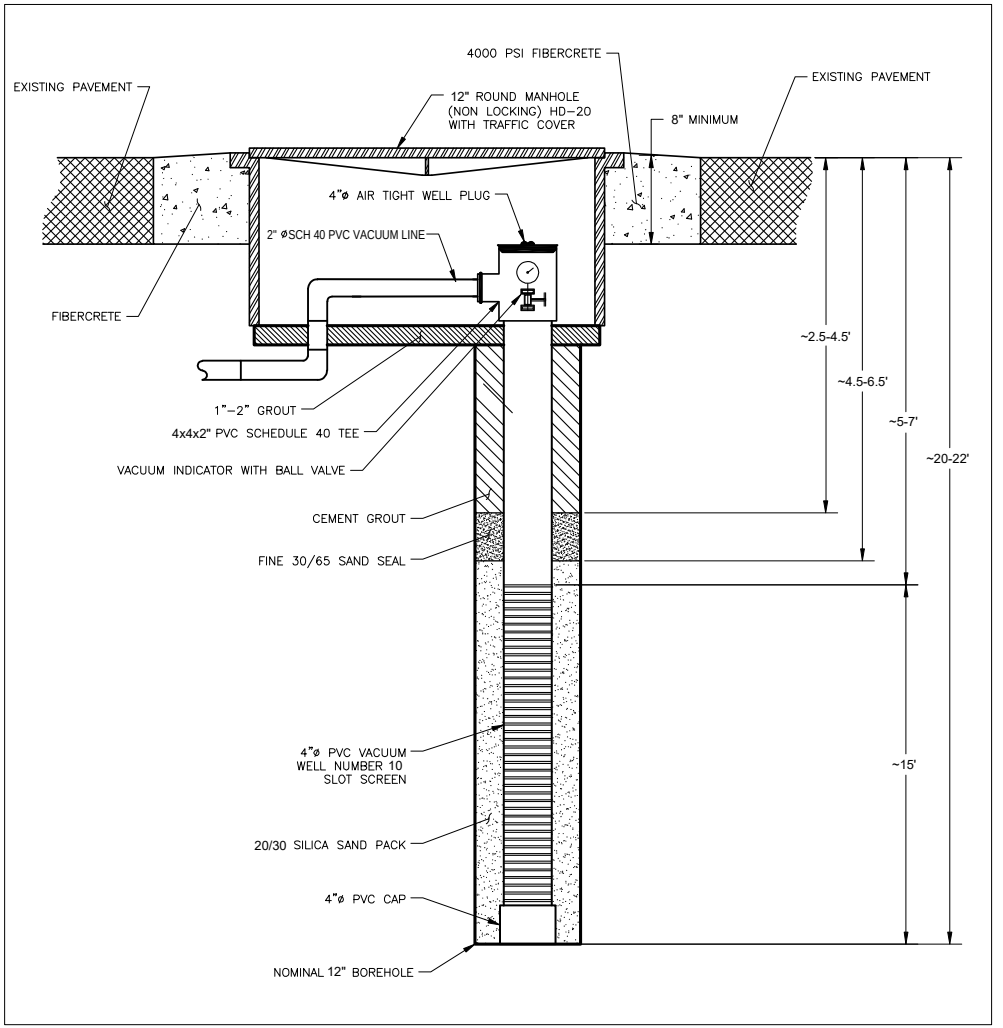
AS AND SVE WELL LOCATIONS WITH TOTAL VOC SOIL IMPACTS AREAS

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

Scale: 1"=50' | 1/20/2025



1 **AIR SPARGE WELL DETAIL**
SCALE: NONE



2 **VERTICAL SOIL EXTRACTION WELL**
SCALE: NONE

FIGURE 32

AS-SVE WELL CONSTRUCTION DETAILS

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PERMA-FIX OF SOUTH GEORGIA, INC.
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VALDOSTA, GEORGIA 30601

Scale: NONE | 11/15/2025

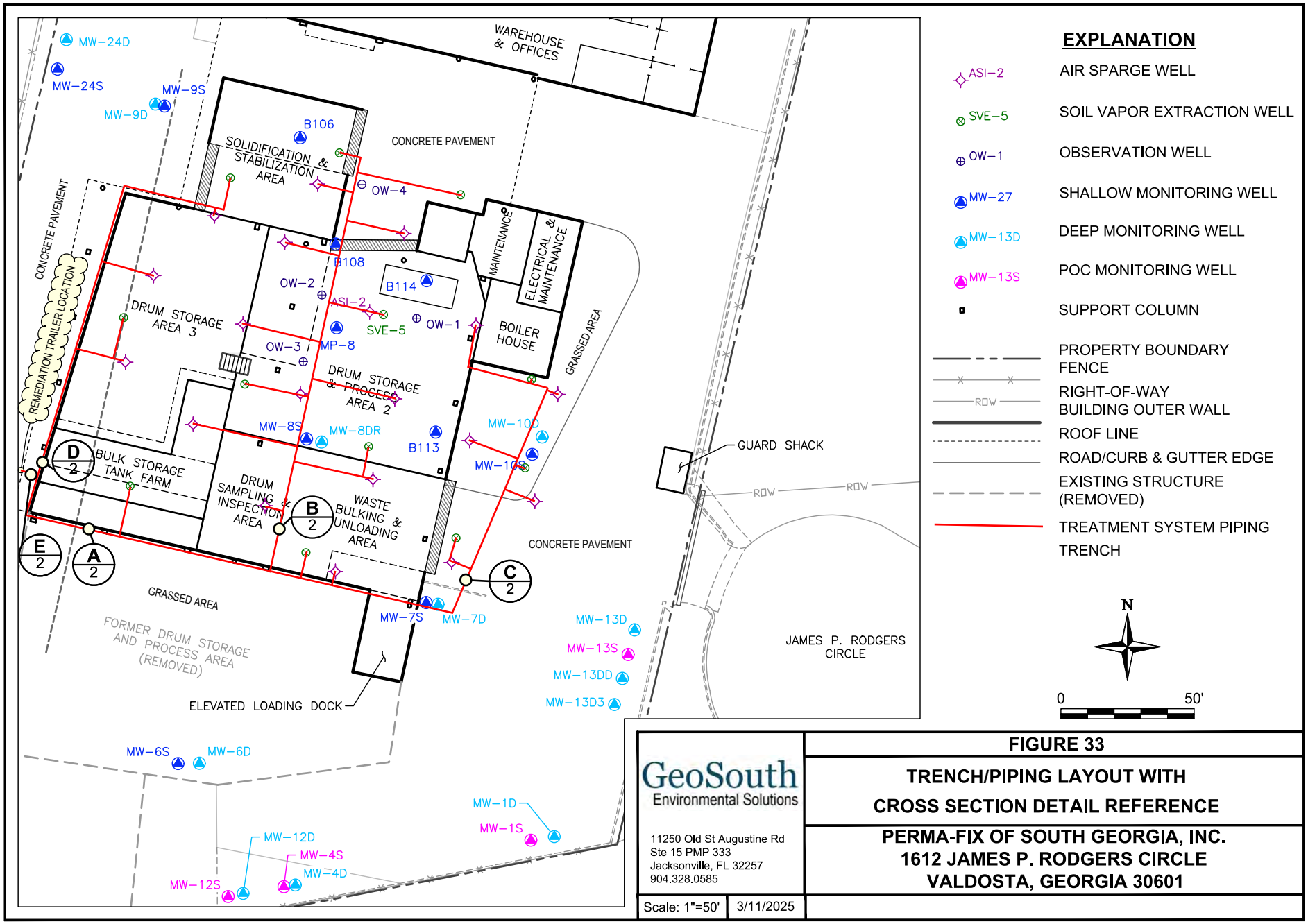

FIGURE 33

TRENCH/PIPING LAYOUT WITH CROSS SECTION DETAIL REFERENCE

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

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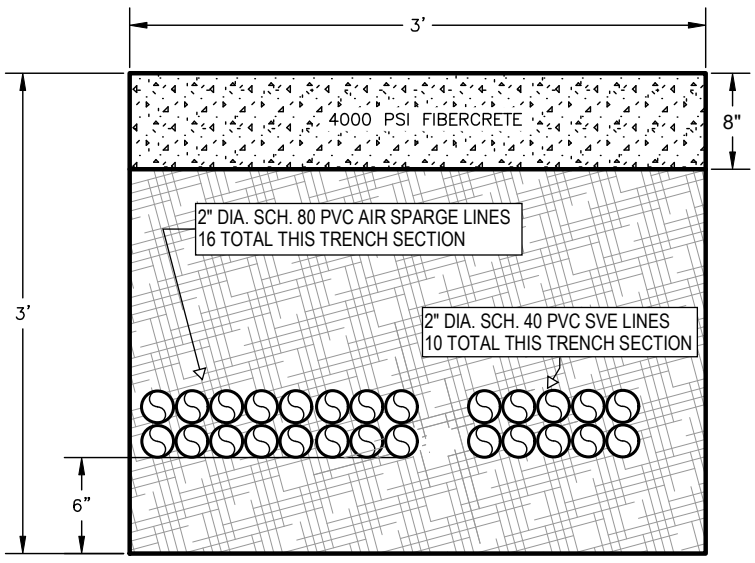
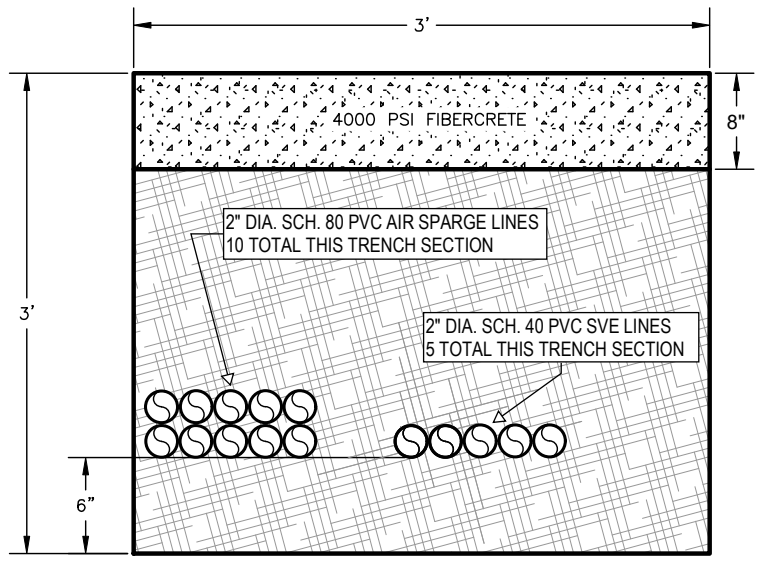
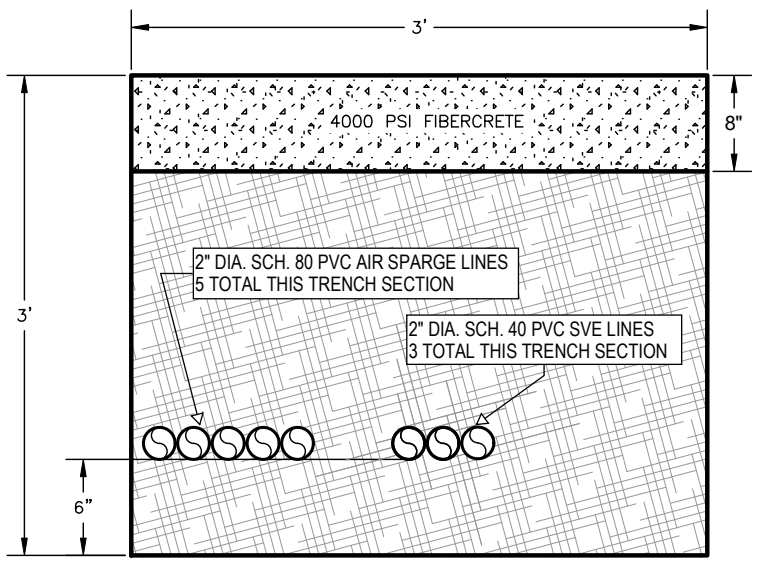
Scale: 1"=50' | 3/11/2025



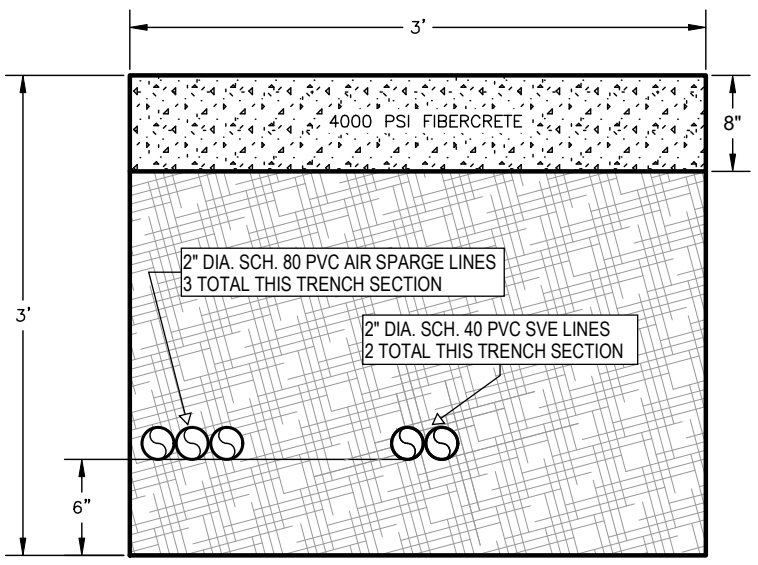
A **TYPICAL TRENCH SECTION A**
SCALE: 1" = 1'



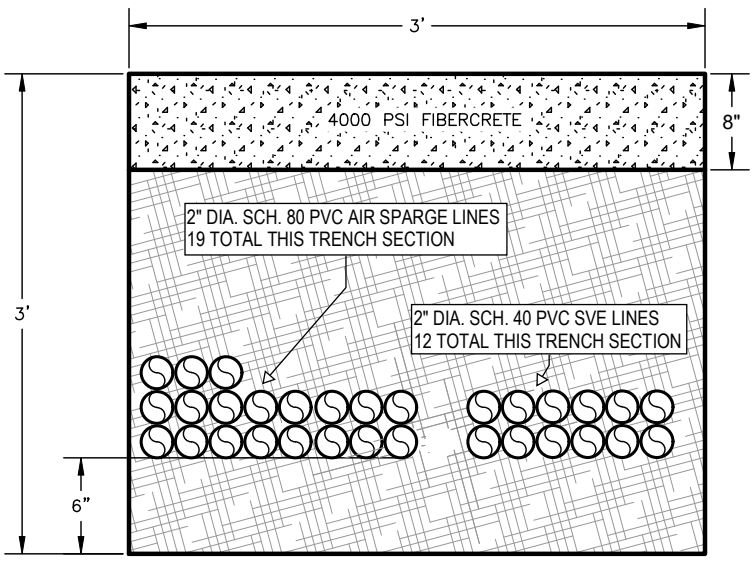
B **TYPICAL TRENCH SECTION B**
SCALE: 1" = 1'



C **TYPICAL TRENCH SECTION C**
SCALE: 1" = 1'



D **TYPICAL TRENCH SECTION D**
SCALE: 1" = 1'



E **TYPICAL TRENCH SECTION E**
SCALE: 1" = 1'

EXPLANATION

DIA	DIAMETER
SVE	SOIL VAPOR EXTRACTION
SCH.	SCHEDULE
PVC	POLYVINYL CHLORIDE

0 1'

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Scale: 1" = 1' | 3/12/2025

FIGURE 34

TRENCH PIPING CROSS SECTION DETAILS

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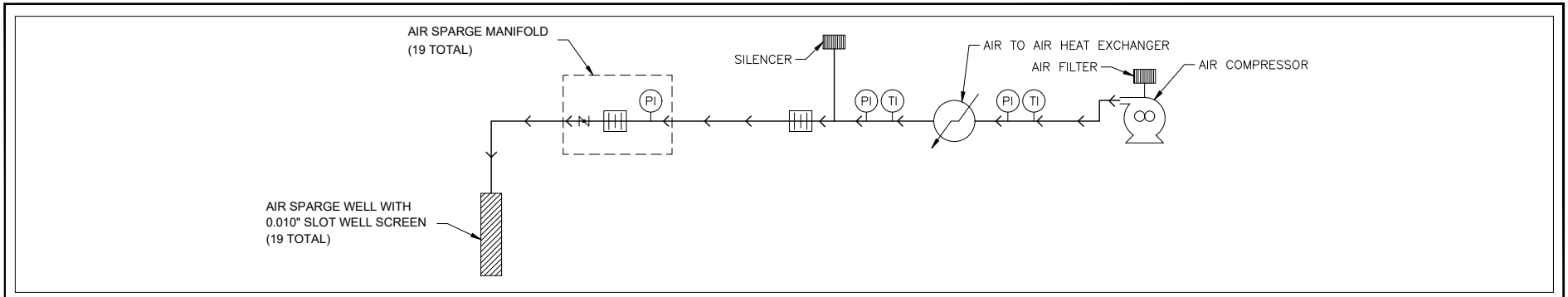
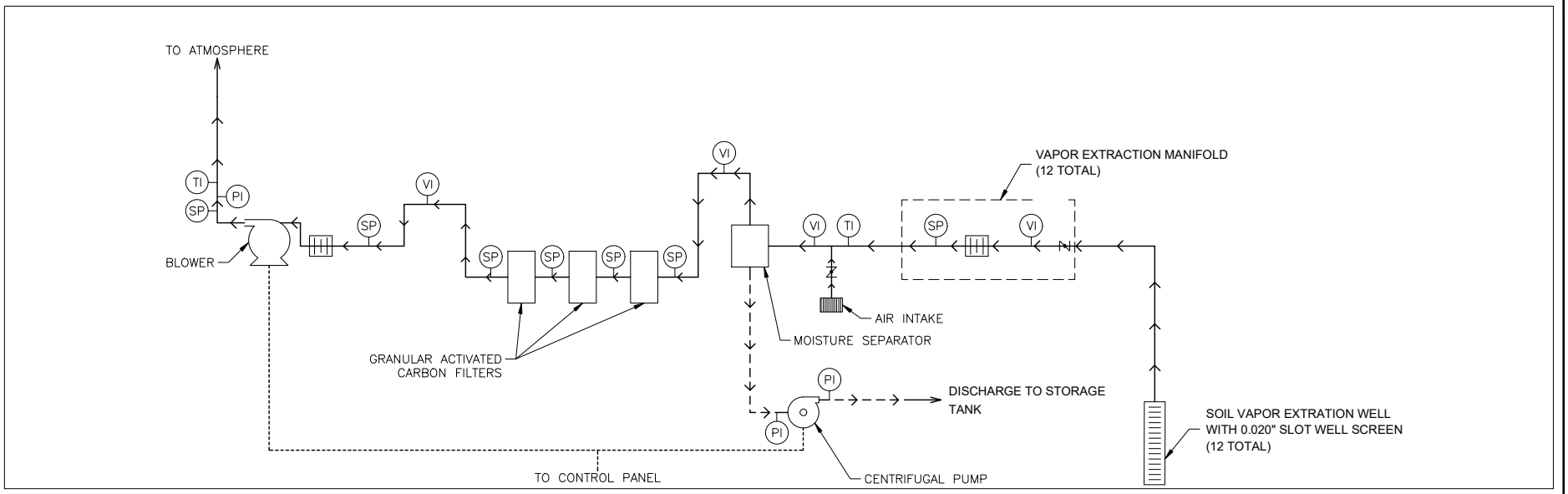
VALDOSTA, GEORGIA 30601



1 AIR SPARGE P&ID
SCALE: NONE



2 SOIL VAPOR EXTRACTION P&ID
SCALE: NONE

EXPLANATION

	FLOW METER	TI	TEMPERATURE INDICATOR		AIR LINE WITH FLOW DIRECTION
N	VALVE	PI	PRESSURE INDICATOR		WATER DISCHARGE LINE WITH FLOW DIRECTION
SP	SAMPLE PORT		ELECTRICAL LINE	P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
VI	VACUUM INDICATOR		AIR LINE		

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FIGURE 35

AS-SVE SYSTEMS
PROCESS AND INSTRUMENTATION DIAGRAMS

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

	Name	Duration	Start	Finish
1	**Revised PCCP Preparation**	**417 days**	**7/31/24 8:00 AM**	**3/5/26 5:00 PM**
2	Prepare Draft Revised PCCP 1	175 days	7/31/24 8:00 AM	4/1/25 5:00 PM
3	PFSG Draft Revised PCCP Revew 1	4 days	4/2/25 8:00 AM	4/7/25 5:00 PM
4	GEPD Revised PCCP Review 1	57 days	4/8/25 8:00 AM	6/25/25 5:00 PM
5	Prep Response to Comments 2	47 days	6/26/25 8:00 AM	8/29/25 5:00 PM
6	PFSG Response to Comments Review 2	11 days	9/1/25 8:00 AM	9/15/25 5:00 PM
7	GEPD Revised PCCP Review 2	47 days	9/16/25 8:00 AM	11/19/25 5:00 PM
8	Prep Response fo Comments 3	48 days	11/20/25 8:00 AM	1/26/26 5:00 PM
9	PFSG Response to Comments Review 3	12 days	1/27/26 8:00 AM	2/11/26 5:00 PM
10	GEPD Revised PCCP Final Review and Approval	16 days	2/12/26 8:00 AM	3/5/26 5:00 PM
11	**Interim Remedial Measures Design Report**	**289 days**	**1/20/25 8:00 AM**	**2/26/26 5:00 PM**
12	Prepare Draft AS/SVE Design 1	46 days	1/20/25 8:00 AM	3/24/25 5:00 PM
13	PFSG Draft AS/SVE Design Review 1	5 days	3/25/25 8:00 AM	3/31/25 5:00 PM
14	GEPD AS/SVE Design Review 1	57 days	4/1/25 8:00 AM	6/18/25 5:00 PM
15	Prepare Response to Comments 2	47 days	6/19/25 8:00 AM	8/22/25 5:00 PM
16	PFSG Response to Comments Review 2	11 days	8/25/25 8:00 AM	9/8/25 5:00 PM
17	GEPD Revised AS/SVE Design Review 2	47 days	9/9/25 8:00 AM	11/12/25 5:00 PM
18	Prepare Response to Comments 3	48 days	11/13/25 8:00 AM	1/19/26 5:00 PM
19	PFSG Revised AS/SVE Design Review 3	12 days	1/20/26 8:00 AM	2/4/26 5:00 PM
20	GEPD Review and Approval	16 days	2/5/26 8:00 AM	2/26/26 5:00 PM
21	**Construction Documents**	**85 days**	**2/27/26 8:00 AM**	**6/25/26 5:00 PM**
22	Prepare the Construction Documents 1	20 days	2/27/26 8:00 AM	3/26/26 5:00 PM
23	PFSG Construction Documents Review 1	5 days	3/27/26 8:00 AM	4/2/26 5:00 PM
24	GEPD Construction Documents Review 1	20 days	4/3/26 8:00 AM	4/30/26 5:00 PM
25	Prepare Response to Comments 2	15 days	5/1/26 8:00 AM	5/21/26 5:00 PM
26	PFSG Construction Documents Review 2	5 days	5/22/26 8:00 AM	5/28/26 5:00 PM
27	GEPD Revised Construction Documents Review and Approval	20 days	5/29/26 8:00 AM	6/25/26 5:00 PM
28	**System Installation**	**115 days**	**6/26/26 8:00 AM**	**12/3/26 5:00 PM**
29	Constractor, Driller, Equipment Procurement	45 days	6/26/26 8:00 AM	8/27/26 5:00 PM
30	Installation of Remediation Wells	30 days	8/28/26 8:00 AM	10/8/26 5:00 PM
31	Installation of Piping and Equipment	40 days	10/9/26 8:00 AM	12/3/26 5:00 PM
32	Baseline Groundwater Sampling Event	5 days	10/9/26 8:00 AM	10/15/26 5:00 PM
33	**Remediation System Operation**	**3,010 days**	**12/4/26 8:00 AM**	**6/17/38 5:00 PM**
34	Startup	18 days	12/4/26 8:00 AM	12/29/26 5:00 PM
35	Initial Adjustments	45 days	12/30/26 8:00 AM	3/2/27 5:00 PM
36	**Remediation System Operation Plan**	**90 days**	**12/4/26 8:00 AM**	**4/8/27 5:00 PM**
37	OMM & Performance Monitoring Plan	60 days	12/4/26 8:00 AM	2/25/27 5:00 PM
38	GEPD Review and Approval of OMM & Performance Monitoring Plan	30 days	2/26/27 8:00 AM	4/8/27 5:00 PM
39	As-Built Report	60 days	12/4/26 8:00 AM	2/25/27 5:00 PM
40	GEPD Review and Approval of As-Built Report	20 days	12/4/26 8:00 AM	12/31/26 5:00 PM
41	**Remediation System Performance Monitoring**	**3,010 days**	**12/4/26 8:00 AM**	**6/17/38 5:00 PM**
42	AS/SVE Performance Monitoring	3,010 days	12/4/26 8:00 AM	6/17/38 5:00 PM
43	**RCRA Facility Investigation (RFI) Work Plan**	**190 days**	**5/6/28 8:00 AM**	**1/26/29 5:00 PM**
44	Prepare Draft RFI Work Plan 1	80 days	5/6/28 8:00 AM	8/25/28 5:00 PM
45	PFSG Draft RFI Work Plan Review 1	10 days	8/28/28 8:00 AM	9/8/28 5:00 PM
46	GEPD Review of RFI Work Plan 1	30 days	9/11/28 8:00 AM	10/20/28 5:00 PM
47	Prepare Response to Comments 2	30 days	10/23/28 8:00 AM	12/1/28 5:00 PM
48	PFSG Response to Comments Review 2	10 days	12/4/28 8:00 AM	12/15/28 5:00 PM
49	GEPD Revised RFI Work Plan Review and Approval	30 days	12/18/28 8:00 AM	1/26/29 5:00 PM
50	**RCRA Hazardous Waste Permit Renewal**	**200 days**	**3/1/29 8:00 AM**	**12/5/29 5:00 PM**
51	Prepare Draft HW Permit Renewal Application	60 days	3/1/29 8:00 AM	5/23/29 5:00 PM
52	PFSG Draft Permit Application Review 1	10 days	5/24/29 8:00 AM	6/6/29 5:00 PM
53	GEPD HW Permit Application Review 1	60 days	6/7/29 8:00 AM	8/29/29 5:00 PM
54	Prepare Response to Comments 2	30 days	8/30/29 8:00 AM	10/10/29 5:00 PM
55	PFSG Response to Comments Review 2	10 days	10/11/29 8:00 AM	10/24/29 5:00 PM
56	GEPD Revised HW Permit Application Review and Approval	30 days	10/25/29 8:00 AM	12/5/29 5:00 PM
57	**Corrective Action Plan (CAP)**	**220 days**	**4/6/31 8:00 AM**	**2/6/32 5:00 PM**
58	Prepare Draft CAP 1	80 days	4/6/31 8:00 AM	7/25/31 5:00 PM
59	PFSG Draft CAP Review 1	10 days	7/28/31 8:00 AM	8/8/31 5:00 PM
60	GEPD Review of CAP 1	45 days	8/11/31 8:00 AM	10/10/31 5:00 PM
61	Prepare Response to Comments 2	30 days	10/13/31 8:00 AM	11/21/31 5:00 PM
62	PFSG Response to Comments Review 2	10 days	11/24/31 8:00 AM	12/5/31 5:00 PM
63	GEPD Revised CAP Review and Approval	45 days	12/8/31 8:00 AM	2/6/32 5:00 PM

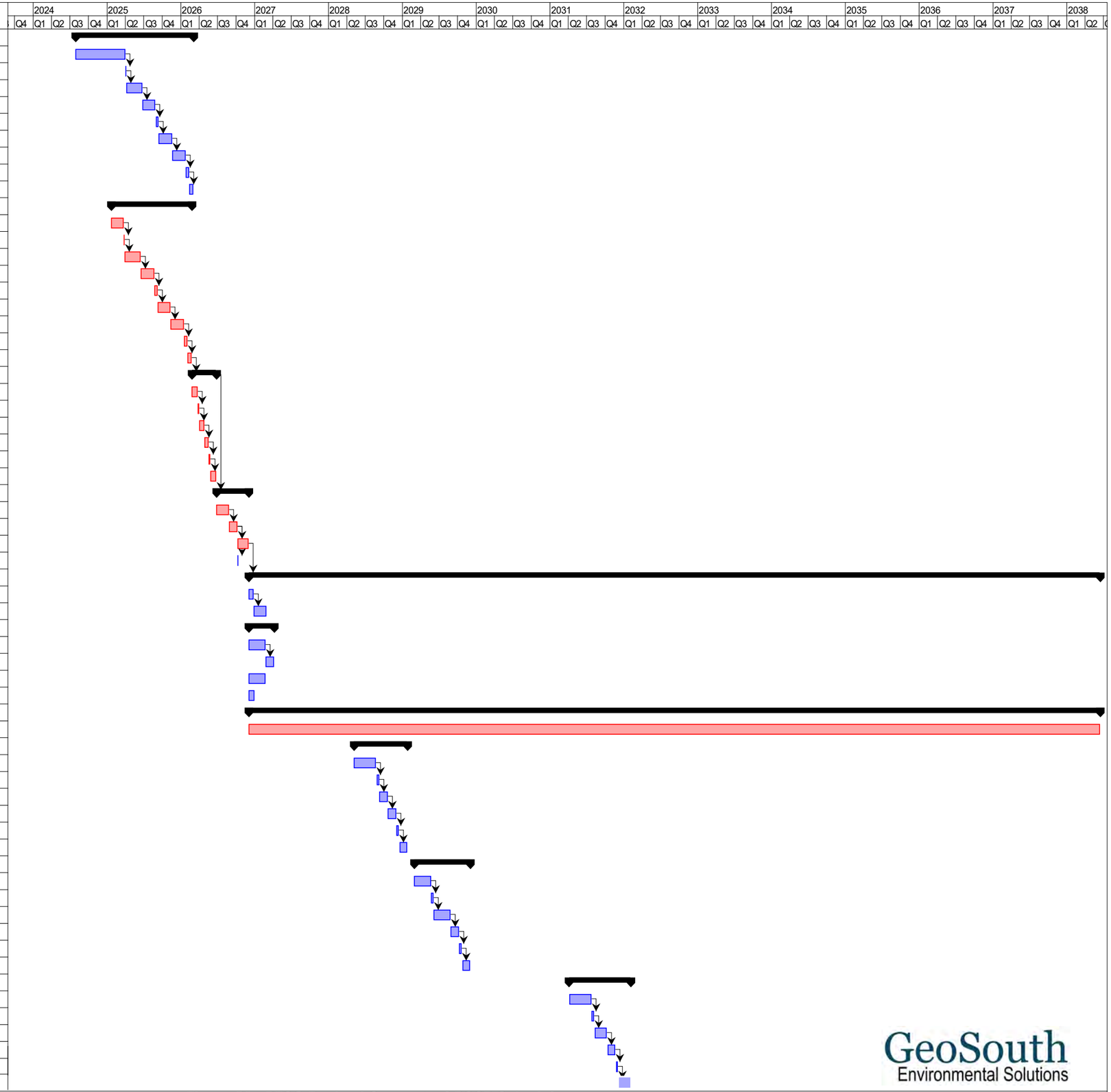

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Figure 36 - PFSG Revised Conceptual PCCP Schedule

APPENDICES

APPENDIX A

ELECTRONIC CD-ROM COPY OF GROUNDWATER MODELING REPORT

GROUNDWATER FLOW AND SOLUTE TRANSPORT MODEL REPORT
PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GA 31601

PREPARED FOR:

PREPARED BY:

5777 CENTRAL AVE. #200
BOULDER, COLORADO 80301

MAY 22, 2020

THIS "GROUNDWATER FLOW AND SOLUTE TRANSPORT MODEL REPORT" WAS PREPARED UNDER THE DIRECTION OF A GEORGIA REGISTERED PROFESSIONAL GEOLOGIST.

SAMUEL A. MARQUIS, JR.
VP – PRINCIPAL HYDROGEOLOGIST
GEORGIA PROFESSIONAL GEOLOGIST #1886

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I. INTRODUCTION

This report presents a hydrogeologic analysis and computer modeling report for the characterization of groundwater flow and evaluation of groundwater remedial strategies at the Perma-Fix of South Georgia, Inc. site (PFSG), located at 612 James P. Rodgers Circle, Valdosta, Georgia (Figure 1). Cameron-Cole, LLC, on behalf of Perma-Fix Environmental Services, conducted this quantitative evaluation. The hydrogeologic analysis and computer modeling work presented herein is a technical supplement to the *Post Closure Care Plan (PCCP)*.

The groundwater flow and solute transport model was developed to simulate groundwater flow and the existing volatile organic compound (VOC) plume using historical and present day groundwater flow and analytical data. The model was then used to evaluate the effectiveness of the remedial alternative selected for the facility in attaining remedial action objectives (RAOs) in a reasonable time frame. The groundwater remedial alternative simulated in the computer modeling were an air sparging (AS)/soil vapor extraction (SVE) system to address the main impacted source areas at the facility. For calibration purposes, the groundwater model used source areas placed in the following Solid Waste Management Units (SWMUs, Figure 2 of PCCP): SWMU 1C (Cooling Pond); SWMU 1F (Paved Areas Not Associated with Other SWMUs); SWMU 4 (Bulk Storage Tank Farm); SWMU 6 (Solvent Recovery Area; and SWMU 7 (Equipment Storage and Decontamination Area). No active remediation is proposed as part of this evaluation to remedy the portion of the plume that has migrated downgradient off-site or is associated with a source area located in SWMU 1D (Northern Portion of Site) in the vicinity of wells MW-11S and MW-11D. In the model simulations, the downgradient portion of the plume was allowed to naturally attenuate at the degradation rate set for the model during the calibration process and the source areas for wells MW-11S and MW-11D were turned off.

The overall scope for this quantitative analysis included developing a hydrogeologic conceptual model, constructing a numerical groundwater flow and transport model, and applying this model to evaluate the proposed remedial action. The analysis presented in this report focuses on the development and use of numerical groundwater flow and solute transport simulators to predict and assess remedial performance. These analysis tools were constructed to simulate the subsurface hydrogeology and to quantitatively assess groundwater remediation at the PFSG facility in accordance with Georgia Environmental Protection Division (GAEPD) requirements and accepted industry practices.

2. CONCEPTUAL MODEL

The conceptual model includes both a hydrogeologic groundwater flow conceptualization and a solute transport conceptualization. The development of the site conceptual model was based on data such as hydrogeologic cross-sections, groundwater level measurements, and analytical data from groundwater monitoring wells compiled from groundwater monitoring conducted at the site between 2003 and 2020. The site exhibits relatively simple geologic features; however, groundwater flow is moderately complex and is influenced by surficial water features such as Langdales Pond located approximately 2,400 feet to the north, many paved areas in the industrial areas located in the mid-section of the model domain, and Mud Creek located approximately 600 feet to the south of the site. The following sections describe the groundwater flow and solute transport conceptualization.

2.1. SITE STRATIGRAPHY

The shallow geology of the site is typical of the nearshore depositional environments of the Miocene in this part of the Georgia Coastal Plain. Two cross-sections have been prepared based on the lithological data collected from the soil boring logs and are presented on Figure 2. The two cross-sections extend from the northern portion of the site toward the southern portion of the site, and these cross-sections include total VOC concentrations collected during the January 2020 groundwater sampling event.

The entire site is underlain by a yellowish red, silty fine sand in the vadose zone, with a few clayey sand interbeds. This unit extends from approximately 10 to 15 feet below ground surface (bgs). At the base of the vadose zone, the entire site is underlain by a brownish yellow, clayey, fine sand layer that ranges from 5 to 10 feet thick. The unconfined water table occurs in this unit with the depth to groundwater ranging from approximately 13 to 19 feet below top of casing. This clayey sand layer reaches ground surface at the southern end of the facility, and disappears within 200 feet of the southern property boundary.

Beneath the clayey sand is a reddish yellow to white, medium to coarse-grained sand. This sand layer increases in thickness to become the dominant formation in the subsurface between the southern portion of the facility and Mud Creek. This clean sand layer and the clayey sand layer above probably represent the Miccosukee Formation, as described by McConnell and Hacke (1993). The Miccosukee Formation varies from 25 to 33 feet in thickness and contains the Unnamed Pliocene Age Aquifer.

At approximately 40 feet bgs at the facility, this sand layer becomes increasingly more clayey, culminating in the dominant dark yellowish orange, sandy clay observed during the installation of the deep wells. This sandy clay formation probably represents the Coosawatchie Formation, the uppermost of the Hawthorne Group Sediments. The deepest wells (MW-13D3, MW-23) both penetrated a marl and limestone bedrock layer beneath the sandy clay layer 75 feet bgs at the facility. The limestone formation most likely represents the Parachula Formation, another of the Hawthorn Group sediments. This lower confining unit

is the regional upper confining unit for the Floridan aquifer and is at least 60 feet thick as represented at monitoring well MW-13D3.

The upper water-bearing unit, as defined in this report, consists of the water-saturated, interbedded sands, clayey sands, and clays extending from the water table to the top of the marl and limestone layer encountered at approximately 75 feet bgs. This upper water-bearing unit consists of a shallow zone (approximately 15-40 feet bgs) and a deep zone (approximately 40 to 75 feet bgs) to differentiate the shallower deposits of clayey sand and medium-coarse sand from the deeper, finer-grained, clay-rich deposits overlying the marl and limestone. This differentiation is also in accordance with the shallow and deep designations of the wells constructed at the site, which are separated at the approximate 40-foot BTOC level, with those less than 40 feet deep referred to as "shallow" wells and those greater than 40 feet deep referred to as "deep" wells.

2.2. GROUNDWATER FLOW

Groundwater flow in the region of the PFSG facility is conceptualized as a single-layer system consisting of clayey, silty sand and fine to medium grained sand, dominated by horizontal flow, underlain by a bounding limestone aquitard. The upper water-bearing unit has been separated into two zones, designated as "shallow" and "deep," during the site investigation to assist in delineating contaminants detected in the groundwater. Groundwater monitoring wells were installed in both of these zones. Groundwater flow in the region is to the south-southeast. Similarly, the direction of the groundwater movement at the site is to the south-southeast and is generally consistent with the local topography that has a gradient to the south ending with Mud Creek. Mud Creek flows towards the east and is considered a gaining stream with water entering from groundwater.

The groundwater gradient underneath the facility is relatively flat with steeper gradients considerably north of the site and toward Mud Creek located south and southeast of the site. Using data collected during the most recent groundwater monitoring event (January 2020) groundwater gradients evaluated at the three areas show gradients of 0.0303 feet/feet (ft/ft) along the northern facility boundary, 0.005 ft/ft in the middle of the facility, and 0.0149 ft/ft south of the facility. Groundwater elevations ranged from 178.44 ft mean sea level (MSL) in the northern upgradient area of the facility to 167.59 ft MSL in the southern area near Mud Creek. The predominant influences on the groundwater flow are topography and Mud Creek. The groundwater elevation contour map from January 2020 is presented in Figure 6.

2.3. SELECTION OF PCE TO SIMULATE CONTAMINANT SOURCE

Based on the results of previous investigations, the Cameron-Cole June 2006 investigation, and quarterly groundwater monitoring at the facility, the primary area of soil and groundwater impacts appears to be beneath the central portions of the facility associated with the SWMU 1C (Former Cooling Pond Location); SWMU 4 (Bulk Storage Tank Farm); SWMU 6 (Solvent Recovery Area); and SWMU 7 (Equipment Storage

and Decontamination Area). There appears to be a separate source area located in SWMU 1D (Northern Portion of Facility) that is not yet been delineated.

Groundwater and soil analytical data collected between 2006 and 2020 indicate that aromatic hydrocarbon and chlorinated organic compounds as the preliminary chemicals of concern (COCs) at the site since they have been detected above preliminary remedial action objectives (RAOs). Preliminary RAOs are based upon the most recent version of the USEPA Regional Screening Level (RSL) Generic Tables (November 2019) for soil, and Georgia groundwater protection standards (GWPS) or concentration limits based upon USEPA Maximum Contaminant Levels (MCLs). For those constituents without an established GWPS or MCL, the "tap water" RSL from the most recent (November 2019) RSL – Generic Tables using a target hazard quotient of 0.1 was used. Most of the COCs identified in the historical investigations continue to be present at concentrations above the preliminary RAOs.

The transport portion of the groundwater model requires inputs that are specific to each constituent modeled; therefore, one constituent needed to be chosen to represent the entire VOC plume. This was accomplished by reviewing historical data for all constituents routinely detected in groundwater samples collected at the facility. The constituents that were evaluated were the most prevalent constituents detected both on-site and off-site in soil and groundwater and included 1,1-DCE, PCE, and TCE. Based on the January 2020 data, PCE was detected in 28 wells, 1,1-DCE was detected in samples from 23 wells, and TCE was detected in samples from 21 wells. The highest concentration of 10,800 micrograms per liter (μg/L) was associated with PCE; and was detected above the one-percent solubility of 2,000 μg/L in well 10S. Lastly, the areal extent of the January 2020 PCE plume (Figure 8) best matches the areal extent of the total VOC plume (Figure 22 of the PCCP) and provides a better overall match when evaluating cleanup scenarios. Therefore, because PCE is the most prevalent constituent detected and has the best-fit footprint to the overall total VOC plume, this compound is considered the most representative COC to simulate the movement and persistence of the full suite of site VOCs in groundwater. Consequently, PCE was used in the MODFLOW/MT3DMS groundwater flow and solute transport model constructed for the site to simulate environmental fate and transport and to simulate the effects of the selected remedy of air sparging (AS) and soil vapor extraction (SVE) upon the groundwater plume.

2.4. SOLUTE TRANSPORT

The COCs at the site are transported as organic solutes in the aqueous-phase. Due to the presence of COCs at concentrations in excess of 1% of the solubility, there may be the potential for residual dense non-aqueous phase liquids (DNAPL) to be present in the shallow zone beneath the facility. PCE exceeded the 1% of the solubility in well MW-10S; therefore, there is the potential for DNAPL in the area that includes SWMU 1C. DNAPL has not been observed in any of the monitoring wells; however, potential residual DNAPL may provide a continuing source to the aqueous-phase VOC plume in the upper water-bearing unit. As the COCs move through the sand unit, both horizontally and vertically, they are attenuated by biological degradation, matrix sorption, and hydrodynamic dispersion. The horizontal transport of these dissolved

constituents is by advective-dispersive flow, with diffusion playing a negligible role in the transport process.

The distribution of COCs and orientation of the plume is controlled mostly by the regional hydraulic gradient, although Mud Creek and preferential flow paths in the coarser-grained portions of the sand unit may influence solute transport to a limited extent. The current shape of the total VOC plume suggests that the plume is moving in a south-southeastern direction, and seems to be dominated by the regional groundwater flow direction. The PCE plume generally mimics the shape and extent of the total VOC plume, though at a lower concentration.

Based on the quarterly groundwater monitoring reports, the plume generally appears to be relatively stable or depleting in most areas and the off-site migration has been relatively slow given the high hydraulic conductivity of the sand unit. The slow transport in a relatively conductive water-bearing unit can be attributed to the shallow hydraulic gradient (which limits the rate of advective transport), retardation caused by a high fraction of organic carbon, and the relatively high attenuation rate of the VOCs through dispersion, sorption, and natural biodegradation, including aerobic or cometabolic degradation and reductive dechlorination processes.

3. COMPUTER CODE SELECTION

This section describes the numerical computer codes selected for the groundwater flow and solute transport modeling. The computer codes selected for the modeling were chosen based on their ability to meet the following requirements:

- Simulate unconfined groundwater flow in two layers with variable input parameters, including hydraulic conductivity, variable boundary conditions, and other physical properties reflecting the hydrogeologic complexity of the site;
- Widely used, extensively tested, and acceptable to state and federal regulatory agencies;
- Non-proprietary and public domain;
- Model specific expertise and training is readily available to help ensure ease of application and quality assurance in future applications;
- Clearly and completely documented; and
- Accompanying software is relatively user-friendly.

The following sections present the rationale for the selection of the groundwater flow and solute transport codes for the project.

The computer codes selected for the groundwater flow and contaminant transport modeling (MODFLOW-MT3DMS) were chosen based on their ability to accurately simulate groundwater flow and solute transport in a complex three-dimensional depositional environment with irregular aquifer geometry and non-uniform hydrogeologic properties. The groundwater flow model was designed to provide cell-by-cell flows, heads, and boundary conditions for input into a contaminant transport model capable of simulating aqueous-phase contaminant fate and transport processes such as hydrodynamic dispersion, chemical retardation, and species decay. Thus, the model was selected to provide a reasonable representation of saturated groundwater flow, heads, and solute transport paths at the PFSG site and surrounding area.

The selected computer codes were specifically chosen to meet the following requirements:

- Simulate unconfined and confined groundwater flow in multiple layers with variable input parameters, including hydraulic conductivity, recharge, and other physical properties reflecting the hydrogeologic conditions representative of the site;
- Performs both steady-state and transient groundwater flow simulations capable of tracking water particles over time for flow velocity analysis;

- Is widely used, extensively tested, and acceptable to state and federal regulatory agencies;
- Provides software which is non-proprietary and is public domain;
- Ensures ease of application and quality assurance in future applications, since model specific expertise and training is readily available;
- Provides clear and complete documentation; and
- Offers accompanying software that has a graphical-user interface and is relatively user-friendly.

3.1. HYDROLOGIC CODE SELECTION

The following sections present the rationale for the selection of the groundwater flow and solute transport codes.

3.1.1. Groundwater Flow Code

The United States Geological Survey's (USGS) Modular Three-Dimensional Finite-Difference Groundwater Flow Model (MODFLOW-2005) was selected as the groundwater flow code for the hydrogeologic analysis. MODFLOW (McDonald and Harbaugh, 1988; Harbaugh and McDonald, 1996; Harbaugh et al., 2000) is a well-documented algorithm that is available in the public domain and used extensively in the environmental industry to characterize and assess groundwater flow. The code was developed by the USGS to simulate groundwater flow in a three-dimensional heterogeneous and anisotropic medium. MODFLOW-uses a block-centered approach to calculate the numerical solution of the three-dimensional partial differential equation for flow through a saturated porous media and assumes a constant-density fluid. The three-dimensional movement of groundwater of constant density through a porous medium may be represented by the following partial differential equation:

$$\frac{\delta}{\delta x}\left(K_{xx}\frac{\delta h}{\delta x}\right)+\frac{\delta}{\delta y}\left(K_{yy}\frac{\delta h}{\delta y}\right)+\frac{\delta}{\delta z}\left(K_{zz}\frac{\delta h}{\delta z}\right)-W=S_s\frac{\delta h}{\delta t} \qquad (1)$$

where: K_{xx}, K_{yy}, K_{zz} are values of hydraulic conductivity along the x, y, z coordinate axes, which are assumed to be parallel to the major axes of hydraulic conductivity (length/time);

h is the potentiometric head (length);
W represents sources and/or sinks of water (1/time);
S_s is the specific storage of the porous material (1/length); and
t is time (time).

The time derivative $\delta h/\delta t$ is approximated by the backward difference procedure as follows:

$$\frac{\delta h}{\delta t} = \frac{(h_1 - h_0)}{\Delta t} \qquad (2)$$

where: h_0 = the hydraulic head of a node at the beginning of a time-step;
h_1 = the hydraulic head of a node at the end of a time-step, which is unknown; and
Δt = the time-step interval.

The finite-difference equations in MODFLOW are used to estimate the unknown head at every model cell, and are solved iteratively for each time-step with the WHS Solver. The WHS Solver, a proprietary solver developed by Waterloo Hydrogeologic, is the fastest and most stable MODFLOW solver available, consistently providing convergence and resulting in fewer numerical iterations and faster run times (Schlumberger Water Services, 2011, Visual MODFLOW 2011.1 Users Manual).

Assumptions and limitations inherent in MODFLOW include (Anderson and Woessner, 1992; McDonald and Harbaugh, 1998; Harbaugh et al., 2000):

- Hydraulic properties are assumed homogeneous within a grid cell;
- Heads are computed at the center of the cell;
- Stress events, such as pumping, are spread equally throughout the cell subjected to stress;
- Model cell faces are rectangular and cannot conform precisely to stratigraphic irregularities at the cell scale; and
- The principal axes of hydraulic conductivity are assumed to be aligned along the model grid.

3.1.2. Solute Transport Code

The solute transport model MT3DMS (Zheng, 1990; Zheng and Wang, 1999) was selected as the computer code to be used to simulate the transport of contaminants. MT3DMS is compatible with MODFLOW and is one of the models included in the Waterloo Hydrologic Visual MODFLOW software package, which was used as the pre- and post-processor for this project. MT3DMS is a comprehensive three-dimensional mass transport model for simulating advection, dispersion, molecular diffusion, sorption/desorption, and biodegradation of multiple species of contaminants in groundwater systems. The code is based on a modular structure to permit simulation of transport processes independently without reserving memory for unused options. It also allows for the addition of future processes without extensive reprogramming.

MT3DMS has been successfully applied to model numerous sites and is widely accepted by regulators and the groundwater consulting and research community. The modular format of MT3DMS allows the user to select only the transport processes that apply to a specific site. These processes are advection, dispersion, chemical reaction, and a source/sink package. The advection and dispersion packages simulate advective and dispersive transport of a chemical. The chemical reactions available are equilibrium linear or non-

linear sorption and first-order irreversible decay or biodegradation. The source/sink package simulates the effect of external sources or sinks to the transport process. These external factors include injection and extraction wells, drains, rivers, recharge, and evapotranspiration.

The input requirements for MT3DMS involve both the parameters for the solution method and the data that describe the physiochemical processes. The physical data needed include the source area location and benzene concentrations, horizontal and vertical dispersivities, effective porosities, and model layer thicknesses and elevations. Parameters governing the chemical reactions, including sorption and decay as applicable, are also required.

3.1.3. Solute Transport Solver

MT3DMS incorporates an upstream finite difference (UFD) numerical solution method solved iteratively for each time-step with the Generalized Conjugate Gradient Solver (GCG) package. The GCG solver is a general-purpose iterative solver based on the generalized conjugate gradient method for solving the system of transport equations. Although it requires more memory, the GCG solver is more stable than other traditional solver packages. Using this solver, advection, dispersion, sink/source, and reaction terms are solved implicitly with finite-difference approximations without stability constraints on the transport step size. With implicit-in-time, or backward-in-time weighting, the terms in the finite-difference approximations are evaluated at the current time step. Implicit-in-time weighting has the advantage of being unconditionally stable, and allows the use of relatively large time steps. Although implicit-in-time weighting is unconditionally stable, its accuracy is only guaranteed with a maximum Courant number of 1.0 or less. As a simulation proceeds and the concentration gradients diminish, this requirement may be relaxed (Schlumberger Water Services, 2011).

3.1.4. Parameter Estimation (PEST) engine

The Visual MODFLOW software package holds a distinct advantage over other codes during the flow model calibration process. Visual MODFLOW incorporates an automated Parameter Estimation (PEST) engine, which automatically runs successive MODFLOW simulations and adjusts the flow input parameters within a specified range to produce the optimum calibration. The PEST engine is able to run a MODFLOW simulation, alter the values for hydraulic conductivity within each conductivity field, and then re-run MODFLOW. After several successive runs of MODFLOW, the PEST engine converges on the optimum calibration for the given parameter distribution chosen.

3.1.5. Selection of Pre- and Post-Processing Software

The groundwater model was run using software interface Visual MODFLOW Flex 6.1 (Flex 6.1), published by Waterloo Hydrogeologic. Flex 6.1 has been written to simulate large and complex regional-scale groundwater systems and allows direct comparisons of multiple models, which makes the software useful in assessing alternative modeling scenarios, grid indiscretions, and hydrogeologic interpretations. Once the model was constructed, adjustments were made to recharge, drain elevations, and the upgradient

constant head boundaries to obtain the best overall match between the field-measured and modeled heads. Upon achieving a satisfactory initial calibration, the model was run using the stochastic PEST nonlinear parameter estimation tool developed by Watermark Numerical Computing (Doherty, 2002) used with MODFLOW.

4. GROUNDWATER FLOW MODEL CONSTRUCTION AND CALIBRATION

The overall objective of the numerical model was to provide a practical hydrogeologic analysis tool to aid in predicting the present plume and simulating groundwater remediation systems. The following sections describe the basic steps required for the creation and calibration of the MODFLOW groundwater flow model. The purpose of the flow model calibration was to refine the model to match, as closely as possible, observed water levels from July 2006 through January 2020. The site hydrogeologic conditions were simulated using transient solution techniques to recreate the significant water level fluctuations observed across the site between 2006 and 2020.

4.1. Model Domain and Grid Size

The initial step in setting up the groundwater flow model was to determine the boundaries of the region to be simulated. The region was chosen based on the area affected by the PCE plume since it was determined to be the most representative for the total VOC plume, the area covered by the soil and groundwater investigations, the regional groundwater flow, and local geographic features.

The groundwater flow domain consists of two layers that represent wells completed in the shallow and deep zones of the upper water-bearing unit. The sand becomes finer grained with depth, and saturated conductivities from tests conducted in the shallow zone differ from those performed in the deep zone. Data collected to date indicates that PCE concentrations are attenuating with depth. MT3DMS can only report one concentration per cell; therefore, a second layer was necessary to simulate the difference in PCE concentrations with depth and allow calibration to both deep and shallow data points. The thickness of the top layer is 40 feet to coincide with the total depth of the shallow zone wells across the site. The thickness of the lower layer was set to be 35 feet to include the screened intervals from the deep zone wells. The depth of the bottom layer in the model generally corresponds with the top of the limestone aquitard.

The model domain encompasses roughly 80 acres, extending 500 feet north of the northern property boundary, 300 feet west of the western property boundary, 1300 feet east of the eastern property boundary, and south approximately 600 feet to Mud Creek. The interior model grid was constructed to be:

- fine enough to accurately represent the various hydrologic zones of the modeled area;
- fine enough to allow for accurate particle tracking;
- fine enough to calibrate to closely spaced well data in the source area; and

- large enough to allow for maximum computational efficiency without compromising the above considerations.

The model contains 158 rows and 161 columns in each of two layers, for a total of 50,876 finite-difference cells (25,438 cells per layer). The finite-difference cells vary in size from 6.25 ft by 6.25 ft throughout most of the center portion of the model to 50 ft by 100 ft at the distant model boundaries. The use of irregular grid spacing is an accepted practice in order to use finer grid spacing in areas of interest within the model domain. Each finite-difference cell was assigned uniform hydraulic properties and at the center of each finite-difference cell was the node.

According to Anderson and Woessner (1992), when small grid spacing is used in the interior of the finite-difference grid, it may be necessary to increase the nodal spacing as the grid is expanded out to the boundaries. However, because the second derivative has a larger error when derived for irregular grid spacing, there is a limit on the size factor between two adjacent cells. For finite-difference models, the rule of thumb is to expand the grid by increasing nodal spacing no more than 1.5 times the previous nodal spacing. This rule was followed during the grid design for the groundwater flow and solute transport model as no nodal spacing within the grid is greater than 1.5 times the spacing of an adjacent cell. Flex 6.1 has a tool that is used to enforce this rule to insure the integrity of the grid remains compliant with the set cell spacing. Because the grid spacing is smaller toward the area of interest, some of the cells nearer the domain boundaries are elongated. This occurrence is unavoidable when using irregular grid spacing, but does not adversely affect the modeling results.

4.2. Assignment of Boundary Conditions

Known or estimated hydrogeologic features and stresses are incorporated into the numerical model in the form of boundary conditions. The types of boundary conditions used in the model included constant head (Dirichlet-type) and specified flow boundaries (Neumann-type) with no flow, and drains. A constant head boundary defines the groundwater elevation as a constant head value at a specific nodal location within the model domain. The specified flow boundaries with no flow occurs when flux across the boundary equals zero meaning flow is not allowed to cross the boundary but runs parallel to the boundary. No-flow boundaries are generally assigned along the edge of the model domain defining a flow region where lateral groundwater flow is not permitted. Model inputs allow the user to choose if constant head and drain boundaries should be assigned to the appropriate layer if specified elevations crosses layer boundaries. This feature was used for both the constant head and drain boundaries.

The boundary conditions were determined from known hydrologic features, seasonal water level data, and regional groundwater flow. In the upper layer of the model, the southern boundary of the model was defined by the centerline of Mud Creek and designated as a drain boundary. Mud Creek is known to be a gaining stream that discharges water from the local water table and influences the direction of

groundwater flow at the site. Constant head boundaries varying linearly between multiple stress periods defined the northern boundary of the model domain. The constant head boundaries were designed such that the groundwater flow moved from the northern boundary to the south-southeast boundary in an attempt to simulate the complex groundwater flow behavior. The western and eastern boundaries were designated as specified flow boundaries with no flow. The bottom of the cells in the lower layer of the model, corresponding to the top of the limestone, was also simulated as a no flow boundary. All boundary conditions for model layers 1 (shallow) and 2 (deep) are shown in Figures 3 and 4, respectively.

4.3. GROUNDWATER FLOW CALIBRATION

Groundwater flow model calibration is an integral component of groundwater modeling applications. Calibration was completed by comparing field-measured (observed) hydraulic heads in the wells with heads predicted by MODFLOW for the same wells under steady-state flow conditions. The hydraulic head measurements used for model calibration were obtained during 35 groundwater monitoring events between July 2006 and January 2020, with 33 to 59 groundwater elevation observations per event. The groundwater elevations were also used to derive the MODFLOW initial heads and constant head boundary conditions. The constant head boundaries were varied between the July 2006 and January 2020 simulations to address the significant fluctuations in the water table observed across the site due to drought conditions and excessive storm events that were known to affect the southeast United States. The following sections (4.3.1 and 4.3.2) present the flow model calibration goals and the general methodology used to arrive at the calibrated input parameters discussed in Section 4.4 and used for the final flow simulations.

4.3.1. Groundwater Flow Model Calibration Goal

The quality of the match between measured and simulated heads was evaluated by: (1) visual comparison between groundwater elevation contour maps of measured and simulated heads; (2) visual evaluation of scatter-plots comparing measured and simulated heads for several sampling events over time; (3) statistical evaluation of the differences between measured and simulated heads, including residual mean error (RM), absolute residual mean error (ARM), root mean squared error (RMS), and normalized RMS (NRMS), as computed directly by MODFLOW. The difference between measured and simulated groundwater elevations at the monitoring well locations is a function of both the quality of the calibration and the proximity of the nearest finite-difference node to the exact monitoring well coordinates.

To address the desired precision of the transient simulation, the calibration goal comparing the measured and simulated heads for calibration points between July 2006 and January 2020 was set at 10 percent (%) for the NRMS. This value is a reasonable calibration goal for these parameters given the fact that there is an approximate 10 foot head change across the model domain.

The NRMS error is generally equally distributed to all locations of the site. If the calculated head in one particular well consistently deviates from the 95% confidence interval of the calculated versus observed error, then those particular data points represent a spatial deviation from the low NRMS. If those outliers are consistently grouped within a certain portion of the model domain, then some localized hydrogeologic phenomena is not perfectly simulated in the model. However, due to significant hydrogeologic complexities in real-world subsurface flow and transport, including combinations of subtly-varying anisotropy and heterogeneity over a large domain, the overall transport behavior of these features are adequately accounted for in a domain-wide NRMS of 10% or less.

4.3.2. Groundwater Flow Model Calibration Methodology

After the assignment of the initial flow field and boundary conditions, calibration was accomplished through iterative adjustment of the values and spatial configuration of hydrogeologic parameters within acceptable ranges. Adjustments were made incrementally, one parameter at a time, while ensuring that each parameter was still consistent with both published and site-specific data. Table 1 provides the input parameter rationale that was used for the groundwater flow model. Input parameters for the simulations were based on field-measured parameters and conservatively estimated parameters derived from scientific publications.

As previously discussed, the Visual MODFLOW code incorporates a PEST engine, which automatically runs successive MODFLOW simulations and adjusts the input parameters within a specified range to produce the optimum statistical calibration. The PEST engine is able to run a MODFLOW simulation, alter the values for selected parameters within the associated field, and subsequently re-run MODFLOW. After several successive MODFLOW runs, the PEST engine converges on the optimal calibration for the selected parameter. PEST cannot, however, change the size or shape of the areal selected parameters, such as recharge or conductivity.

4.3.3. Internal Stresses

Features that affect horizontal groundwater flow that require specific inputs and are considered internal stresses include recharge and production water well pumping.

4.3.4. Recharge

Recharge as an internal stress was evaluated to assess its hydrologic impact on the groundwater flow field across the model domain. Based on the results of the evaluation, recharge from precipitation affects horizontal groundwater flow enough to be modeled as an internal stress. Annual precipitation data collected since 2000 and submitted as part of each semi-annual report was used as the initial basis for recharge. This parameter was iteratively adjusted during the calibration process to accommodate seasonal fluctuations as well as extreme dry and wet periods.

Three zones were created to handle the recharge inputs. These zones were created to reflect areas of infiltration throughout the model domain. Areas of higher infiltration were placed in the north near Langdales Pond (Zone 1) and in the south near Mud Creek (Zone 3). The majority of the industrial area in the vicinity of the facility is covered with some type of pavement or structures that prevent infiltration and direct stormwater runoff to the city stormwater collection system. This area (Zone 2) was assigned a lower recharge rate to reflect less infiltration. In general, an attempt was made to constrain recharge rates to known precipitation values when possible. However, due to the vast expanse of time covered in the model (35 years) it is not possible to incorporate all excessive precipitation events.

4.4. HYDROLOGIC INPUT VARIABLES

This section summarizes the hydrogeologic input variables used in the groundwater flow simulation effort. These variables include hydraulic conductivity, effective porosity, and total porosity. As noted previously, Table 1 presents the rationale for the input parameters selected for the final calibrated flow model and is pertinent to the sections below.

4.4.1. Hydraulic Conductivity

Initial hydraulic conductivity values for the simulations were chosen based on published values for sands, site-specific pumping test data, and physical properties field data collected in 1996 and 2006. Freeze and Cherry (1979) estimate hydraulic conductivities between 10^{-3} to 10^{-1} cm/s in clean sands. Soil physical properties testing was performed on soil samples collected from wells MW-5S, MW-6D, MW-6S, MW-7S, MW-8S, MW-9D, and MW-10D in March 1996 and from borings AS-1, MW-100, and B-113 in June 2006. Samples analyzed from 41 to 43 feet bgs in 1996 reported an average vertical conductivity of 5.36×10^{-6} centimeters per second (cm/s). Laboratory testing results reported an average vertical hydraulic conductivity of 5.97×10^{-6} cm/s from approximately 15 to 18 feet bgs corresponding to the clayey fine sand unit and an average vertical conductivity of 1.36×10^{-4} cm/s from 25 to 28 feet bgs, which corresponds to the medium to coarse sand unit of the upper water-bearing zone. Results of the laboratory testing from 1996 and 2006 are summarized in the PCCP in Tables 9-12.

Pumping tests were performed on wells MW-5S, MW-5D, MW-12S, and MW-12D in July 1996 and on well MPX-1 in July 2006. Analytical analysis of pumping test data from 1996 reported a range of hydraulic conductivity from 5.61×10^{-1} cm/s to 1.14 cm/s with an average value of 8.48×10^{-1} cm/s in the shallow zone of the water-bearing unit. Hydraulic conductivities in the deep zone of the water-bearing unit ranged from 8.5×10^{-2} cm/s to 7.4×10^{-1} cm/s with an average hydraulic conductivity of 3.12×10^{-1} cm/s. The 2006 pumping tests results were also analyzed using analytical techniques, and estimated shallow hydraulic conductivities ranged from 3.75×10^{-3} cm/s to 1.39×10^{-2} cm/s with an average of 9.3×10^{-3} cm/s. Tables 11 and 12 in the PCCP summarize the pumping test results from 1996 and 2006, respectively.

Laboratory hydraulic conductivity tests provide useful local-scale information for preliminary determination of k values, but are of limited usefulness compared to a calibrated regional-scale flow model due to the well-established scale dependency of hydraulic conductivity data (Fetter, 1993; Bedient et al., 1999). The laboratory-derived k values exhibit the greatest difference from numerically-derived values due to the scale-dependency of hydraulic conductivity measurements. Hydraulic conductivity values generally increase in proportion to the volume of aquifer sampled or evaluated (i.e., pumping tests yield larger values than slug tests, which, in turn, produce larger values than laboratory tests). Like laboratory permeability tests, aquifer slug tests and single-well pumping tests provide hydraulic properties only in close proximity to the well. These tests, while useful, sample only a relatively small aquifer volume and, therefore, generally provide estimates of k that are typically within only one to three orders of magnitude of those derived from regional-scale flow model calibrations. Consequently, data from such tests can only be used to constrain k values to within reasonable limits and cannot be assumed to represent the hydraulic conductivity of large-scale hydrostratigraphic units.

Two conductivity zones were created, one for each layer. Once the initial values of k were assigned in the model, the values were modified during the calibration process using the PEST engine in MODFLOW. The PEST values were adjusted minutely as slight variations in the values provided a better model fit during the iterative, deterministic calibration process. The resulting conductivities are presented on Table 1 and Figures 3 and 4.

4.4.2. Total and Effective Porosity

The values for the total and effective porosity at the site were determined from soil physical properties testing performed in June 2006. Shallow zone data showed an average total porosity of 0.33 and an average effective porosity of 0.15 (excludes the vadose zone effective porosity data). These values were used as input parameters in the numerical model for both the shallow and deep zones and remained unchanged throughout the model calibration.

4.4.3. Specific Yield and Specific Storage

The initial value for specific yield used for the model calibration was set at 0.25 based on published values for similar lithologies. The values were subjected to the PEST engine in MODFLOW, which did not change the value.

Specific storage was set at 0.015 1/ft. This value is based on 10 percent of the porosity and published values for similar lithologies. The values were subjected to the PEST engine in MODFLOW and adjusted during the calibration process, with a lower specific yield of 0.0125 resulting in a better fit and calibration.

4.5. GROUNDWATER FLOW MODEL CALIBRATION RESULTS

The results of the groundwater flow model calibration indicate that the calculated hydraulic heads representing observed heads at the site over an eleven year period from June 2006 through January 2020 calibrate within a high degree of accuracy, indicating an acceptable match between computer-modeled and field-measured heads. The results indicate that the model was able to accurately reproduce the flow system present at the site under variable water tables. Table 3 provides a listing of the calibration results for the 35 monitoring events between July 2006 and January 2020 that contained groundwater monitoring events conducted with more than seven wells gauged per event. The highlighted rows on Table 3 represent five calibration points as well as the entire dataset that was used in the following assessment. The calibration data is presented graphically on Figure 5.

In order to analyze the effectiveness of the calibration, as mentioned previously, five main statistical factors were measured: root mean error (RM), absolute root mean error (ARM), root mean squared error (RMS), normalized root mean squared error (NRMS), and the correlation coefficient. The NRMS was the primary indicator for the quality of the calibration. Figure 6 presents scatter plots comparing the computed heads with the observed heads for five individual calibration events along with a complete plot that uses all data from the 35 events during the calibration period from July 2006 through January 2020. It is evident from the figure that there is a good correlation between the computed and observed heads for all time periods. A visual comparison between observed and calculated groundwater elevations are shown in Figure 6.

4.5.1. Root Mean (RM)

The RM is the mean difference between computed and observed heads and is calculated by Visual MODFLOW using the following equation:

$$RM = \frac{1}{n}\sum_{i=1}^{n}\left(h_o - h_c\right)_i$$

Where: RM = residual mean error;
n = number of computed and observed data points;
h_o = observed heads; and
h_c = computed heads.

The values for RM for all 35 evaluation events ranged from -1.0 to 0.96 ft with an average of -0.03 ft for the calibrated MODFLOW simulation. The overall average RM using all 1,535 data points collected between 2006 and 2020 is -0.02 ft. Both the average RM and the overall RM are within the calibration goal of 1.0 ft. The RM is not as statistically significant a parameter as the ARM or RMS because both negative and positive differences or residuals are incorporated in the mean and may cancel each other

out, but it does give an indication of whether or not all values are too high or too low. The RM values for each of the calibration points indicate that the RM is biased slightly high.

4.5.2. Absolute Root Mean (ARM)

The ARM, or mean of the absolute value of the differences between the computed and observed heads, is calculated by Visual MODFLOW using the following equation:

$$ARM = \frac{1}{n}\sum_{i=1}^{n}\left|\left(h_o - h_c\right)_i\right|$$

Where: n = number of computed and observed data points;
h_o = observed heads; and
h_c = computed heads.

The values for ARM for all 35 evaluation events ranged from -1.19 to 0.56 ft with an average of 0.88 ft for the calibrated MODFLOW simulation. The overall average RM using all 1,535 data points collected between 2006 and 2020 is 0.87 ft. The ARM met the calibration goal of 1.5 ft for all 35 calibration points.

4.5.3. Root Mean Squared (RMS) and Normalized RMS

The RMS, or average of the squared differences in computed and observed heads, is calculated by Visual MODFLOW using the following equation:

$$RMS = \left[\frac{1}{n}\sum_{i=1}^{n}\left(h_o - h_c\right)_i^2\right]^{0.5}$$

Where: n = number of computed and observed data points;
h_o = observed heads; and
h_c = computed heads.

The RMS is considered one of the best measures of errors assuming the errors are normally distributed and a NRMS of 10-15% is considered acceptable in groundwater flow and solute transport applications (Anderson and Woessner, 2002; Rumbaugh, 2005). The normalized RMS is the ratio of the RMS to the total head change in the system for the 35 calibration events.

The values for RMS for all 35 evaluation events ranged from 0.73 to 1.86 ft with an average of 1.15 for the calibrated MODFLOW simulation. The overall average RMS using all 1,535 data points collected between 2006 and 2020 is 1.16 ft. The RMS met the calibration goal of 2.5 ft for all 35 calibration points.

The values for NRMS for all 35 evaluation events ranged from 8.16% to 15.05% with an average of 10.70% for the calibrated MODFLOW simulation. The earlier events had higher NRMS results and the averages of each event NRMS is statistically biased high. A better comparison is the computed NRMS using all 1,535 data points collected between 2006 and 2020 of 5.15%. All NRMS percentages are within the calibration goal of 10-15% with the exception of the December 2007 event which was slightly above at 15.05%.

4.5.4. Correlation Coefficient

The correlation coefficient show how well two values are related. Correlation coefficient values of 0.90 or greater indicate that the two datasets are "very highly correlated." Correlation coefficients whose values are between 0.7 and 0.9 indicate may be considered highly correlated. Correlation coefficients between 0.5 and 0.7 may be considered moderately correlated, and datasets with correlation coefficients between 0.3 and 0.5 are thought to have a low correlation. (Calkins, 2005). The correlation coefficient of the simulated versus observed heads in the 35 evaluation events ranged from 0.81 to 0.95 with an average of 0.92. The correlation coefficient using all 1,535 data points between 2006 and 2020 is 0.90 indicating that the observed heads strongly match the calculated heads.

4.5.5. Water Balance Error

Aside from comparing the computed and observed heads, another measure of accuracy of the numerical solution for the computer simulations is the water balance error for each simulation. The water balance error for MODFLOW is the difference between total inflow and outflow divided by the average of the inflow and outflows. A water balance error of "around one-percent" is considered acceptable in groundwater modeling applications (Anderson and Woessner, 1992). The water balance error for the transient flow model calibration period from July 2006 through January 2020 is 0.05% with a total inflow of 486,205,568 gallons (gal) and a total outflow of 485,969,984 gal. Given the large model domain, a 0.05% water balance error is considered exceptional.

5. SOLUTE TRANSPORT MODEL CONSTRUCTION AND CALIBRATION

This section presents the input parameter rationale and calibration of the solute transport portion of the model. The solute transport model was designed to simulate the environmental fate and transport of contaminants. As discussed in detail in Section 2.3, PCE was selected as the constituent for the transport modeling because of its prevalence and the areal extent of the PCE plume corresponds well with the overall shape and horizontal extent of the total VOC plume. The output from the calibrated MODFLOW regional groundwater flow model was used as the basis of the groundwater flow field for the MT3DMS solute transport simulations. As a result, the model domain, grid, boundary conditions, and hydrogeologic properties were unchanged, providing for a direct interface between the flow and transport models. The following sections describe the revision and calibration of the MT3DMS solute transport model.

5.1. METHODOLOGY

After setting up the initial flow field, calibration of the solute transport model was accomplished in the same manner as the flow model, through iterative adjustment of solute transport parameters, and the source area location, within acceptable ranges. The adjustments made were consistent with values of parameters found in scientific literature and with data collected at the site.

The purpose of the solute transport model was to be able to accurately simulate contaminant transport at the site and to represent the current average extent of the plume based on data collected during 68 groundwater monitoring events conducted between February 2003 and January 2020. The calibrated model was used to: (1) determine the likely location of the source area (i.e., DNAPL as residual globules and high aqueous phase concentrations), (2) predict plume migration, and (3) evaluate the effectiveness of the proposed remedial technology (AS/SVE) in attaining groundwater RAOs based on the cleanup time for PCE.

5.2. INPUT PARAMETER RATIONALE

The input parameters for the model simulations are conservatively estimated parameters, including dispersion and biodegradation, based on published studies. Table 2 presents the values and rationale for input parameters selected and the following subsections present the rationale for the solute transport model input parameters.

5.2.1. Source Concentration

As previously discussed, the source concentration and parameter specific properties are represented by PCE in the solute transport model. The transport model start date was set as January 1, 1986, because a consent order was filed regarding the site in the mid-1980s. The initial concentration at the beginning of

the model was zero μg/L. Four different source areas were simulated in the shallow-zone layer, and one source area was simulated in the deep zone layer of the model. The source areas are input as constant concentration zones ranging in concentration from 10 μg/L up to 90,000 μg/L. The source areas were chosen in areas of higher concentrations in the vicinity of the SWMU #1C (Cooling Pond), SWMU #6 (Solvent Recovery Area), and SMWU #7 (Decontamination and Equipment Storage). Soil data collected in 2006 and 2014-2015 confirm several different zones with high VOC concentrations resulting from various on-site operations and spills. A source area was required near the MW-11S and MW-11D well cluster to match the elevated PCE concentrations that are observed on the north side of the facility. The size and shapes of each source area was iteratively modified throughout the calibration process to achieve the best calibration. Figures 3 and 4 illustrate the locations and concentration of the model source areas for the shallow and deep layers, respectively.

5.2.2. Retardation

Retardation results from sorption of hydrophobic substances onto soil particles, chemical interactions between subsurface fluids in primary and secondary pores and the geologic media, and migration into "dead-end" pores by diffusion (Leap, 1992). It is used to quantify the velocity of a dissolved constituent relative to the velocity of groundwater in which it travels. To account for the slower movement of aqueous-phase benzene in the aquifer, retardation factors (R_d) were calculated using the following equation (Bouwer, 1991) and input parameters. The analytical solution to the retardation equation is calculated using the following equation (Bouwer, 1991):

$$R_d = 1 + K_d (\rho_B / n_e) \quad \text{and}$$

$$K_d = F_{oc} K_{oc}$$

where:

- R_d = retardation factor for benzene (dimensionless)
- K_d = soil-water partition coefficient (cm^3/g)
- F_{oc} = fraction organic carbon (dimensionless)
- K_{oc} = organic carbon-water partition coefficient (cm^3/g)
- n_e = effective porosity (dimensionless)
- ρ_B = bulk density of aquifer sediment (g/cm^3)

As seen from the retardation equation, a retardation factor of approximately one indicates that there is no sorption and the dissolved constituent would move at approximately the same velocity as groundwater. The greater the factor is above one, the slower the constituent would move in relation to groundwater due to sorption (i.e., the chemical species is retarded in groundwater).

The values for effective porosity (n_e=0.15), and bulk density (ρ_B=1.70 g/cm^3) used in the above equations were obtained by averaging the results from the soil physical properties testing conducted in 2006. The fractional organic carbon (F_{oc}) was calibrated with values of 3.3% in both the shallow and deep zones

which is within the range of values measured in the shallow zone in 1996. The organic carbon-water partition coefficient for PCE (K_{oc}) ranged from 66 cm^3/g to 437 cm^3/g (USEPA, 1996). However, model calibration required a lower K_{oc} of 29 cm^3/g in the shallow zone and 35 cm^3/g in the deep zone to achieve the necessary retardation factor needed to match the PCE plume. The R_d of 5.93 for the shallow zone and 6.95 for the deep zone were arrived at by modifying the K_{oc} iteratively during the calibration process. These final R_d factors indicate that the PCE moves slightly less than six times the groundwater in the shallow zone and nearly seven times slower than the groundwater in the deeper zone.

5.2.3. Half-Life

Published values for the half-life of PCE range from 3.7 months to 4.5 years for groundwater (Howard et al., 1991). At the PFSG facility, due to the highly conductive sands, high concentration source areas that degrade quickly, and the limited migration of the plume over the last 20 years, a half-life of 2.3 years was selected for the simulation and based on model calibration. A half-life of 2.3 years, indicates the amount of aqueous-phase PCE will be cut in half due to biological degradation (barring increases from residual source areas). A biological half-life of 2.3 years equates to a PCE decay rate of 0.00083 per day. This decay rate means that every day, the amount of PCE currently present decreases by a factor of 0.00083.

5.2.4. Numerical Inputs

The solute transport model was designed to simulate the environmental fate and transport of PCE from the time of initial release to current conditions. As discussed in Section 5.2.1, the start date of the model was set as January 1, 1986, because a consent order based on a documented VOC release was filed regarding the site in the mid-1980s. Using a release at an early start date within this range provided for the best breakthrough curve matches for each of the downgradient wells that had analytical detections of the modeled constituents. During the calibration of the model, the simulation was run for a period of 12,783 days (35 years). However, during the evaluation of potential remediation time frames the model was extended out to 17,166 days (47 years) to adequately simulate the release and proposed remediation. This made the future date of December 31, 2032 the end of the simulation.

The time step multiplier in MT3DMS (the factor by which each successive time step is increased in length) was set at 1.08. The Courant number ($C = v\Delta t/\Delta l$, where Δt is the time step length and Δl the characteristic nodal spacing) represents the number of cells a particle will be allowed to move through in any direction and is generally set between 0.5 and 1.0. For the MT3DMS model the Courant number was set at 0.75. This value ensured that constituents never moved from one cell to the next in less time than one time step. A Courant number of less than or equal to one is considered acceptable in groundwater modeling applications (Anderson and Woessner, 1992).

5.2.5. PCE Source Concentration

The PCE source concentrations were determined by trial-and-error, statistical methods, and isoconcentration map and breakthrough curve matching of well in the monitoring network. The initial source area was conservatively modeled to include the approximate extent of the present and historically SWMUS. Variations in concentrations observed in groundwater monitoring locations necessitated that the source areas be broken into four smaller source areas in the shallow zone and one smaller area in the deep zone with concentrations varying through time to achieve a robust calibration and match the parameter breakthrough curves for the key wells. The shape and concentrations of the five areas were modified over time until the best possible match for the calibration statistics to the observed concentrations was obtained.

5.3. SOLUTE TRANSPORT CALIBRATION RESULTS

The calibration of the solute-transport model was an iterative process in which parameters were varied with each successive model run until the PCE plume was accurately reproduced. To address the desired precision of the transient simulation, the calibration goal comparing the measured and simulated PCE concentrations at 1,630 observation points over 54 events was set at 10 percent or less for the NRMS. This value is a reasonable calibration goal for these parameters given the large model domain.

Calibration of the solute transport model was performed with 2,207 observed groundwater PCE concentrations collected during 68 groundwater monitoring events conducted from February 2003 to January 2020. The results of the solute transport simulation indicate that the model provides an accurate simulation of the PCE plume between 2006 and 2020. Datasets with less than 10 data points generally result in higher statistical values due to the low number of comparisons. Sixteen of the first 18 datasets contained only seven data points each, which resulted in higher calibration statistics for these events. Although the resulting calibration statistics exceed the calibration goals, this data was necessary to include to assist in the calibration and present a complete picture of the plume development.

In analyzing the effectiveness of the solute transport calibration, four main statistical factors were used: RM, ARM, RMS, and NRMS (Table 4). The calibration goals for RM, ARM, and RMS were adjusted by a factor of 1,000 to accommodate the conversion of data from mg/L to μg/L, resulting in calibration goals of 1,000 μg/L, 1,500 μg/L, and 2,500 μg/L respectively. Calibration was accomplished through iterative adjustment of parameters within ranges of acceptable values. Adjustments were made carefully and incrementally, one parameter at a time, while ensuring that each parameter was still consistent with all available information. The adjustments made were consistent with field data and literature values.

All values for RM, ARM, and RMS were within the calibration goals set. The RM is not as statistically significant a parameter as the ARM or RMS because both negative and positive differences or residuals are incorporated in the mean and may cancel each other out, but it does give an indication of whether or not

all values are too high or too low. The RM values for each of the calibration points indicate that the RM is biased slightly low.

The NRMS (the ratio of the RMS to the total concentration range in the flow system) for the 68 evaluation events ranged from 0.96% to 64.76%, with an average of 16.79% and an overall total NRMS of 1.14% inclusive of all data between 2003 and 2020. Half of the NRMS results are below the NRMS calibration goal of 10%. The majority of the events with gross exceedances of the NRMS calibration goal occurs in the early years from February 2003 to July 2007 when the number of data points in the dataset were limited. The calibration goal was met in 27 of the most recent 29 events from August 2012 to January 2020. The overall calibration results indicate that the groundwater flow and PCE solute transport model attained a robust calibration for all 68 evaluation periods. Therefore, the model accurately simulates the behavior of the PCE plume.

Figure 7 depicts scatter plots of the computed PCE concentrations versus observed concentrations between February 2003 and January 2020. From a visual examination of the scatter plots, it is apparent that there is a strong correlation between calculated and observed VOC concentrations for all monitoring events. The computed error statistics are shown in the upper left hand corner of each scatter plot. It is evident that the calibrated MT3DMS model was able to accurately simulate the measured concentrations in the wells over time, incorporating the transient variations in groundwater flow into the transport of VOCs, with slight under and overestimations during events with significant short-term fluctuations in the observed PCE concentrations.

Figure 8 presents the observed PCE plume and the simulated PCE plumes for January 2020. The visual comparison of the two plumes show that the MODFLOW/MT3DMS-predicted plume is slightly larger. However, the model accurately simulated the approximate extent, shape, and concentrations of the observed PCE plume as well as the total VOC plume.

6. GROUNDWATER REMEDIATION SIMULATIONS

This section provides a discussion of simulated remedial technologies that will address soil and groundwater within each remedial target area at the facility. A groundwater remediation scenario was evaluated for site cleanup using the calibrated groundwater flow and transport model based upon an air sparging and soil vapor extraction (AS/SVE) system, the selected soil and groundwater remedy as presented in the accompanying PCCP. The remediation scenario included AS combined with SVE to treat the source areas and on-site groundwater plume. AS/SVE remediation was simulated as a source remediation technology in the areas of the model which coincide with the principal soil VOC source areas in SWMUs 1C, 6, and 7.

No remedy was applied to the localized areas of elevated VOC concentrations outside of the principal source areas, including SWMU 1D (Northern Portion of Facility) in the vicinity of wells MW-11S and MW-11D. A source was required at this location initially to achieve model calibration. Based on the calibrated model, it is clear that there is a source contributing to the elevated concentrations in the northern portion of the site in the vicinity of wells MW-11S and MW-11D. During the model simulations, the source in this area showed a clear contribution to the PCE concentrations observed in the eastern and downgradient portions of the plume. Since this area is outside the scope of the current selected remedy, to achieve an accurate representation of the remediation effects of the proposed AS/SVE system, the source area in the vicinity of MW-11S and MW-11D were turned off for runs of future remedial simulations. This area requires additional delineation and may require an additional separate remedy once the primary source areas associated with this model have been addressed.

Two remedial targets addressed in this evaluation include: (1) the source area in the vadose zone; and (2) the source areas in the groundwater. The five evaluation criteria for evaluating the remaining corrective measures are described in the USEPA guidance document entitled RCRA Corrective Action Plan (Final), OSWER Directive 9902.3-2A May 1994. The evaluation criteria are:

1. Long-term reliability and effectiveness,
2. Reduction of toxicity, mobility, or volume of waste,
3. Short-term effectiveness,
4. Feasibility of implementation; and
5. Cost.

Each criterion is not specifically discussed below, but were all considered in the evaluation.

6.1. SOLUTE TRANSPORT MODELING OF REMEDIAL ALTERNATIVES

Solute transport modeling was performed to simulate the effects of remediation in the impacted SWMUs and along the southern facility property perimeter. The calibrated groundwater flow and transport model was used to compare the remedial technology to the preliminary groundwater RAOs and to provide an estimate of the cleanup times and what effect the remedy will have on the downgradient, offsite impacts.

The computer modeling simulations were completed using MODFLOW and MT3DMS. As stated in Section 3.0, MODFLOW and MT3DMS are numerical hydraulic and solute transport codes that simulate the movement of groundwater and dissolved-phase chemicals through groundwater. MT3DMS were used to simulate the remediation of all VOCs subject to PCE transport parameters.

The numerical flow and solute transport model was calibrated to observed groundwater elevations and PCE concentrations under transient flow and solute transport conditions between February 2003 and January 2020. The predictive simulations were run for an additional 13 years by decreasing the concentrations in the primary source areas such that they represent the expected mass reduction associated with AS/SVE technology.

6.2. REMEDIAL SIMULATION METHODOLOGY

The remediation simulation scenario presented in this section is based on assumed remediation rates in the source area. The assumed remediation rates are based off observed remediation rates for AS/SVE technologies at sites with similar lithologies and contaminant profiles. The specific remediation rates and zones of influence are discussed in the sections below.

6.2.1. Source Remediation Simulation Methodology

A large number of studies have demonstrated that AS/SVE is capable of removing 90 to 99.9% of contaminants within two years of operation largely due to the volatilization of contaminants into the vadose zone (Bass and Brown, 1996; Concurrent Technologies Corporation on behalf of U.S. Army Armament Research, 1996). Contaminant removal is asymptotic so the majority of the PCE is removed in the first months of operation, and mass reductions approaching or exceeding 99% are typically observed within the first two years of remediation. In typical AS/SVE remediation, the sparge bubbles and vapor recovery zone will remove contaminants from pathways with higher permeability before stripping more recalcitrant zones of contaminants at a slower rate. The AS/SVE remediation scenarios in the model remove three zones of source-area contaminants: (1) easily-removed contaminants within the air-flow pathways; (2) contaminants in locations within secondary air-flow pathways; and (3) recalcitrant contaminants either in the residual-NAPL phase or sorbed-phase, not easily accessible to the air-flow pathways.

This behavior of AS/SVE remediation was simulated in the model by reducing the concentration of the three MT3DMS constant concentration source area cells located in the shallow zone at first-order degradation rates. For the first two years in the simulation, an average source concentration of 60 μg/L, 324 μg/L, and 45 μg/L were applied in the three source areas representing mass reductions of 97% from the initial source concentrations of 2,000 μg/L, 10,800 μg/L, and 1,500 μg/L, respectively. The initial source concentrations were those that were present in the calibrated model representing January 2020. During the two-year simulation the source concentrations were held constant representing the first two years of AS/SVE remediation. After two years, these concentrations were further reduced by 60% to reflect a mass reduction of 99% of the 2020 initial concentration for an additional two years. After year four of AS/SVE operation, the source area concentrations were reduced by 50% ιn two-year increments with the plume evaluated after each successive simulation. By 9.5 years, all PCE concentrations in groundwater underneath the facility and at the POC wells were below the RAO of 5 μg/L. Residual contamination persisted at low levels downgradient offsite, but naturally attenuated below the RAO of 5 μg/L by year 13.

No remedial technology was applied off-site or downgradient of the facility, allowing PCE in the saturated zone to migrate downgradient of the facility under natural attenuation. This portion of the plume was left to degrade at the calibrated half-life for PCE of 2.3 years.

6.2.2. Remedial Effectiveness Evaluation Methodology

Solute transport modeling using MODFLOW/MT3DMS was performed to predict the concentration of PCE remaining in three downgradient areas of shallow zone groundwater over time as an indicator of AS/SVE remedial progress. Effectiveness evaluation goals were established for three areas of the off-site plume to the southeast of the PFSG facility. The three areas of PCE reduction observed during numerical simulations were the proximal plume (in shallow zone groundwater along the southeast facility property at MW-13S and the southern property boundary at MW-1S and MW-4S), the mid-plume (in shallow zone groundwater in the area of the Georgia Petroleum trailers and just north of the railroad tracks), and the distal plume (in in the vicinity of MW-14S and MW-20). The simulated response of the VOC plume was monitored in the proximal plume, the mid-plume, and the distal plume, providing VOC mass reduction benchmarks for VOCs to which remedial performance can be evaluated. At every year after the initiation of the AS/SVE system, the simulated PCE concentrations at these three plume locations are compared to the concentrations at the start of remediation.

6.3. REMEDIAL SIMULATION ASSUMPTIONS

Predicted remediation rates are determined based upon the known hydrogeology and VOC concentrations at the site, knowledge obtained from operating systems at sites with similar hydrogeology and VOCs, and scientific principals related to groundwater and soil remediation and solute transport modeling. The results of the numerical evaluation, specifically the PCE concentrations at a given time, are developed

using this knowledge base. This numerical evaluation is accurate based on current knowledge; however, some factors may affect the remediation and the projected degradation of the plume as displayed on Figures 9 through 12. As remediation progresses, the solute transport model will be updated based on actual degradation rates that are being achieved. Factors, or qualifiers, that will potentially affect the actual remediation rates include, but are not limited to, the following:

- Assumed degradation rate defined in the simulation methodology sections;
- Presence of residual separate phase NAPL in the vadose and saturated zones outside of the remedial zones of influence;
- Site hydrogeologic conditions including additional data obtained from the soil and groundwater;
- Groundwater elevations, which are a function of rainfall;
- Site conditions including aboveground access and below grade infrastructure; and
- Operation of the system, including O&M.

6.4. AS/SVE Remediation Simulation Results

Following the methodology described in Section 6.2 results of the AS/SVE remediation simulation scenarios were developed. The results described in the following two subsections include the solute transport modeling results and the remedial effectiveness evaluation results. The solute transport results represent the simulated PCE plume as various times within the remediation implementation, while the remedial effectiveness evaluation results represent the total VOC plume as described in Section 6.2.2.

6.4.1. Solute Transport Modeling Results

Figures 9 through 12 show the simulated PCE plume at 2, 4, 6, 8, 10, 12, and 13 years of source-area AS/SVE remediation. The modeled rate of remediation is based upon other sites using AS/SVE technology, current knowledge of site conditions including the presence of residual separate phase NAPL, concentrations of VOCs in detected in monitoring wells, and site hydrogeology. Actual remediation times may vary based on the qualifiers presented in Section 6.3.

For the source area where AS/SVE will be implemented, the model was run with the assumption that the system would achieve a 97% reduction of source area concentrations after two years of operation. Since AS/SVE is known to reach asymptotic levels over time, from years four to six of operation the source area concentrations were modeled to reflect a 60% removal efficiency. This was followed by a 50% mass removal efficiency for every additional two years of operation up to thirteen years when the model indicated all concentrations of PCE would be below the RAO.

Using the above-mentioned reductions in the source area concentrations, concentrations that are at or below the RAO occurred beneath the facility after ten years of operation (Figure 11). The portion of the plume that migrated offsite was shown to naturally attenuate after 12 years of operation with no concentrations above the RAO observed in year 13 (Figure 12).

7. CONCLUSIONS AND RECOMMENDATIONS

A groundwater flow and solute transport model was developed for the PFSG facility in order to evaluate groundwater flow and assess the effects of the selected AS/SVE groundwater remedy presented in the *Interim Soil and Groundwater Remedial Measures Work Plan*. The MODFLOW/MT3DMS flow and transport models were successfully calibrated to observed water levels and average PCE concentrations. These results indicate that the models are capable of simulating the major flow and transport processes at the site and of providing a quantitative hydrogeologic analysis tool for simulating remedial scenarios.

The modeling results indicate that the combined AS/SVE system will be an effective remedial alternative to achieve remediation at main source areas within the impacted SWMUs in the central and southern portions of the site. Modeling results predict that after 9.5 years of AS/SVE system operation, average PCE concentrations on-site of 2,000 µg/L will be reduced to less than 5 µg/L at the facility boundaries and point of compliance wells. Furthermore, the solute transport modeling results also indicate that PCE concentrations off-site will be below 5 µg/L, assuming no recalcitrant NAPL sources are present and provided specific conditions are met, within 13 years.

8. REFERENCES

Anderson, M.P., and Woessner, W.W., 1992. *Applied Groundwater Modeling, Simulation of Flow and Advective Transport*. Academic Press, San Diego, California, 381 pp.

Bass, D.H., and Brown, R.A., 1996. "Air Sparging Case Study Database Update", in Proceedings of the First International Symposium on In Situ Air Sparging for site Remediation, Las Vegas, NV, International Network for Environmental Training, Potomac, MD.

Bouwer, H., 1991. *Simple Derivation of the Retardation Equation and Application to Preferential Flow and Macrodispersion*. Ground Water, Vol. 29, No. 1, pp. 41-46.

Fetter, C.W., 1994. *Applied Hydrogeology, Third Edition*. Prentice-Hall, Inc., Upper Saddle River, New Jersey, 691 pp.

Freeze, R.A., and Cherry, J.A., 1979. *Groundwater*. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 604 pp.

Harbaugh, A.W., and McDonald, M.G., 1996. *User's Documentation for MODFLOW-96, an Update to the U.S. Geological Survey Modular Finite-Difference Ground-Water Flow Model.* U.S. Geological Survey Open-File Report 96-485, 56 pp.

Harbaugh, A.W., Banta, E.R., Hill, M.C., and McDonald, M.G., 2000. *MODFLOW-2000: the U.S. Geological Survey Modular Ground-Water Model -- User Guide to Modularization Concepts and the Ground-Water Flow Process*. U.S. Geological Survey Open-File Report 00-92, 121 pp.

Howard, P.H., Boethling, R.S., Jarvis, W.F., Meylan, W.M., and Michalenko, E.M., 1991. *Handbook of Environmental Degradation Rates*. Lewis Publishers, Chelsea, Michigan, 725 pp.

Konikow, L.F., 1978. *Calibration of Ground-Water Models*. In *Verification of Mathematical and Physical Models in Hydraulic Engineering*. American Society of Civil Engineers, N.Y., pp. 87-93.

Leap, D.I., 1992. Apparent Relative Retardation of Tritium and Bromide in Dolomite. Ground Water, Vol.30, No. 4, pp. 549-558.

Marquis, Jr., S. A. 1994. *Bioremediation design using numerical transport modeling.* Proceedings of Hazmacon '94 - Hazardous Materials Conference and Exhibition, San Jose, CA, March 29-31, 1994, pp. 161-171.

Marquis, Jr., S.A., and D. Dineen. 1994. *Comparison between pump and treat, biorestoration, and biorestoration/pump and treat combined: lessons from computer modeling.* Ground Water Monitoring and Remediation, v. 9, no. 2, pp. 105-119.

McConnell, J.B. and Hacke, C.M., 1993. Hydrogeology, Water Quality and Water-Resources Development Potential of the Upper Floridan Aquifer in the Valdosta Area, South-Central Georgia: U.S. Geological Survey, WRI Report 93-4044, 1993.

McDonald, M.G., and Harbaugh, A.W., 1988. *A Modular Three-Dimensional Finite-Difference Ground-Water Flow Model*. U.S. Geological Survey Techniques of Water-Resources Investigations, book 6, chap. A1, 586 pp.

Mehran, M., Olsen, R.L., and Rector, B.M., 1987. *Distribution Coefficient of Trichloroethylene in Soil-Water Systems*. Ground Water, Vol. 25, Mo. 3, pp. 275-282.

Pollock, D.W., 1994. *User's Guide for MODPATH, Version 3: A Particle Tracking Post-Processing Package for MODFLOW, the U.S. Geological Survey Finite-Difference Ground-Water Flow Model*.

Priddle, M.W. and Jackson, R.E., 1991. *Laboratory Column Measurement of VOC Retardation Factors and Comparison with Field Values*. Ground Water, Vol. 29, No. 2, pp. 260-266.

Rumbaugh, J.O., and Rumbaugh, D.B. (Rumbaugh, 2005). 2005. Guide to Using Groundwater Vistas, Version 4. Environmental Simulations, Inc. Reinholds, PA.

Zheng, C., 1990. MT3D: A Modular Three-Dimensional Transport Model for Simulation of Advection, Dispersion and Chemical Reactions of Contaminants in Groundwater Systems. Report to the U.S. EPA, 170 pp.

Zheng, C., and Wang, P.P., 1999. *MT3DMS. A Modular Three-Dimensional Transport Model.* Technical Report, U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.

TABLES

TABLE 1
Groundwater Flow and Solute Transport Model
Flow Input Parameter Rationale
Perma-Fix of South Georgia, Inc., Valdosta, GA

GROUNDWATER FLOW MODEL				
INPUT PARAMETER	**VALUE**	**UNITS**		**RATIONALE**
Horizontal and Transverse Hydraulic Conductivity				
Shallow Zone				
Kx	6.35E-03	cm/sec		Based on saturated hydraulic conductivity values determined from soil physical property testing and pumping tests conducted in 1996 and 2006 and refined in 2020 through calibration and use of PEST.
Ky	6.30E-03	cm/sec		
Kz	6.00E-03	cm/sec		
Deep Zone				
Kx	1.57E-03	cm/sec		Based on saturated hydraulic conductivity values determined from soil physical property testing and pumping tests conducted in 1996 and 2006 and refined in 2020 through calibration and use of PEST.
Ky	1.47E-03	cm/sec		
Kz	6.99E-04	cm/sec		
Storage				
S_y	0.25	dimensionless		Based on values for medium sands from Johnson (1967) and model calibration.
S_s	0.0125	1/ft		Based on model calibration and 2020 PEST.
Porosity				
Effective (n_e)	0.15	dimensionless		Based on 2006 soil physical property data for Shallow Zone.
Total (n_T)	0.33	dimensionless		Based on 2006 soil physical property data.
Recharge				
	Zone 1	Zone 2	Zone 3	Based on model calibration and PEST simulation not to exceed 60% of the average annual rainfall in Valdosta.
0-7890	50.0	3	45	in/yr
7891-8020	37.0	2	45	in/yr
8021-8850	50.0	8	45	in/yr
8851-11030	30.0	1	40	in/yr
11031-11220	11.0	0.25	15	in/yr
11221-11675	13.0	0.25	13	in/yr
11676-11865	10.0	1	15	in/yr
11866-12260	13.0	4	45	in/yr
11261-12400	0.1	0.01	10	in/yr
12401-12440	0.3	0.1	10	in/yr
12441-12783	1.0	0.1	5	in/yr

PEST - Parameter Estimation: Module in Modflow that aids in calibration by running multiple simulations to provide the best values based on mathematical solutions.
cm/sec = centimeter per second
ft = foot
in/yr = inches per year

TABLE 2
Groundwater Flow and Solute Transport Model
Solute Input Parameter Rationale
Perma-Fix of South Georgia, Inc., Valdosta, GA

SOLUTE TRANSPORT MODEL			
INPUT PARAMETER	**VALUE**	**UNITS**	**RATIONALE**
Dry Bulk Density			
ρ_B	1.70	g/cm^3	Within range of dry bulk density values from soil testing conducted in 2006 (1.66 to 1.92 g/cm^3).
Tetrachloroethene Degradation			
Half-life	2.3	year	Model value is based on calibration and within published values of 3.7 months to 4.5 years (Howard et al., 1991).
Decay Rate	0.00083	1/day	=ln(2)/(half-life)
Tetrachloroethene Retardation			
			Shallow Zone (1)
K_{oc}	29	cm^3/g	Based on calibration of transport model.
F_{oc}	0.033	dimensionless	Value within the range of measured organic content in 1996 soil samples collected in the vadose and shallow zones (0.026 to 0.048).
K_d	0.96	cm^3/g	$K_d=K_{oc} \times F_{oc}$
R_d	5.93	dimensionless	$R_d= 1 + (\rho_B/n) K_d$
			Deep Zone (2)
K_{oc}	35	cm^3/g	Based on calibration of transport model.
F_{oc}	0.033	dimensionless	Value within the range of measured organic content in 1996 soil samples collected in the vadose and shallow zones (0.026 to 0.048).
K_d	1.16	cm^3/g	$K_d=K_{oc} \times F_{oc}$
R_d	6.95	dimensionless	$R_d= 1 + (\rho_B/n) K_d$
Dispersion			
Longitudinal dispersivity (α_L)			Based on calibration of transport model. Longitudinal dispersivity in homogeneous alluvial materials typically range from 1.5 to 33 feet, while values in heterogeneous sediments typically range from 33 to 200 feet (Fetter, 1988; Satkin and Bedient, 1988; EPRI, 1991). The sediments at the site are on the more homogeneous end of the dispersivity spectrum.
Shallow Zone	14	feet	
Deep Zone	10	feet	
Lateral dispersivity (α_T)			Shallow zone = 50% and Deep zone = 20% of α_L, which is consistent with available scientific publications and based on model calibration. Anderson (1979) gives ranges of 3% to 40%.
Shallow Zone	7	feet	
Deep Zone	2	feet	
Vertical dispersivity (α_V)			1.0 percent of α_L based on model calibration.
Shallow Zone	0.14		
Deep Zone	0.14	feet	
Numerical Inputs			
Source start date	1/1/1986		Start date is based on estimated release date.
Transient simulation time	17,166	days	Simulation time based on release date, present day calibration, and prediction simulations.
Time step multiplier	1		Based on model results and run time
Convergence criterion	0.0001		Visual MODFLOW default

TABLE 2
Groundwater Flow and Solute Transport Model
Solute Input Parameter Rationale
Perma-Fix of South Georgia, Inc., Valdosta, GA

Source Concentration			
$C_{i,Layer\ 1,\ zone\ 1}$			
0-3800	N/A		
3801-7600	0.01	mg/L	1 % solubility for PCE and model calibration.
7601-7800	22	mg/L	
7801-9000	0.5	mg/L	
9001-11500	1	mg/L	
11501-12783	2	mg/L	
$C_{i,Layer\ 1,\ zone\ 2}$			
0-7500	NA		
7501-8100	5	mg/L	
8101-8120	63	mg/L	
8121-8295	9	mg/L	
8296-8950	5	mg/L	1 % solubility for PCE and model calibration.
8951-9820	9	mg/L	
9821-10030	3.5	mg/L	
10031-10200	12.7	mg/L	
10201-11342	6	mg/L	
11343-11667	10	mg/L	
11668-12050	12	mg/L	
12051-12438	10.8	mg/L	
12439-12783	9	mg/L	
$C_{i,Layer\ 1,\ zone\ 3}$			
0-7800	N/A		
7801-9600	0.25	mg/L	1 % solubility for PCE and model calibration.
9601-10000	0.07	mg/L	
10001-11500	0.1	mg/L	
11501-12783	0.05	mg/L	
$C_{i,Layer\ 1,\ zone\ 4}$			
0-8023	N/A		
8024-8900	90	mg/L	
8901-10000	2	mg/L	1 % solubility for PCE and model calibration.
10001-11000	5	mg/L	
11001-11300	1	mg/L	
11301-12783	1.5	mg/L	
$C_{i,Layer\ 2,\ zone\ 3}$			
0-6000	N/A		
6001-9000	13	mg/L	1 % solubility for PCE and model calibration.
9001-11000	3	mg/L	
11001-12783	5	mg/L	

g/cm^3 = grams per cubic centimeter
cm^3/g = cubic centimeters per gram
mg/L = milligrams per liter
NA = not applicable - no concentrations entered

TABLE 3
Groundwater Flow Model
Calibration Results
Perma-Fix of South Georgia, Inc., Valdosta, GA

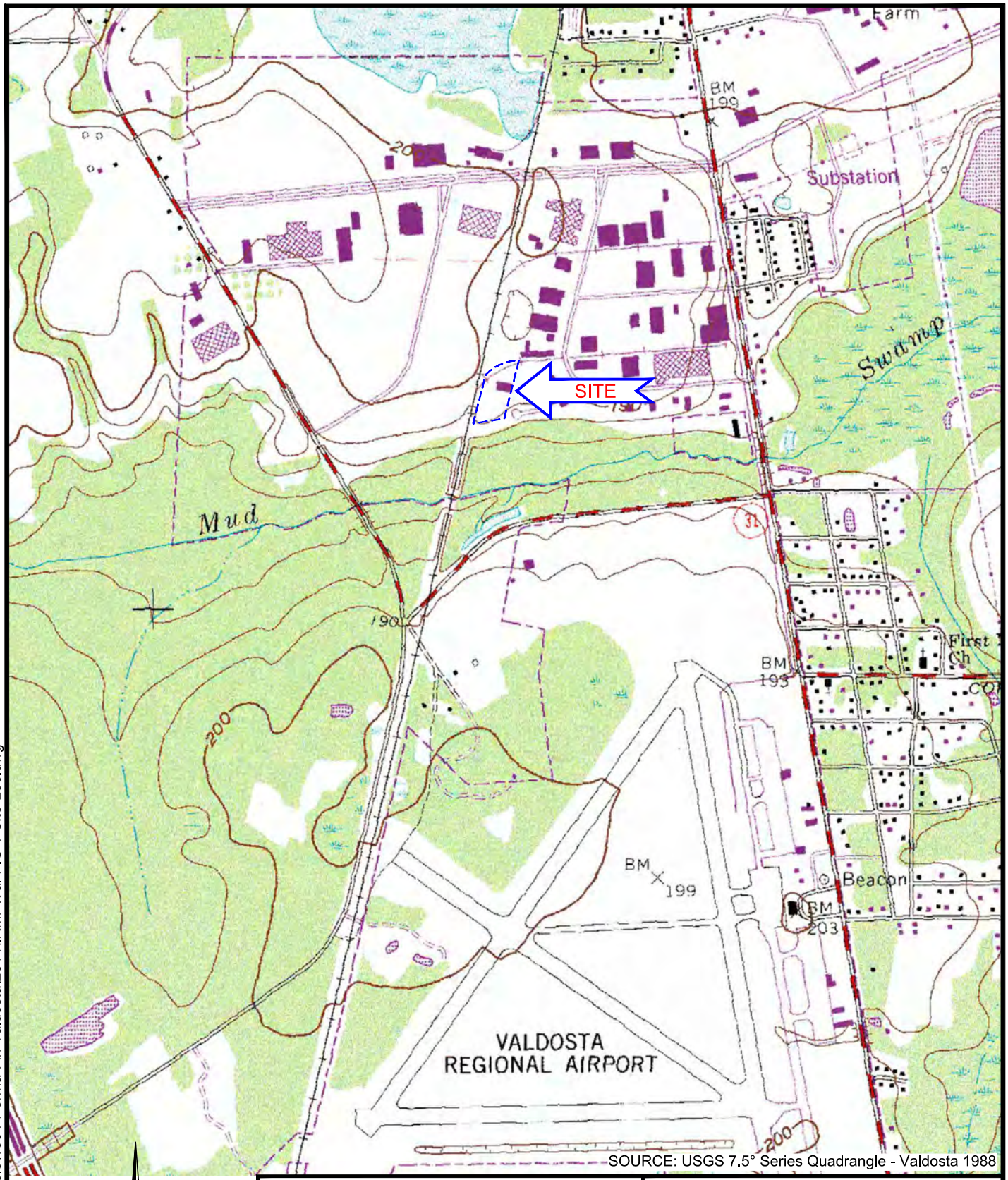
Date	Elapsed Days	# of Data Points	RM (ft)	ARM (ft)	RMS (ft)	NRMS (%)	Correlation Coefficient
Jul-06	7504	59	-0.19	0.56	0.73	8.16	0.95
Sep-07	7910	33	0.55	0.65	0.91	12.03	0.93
Dec-07	8020	59	0.47	0.70	1.19	15.05	0.84
Mar-08	8111	42	-0.15	0.89	1.86	11.03	0.81
Jun-08	8202	37	-0.13	0.84	1.30	11.72	0.88
Sep-08	8294	37	-0.89	1.17	1.28	14.24	0.94
Dec-08	8377	42	-0.64	0.96	1.22	10.34	0.90
Mar-09	8483	42	0.26	0.76	1.06	13.32	0.87
Jul-09	8587	42	-0.24	0.67	0.85	10.02	0.94
Sep-09	8664	42	-0.21	0.68	0.82	10.43	0.94
Dec-09	8741	40	-0.29	0.76	0.94	12.82	0.90
Mar-10	8829	44	-1.00	1.13	1.31	13.70	0.94
Mar-14	10297	38	-0.50	1.11	1.33	12.81	0.89
Jun-14	10395	38	-0.44	0.93	1.09	8.54	0.94
Dec-14	10570	45	0.96	1.19	1.48	13.25	0.93
Mar-15	10659	40	-0.11	0.77	0.99	8.62	0.95
Jun-15	10743	45	0.51	0.82	1.07	8.80	0.95
Aug-15	10813	45	0.35	0.79	1.05	8.68	0.95
Dec-15	10939	45	0.86	1.08	1.39	11.88	0.93
Mar-16	11030	45	0.47	0.96	1.33	11.45	0.90
Jun-16	11111	45	0.08	0.82	1.02	8.28	0.94
Sep-16	11220	45	0.03	0.76	0.98	8.54	0.94
Jan-17	11338	45	0.43	0.88	1.17	10.92	0.93
Mar-17	11401	45	0.40	0.85	1.12	10.42	0.93
Jun-17	11499	45	-0.04	0.81	1.07	9.66	0.92
Sep-17	11583	45	-0.07	0.85	1.09	9.25	0.92
Jan-18	11695	45	0.36	0.94	1.23	11.73	0.92
Mar-18	11758	45	0.09	0.84	1.08	10.13	0.93
Jun-18	11863	46	-0.33	0.95	1.20	9.78	0.91
Oct-18	11976	46	-0.40	0.95	1.14	9.97	0.93
Jan-19	12073	46	-0.82	1.13	1.38	11.10	0.93
Apr-19	12164	46	-0.69	0.97	1.21	9.75	0.94
Jul-19	12262	39	0.13	0.86	1.10	9.32	0.92
Oct-19	12352	46	0.29	0.80	1.06	9.33	0.94
Jan-20	12438	46	-0.06	0.83	1.07	9.57	0.93
	Maximum	59	0.96	1.19	1.86	15.05	0.95
	Minimum	33	-1.00	0.56	0.73	8.16	0.81
	Average	--	-0.03	0.88	1.15	10.70	0.92
Overall Results Using All Data		1535	-0.02	0.87	1.16	5.15	0.90
Model Calibration Goals			± 1.0	1.5	2.5	10%	0.70

Notes:
RM = Residual mean error
ARM = Absolute residual mean error
RMS = Root mean square error
N/A = Not applicable
NRM = Normalized root mean square error
Highlighted cells indicate event presented in accompanying figures
Statistics only evaluated for events containing greater than 30 points.

TABLE 4
Solute Transport Model
Calibration Results
Perma-Fix of South Georgia, Inc., Valdosta, GA

Date	Elapsed Days	# of Data Points	RM (ug/L)	ARM (ug/L)	RMS (ug/L)	NRMS (%)	Correlation Coefficient
Feb-03	6260	7	-6.40	6.40	17.0	37.93	-0.25
Jun-03	6361	7	-40.0	40.0	83.0	39.73	0.60
Sep-03	6452	7	-36.0	36.0	67.0	51.46	0.30
Dec-03	6544	7	-34.0	34.0	64.0	45.86	0.18
Mar-04	6634	7	-24.0	24.0	61.0	37.85	-0.27
May-04	6722	7	-14.0	14.0	36.0	37.91	-0.28
Aug-04	6817	7	-25.0	25.0	64.0	37.84	-0.32
Dec-04	6909	7	-35.0	35.0	69.0	42.94	0.05
Feb-05	6998	7	-34.0	34.0	65.0	42.23	0.10
May-05	7086	7	-20.0	20.0	43.0	39.23	-0.07
Sep-05	7183	7	-42.0	42.0	90.0	39.12	0.03
Dec-05	7274	7	-35.0	35.0	80.0	38.05	-0.01
Feb-06	7363	7	-46.0	46.0	120	37.81	0.04
May-06	7454	7	-32.0	32.0	79.0	37.83	0.19
Jul-06	7505	20	83.0	340	830	11.75	0.84
Jul-06	7511	38	-280	280	590	20.05	0.16
Mar-07	7729	7	-26.0	26.0	64.0	37.81	0.35
Jun-07	7821	7	-15.0	15.0	38.0	37.79	0.35
Aug-07	7911	38	120	200	610	12.17	0.81
Dec-07	8023	52	47.0	280	570	13.64	0.78
Mar-08	8112	42	-15.0	230	600	0.96	1.00
Jun-08	8206	42	-150	250	810	8.29	0.89
Sep-08	8300	42	210	320	1100	64.76	0.48
Dec-08	8384	42	-45.0	280	710	16.10	0.70
Mar-09	8489	41	-320	400	2000	15.37	0.41
Jul-09	8591	40	-150	290	850	9.54	0.87
Sep-09	8673	41	-68.0	250	660	8.10	0.88
Dec-09	8744	41	22.0	250	650	14.82	0.77
Mar-10	8830	39	42.0	270	640	11.84	0.81
Mar-10	8851	5	-1.70	1.70	2.90	9.74	1.00
May-10	8914	42	93.0	280	630	15.67	0.80
Aug-10	8981	42	180	250	610	7.20	0.93
Oct-10	9053	42	190	300	770	7.90	0.89
Feb-11	9189	42	370	460	1150	18.85	0.82
May-11	9277	42	330	420	1180	12.61	0.78
Aug-11	9366	42	340	440	1290	13.74	0.75
Nov-11	9449	42	280	410	1140	11.24	0.82
Feb-12	9554	42	260	330	1000	10.81	0.87
Apr-12	9609	42	250	330	980	10.73	0.87
Aug-12	9728	42	170	260	810	8.03	0.91
Nov-12	9814	42	210	250	740	8.16	0.92
Mar-13	9924	42	110	300	830	8.77	0.83
Jun-13	10023	42	-15.0	340	1067	9.52	0.85
Aug-13	10100	42	110	18.0	510	4.05	0.97
Dec-13	10206	41	180	220	550	11.09	0.91
Mar-14	10304	41	140	260	610	8.01	0.87
Jun-14	10394	41	120	190	440	8.27	0.93
Dec-14	10569	41	94.0	150	380	6.25	0.94
Mar-15	10663	41	100	160	360	6.67	0.95
Jun-15	10746	41	-20.0	170	410	5.23	0.97
Aug-15	10816	41	-1.2	160	380	4.99	0.96
Dec-15	10942	39	41.0	130	290	16.66	0.73
Mar-16	11034	40	54.0	120	250	4.52	0.97
Jun-16	11123	41	8.10	140	320	4.89	0.96
Sep-16	11223	41	16.0	160	370	4.91	0.96
Jan-17	11345	41	-38.0	130	310	3.77	0.98
Mar-17	11406	41	-53.0	150	400	3.55	0.98
Jul-17	11505	44	-18.0	110	310	3.08	0.98
Sep-17	11586	39	-27.0	150	380	3.52	0.98
Jan-18	11698	41	94.0	190	650	8.04	0.97
Mar-18	11761	41	-170	250	940	5.35	1.00
Jun-18	11865	41	-43.0	120	310	2.28	1.00
Oct-18	11980	41	140	170	610	7.32	1.00
Jan-19	12076	42	130	190	470	5.43	0.98
Apr-19	12167	42	47.0	140	310	3.11	0.99
Aug-19	12265	41	49.0	150	340	3.04	0.98
Oct-19	12356	41	29.0	160	420	3.32	0.98
Jan-20	12438	41	80.0	120	300	2.82	0.98
	Maximum	52	370	460	2000	64.76	1.00
	Minimum	5	-320	1.7	2.9	0.96	-0.32
	Average	32.5	42	182	507	16.79	0.68
Overall Results Using All Data		2207	62	230	720	1.14	0.93
Model Calibration Goals			± 1,000	1,500	2,500	10%	0.70

FIGURES



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MILE

M:\clients\Cameron-Cole\1004-Perma-Fix-Valdosta\2014\RMP\Val-FIG 1-Site-Loc.dwg

Cameron-Cole
5777 CENTRAL AVENUE, SUITE 200
BOULDER, COLORADO 80301
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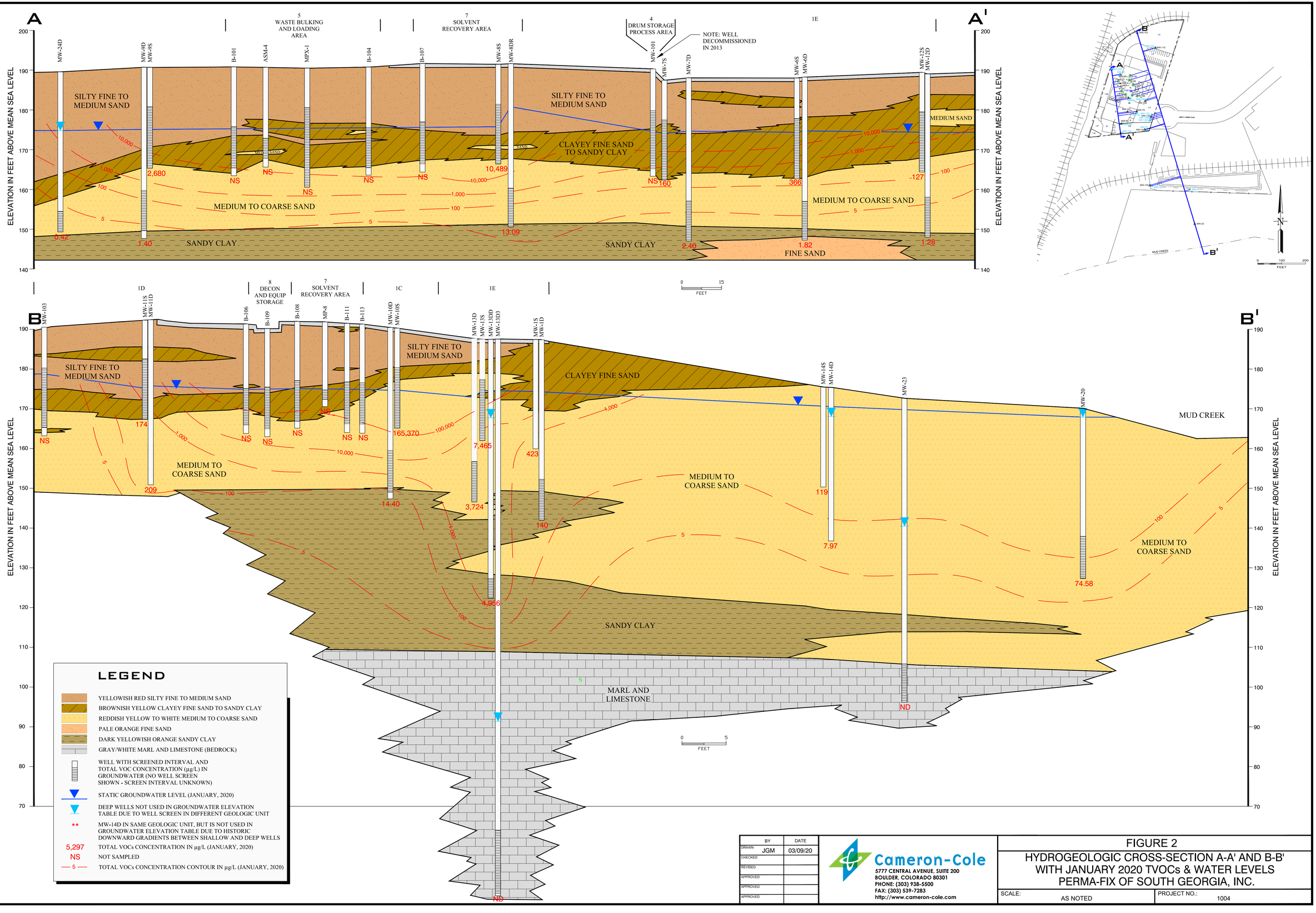
FAX: (303) 539-7283
http://www.cameron-cole.com

FIGURE 1

SITE LOCATION MAP
PEMA-FIX OF SOUTH GEORGIA INC.
VALDOSTA, GA

SCALE:	DATE:	PROJECT NO.
AS SHOWN	12/9/14	1004



LEGEND

- YELLOWISH RED SILTY FINE TO MEDIUM SAND
- BROWNISH YELLOW CLAYEY FINE SAND TO SANDY CLAY
- REDDISH YELLOW TO WHITE MEDIUM TO COARSE SAND
- PALE ORANGE FINE SAND
- DARK YELLOWISH ORANGE SANDY CLAY
- GRAY/WHITE MARL AND LIMESTONE (BEDROCK)
- WELL WITH SCREENED INTERVAL AND TOTAL VOC CONCENTRATION (µg/L) IN GROUNDWATER (NO WELL SCREEN SHOWN - SCREEN INTERVAL UNKNOWN)
- STATIC GROUNDWATER LEVEL (JANUARY, 2020)
- DEEP WELLS NOT USED IN GROUNDWATER ELEVATION TABLE DUE TO WELL SCREEN IN DIFFERENT GEOLOGIC UNIT
- ** MW-14D IN SAME GEOLOGIC UNIT, BUT IS NOT USED IN GROUNDWATER ELEVATION TABLE DUE TO HISTORIC DOWNWARD GRADIENTS BETWEEN SHALLOW AND DEEP WELLS
- 5,297 TOTAL VOCs CONCENTRATION IN µg/L (JANUARY, 2020)
- NS NOT SAMPLED
- — 5 — TOTAL VOCs CONCENTRATION CONTOUR IN µg/L (JANUARY, 2020)

	BY	DATE
DRAWN	JGM	03/09/20
CHECKED		
REVISED		
APPROVED		
APPROVED		
APPROVED		

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PHONE: (303) 938-5500
FAX: (303) 539-7283
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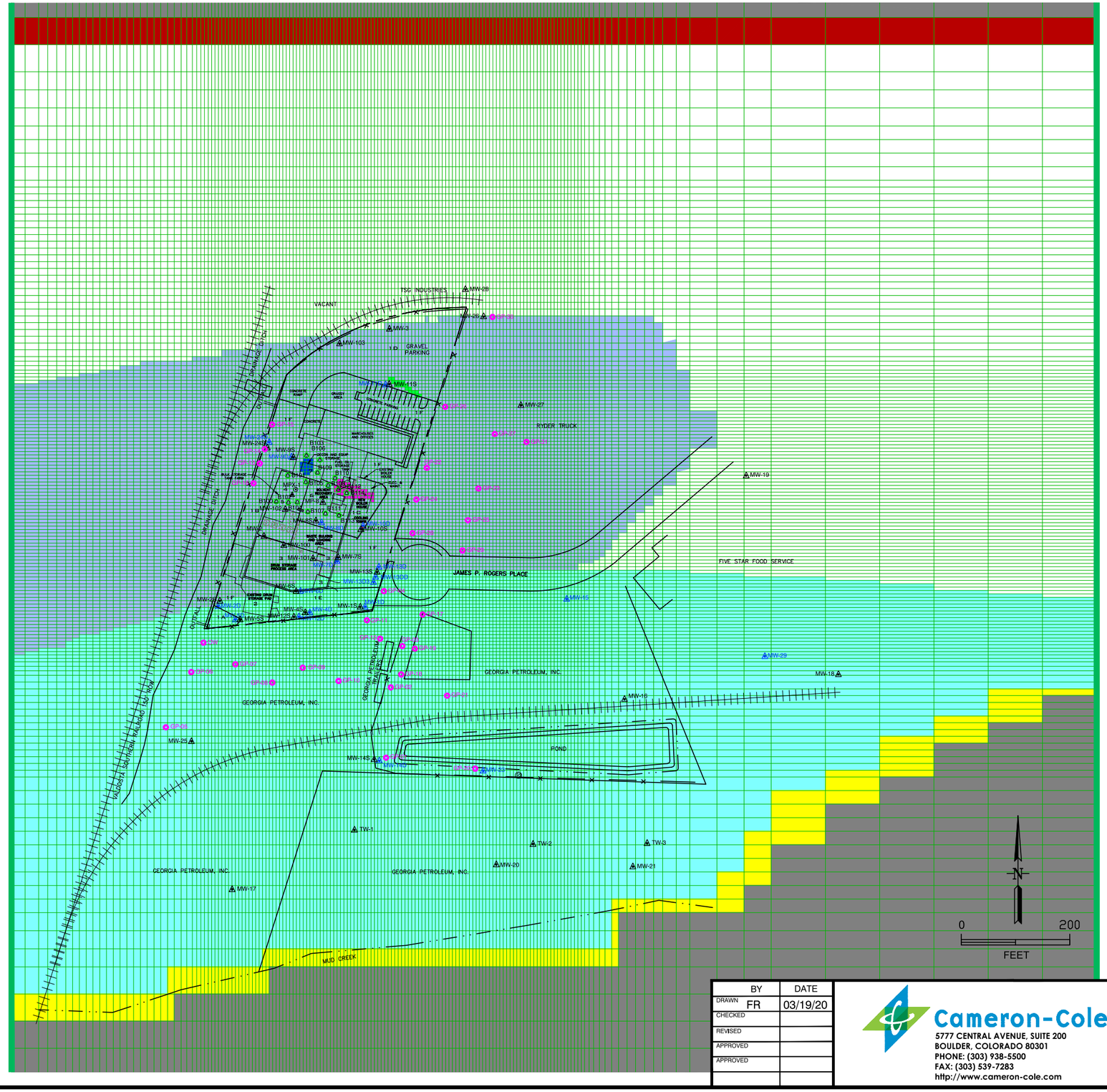
FIGURE 2

HYDROGEOLOGIC CROSS-SECTION A-A' AND B-B' WITH JANUARY 2020 TVOCs & WATER LEVELS PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: AS NOTED

PROJECT NO.: 1004

M:\Clients\Cameron-Cole\1004\Permit-Fin-Wildlife\2020\Drawing\1004FIG 17-2020-XSec_LAYOUT.LAYOUT1 3/12/2020 2:04 PM



LEGEND

TETRACHLOROETHENE SOURCE CONCENTRATIONS

- 10 - 22,000 µg/L
- 1,000 - 90,000 µg/L
- 50 - 250 µg/L
- 3,500 - 63,000 µg/L

LEGEND

B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL (6/06)
MW-27	SHALLOW MONITORING WELL
MW-5D	DEEP MONITORING WELL
MPX-1	MPX SHALLOW TEST WELL
GP-09	GEOPROBE SAMPLE LOCATION (3/04)
	NO-FLOW BOUNDARY
	GROUNDWATER MODEL GRID
	CONSTANT HEAD BOUNDARY
	INACTIVE FLOW
	DRAIN AREA
	RECHARGE AREA 1
	RECHARGE AREA 2
	RECHARGE AREA 3

HYDRAULIC CONDUCTIVITY

Kx = 6.35 x 10^{-3} cm/sec

Ky = 6.30 x 10^{-3} cm/sec

Kz = 6.00 x 10^{-3} cm/sec

	BY	DATE
DRAWN	FR	03/19/20
CHECKED		
REVISED		
APPROVED		
APPROVED		

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BOULDER, COLORADO 80301
PHONE: (303) 938-5500
FAX: (303) 539-7283
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FIGURE 3

GROUNDWATER FLOW MODEL GRID DESIGN, BOUNDARY CONDITIONS, AND SOURCE AREAS FOR SHALLOW LAYER PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: AS SHOWN

PROJ. NO.: 1004

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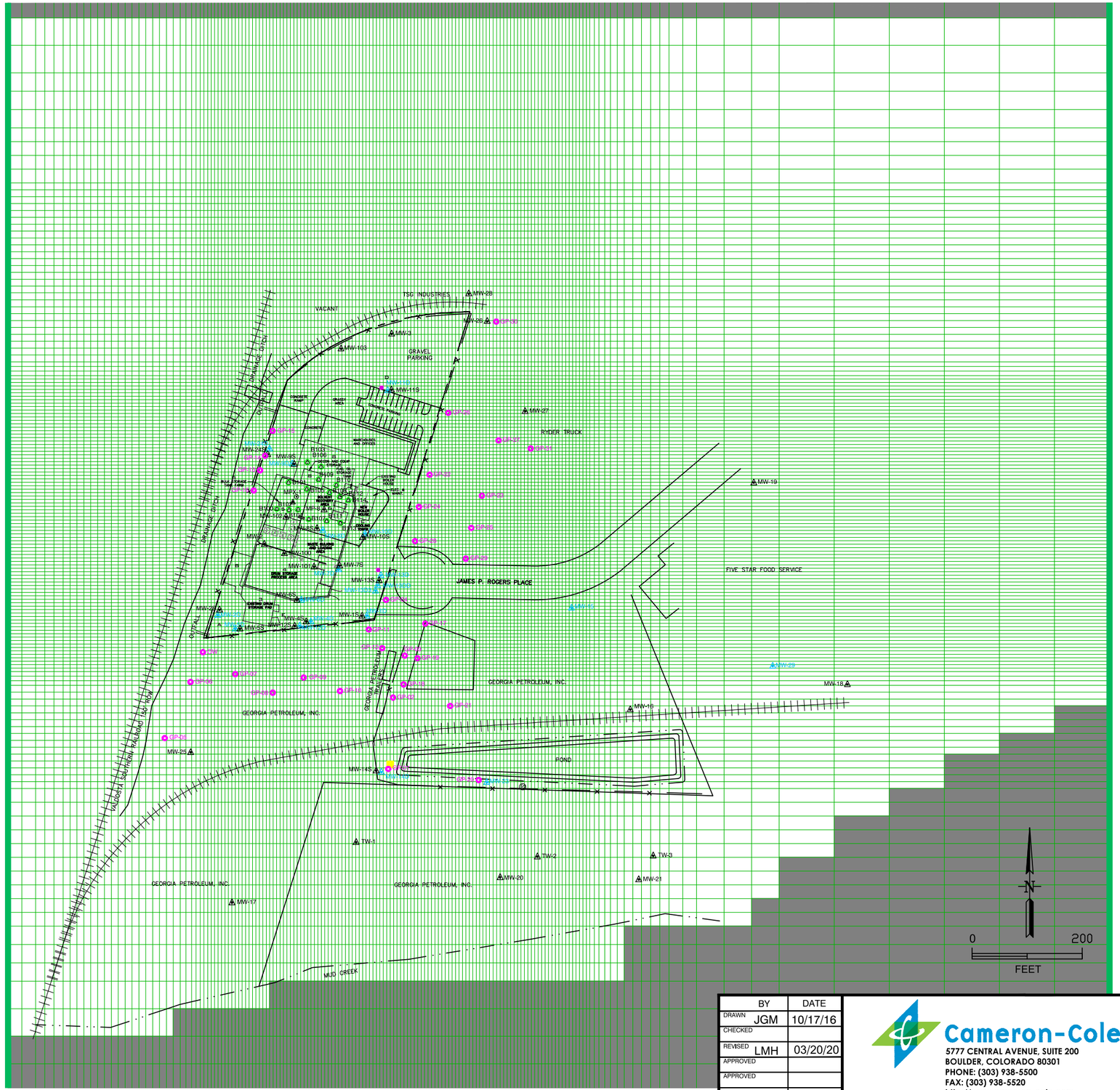

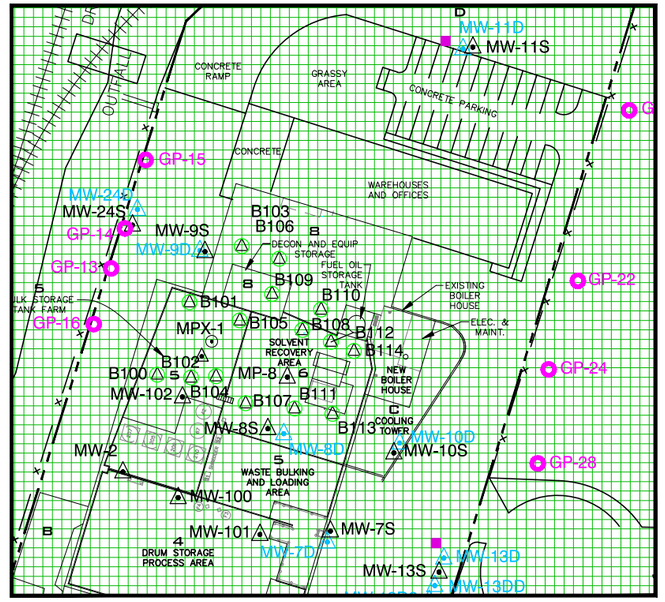

LEGEND

TETRACHLOROETHENE SOURCE CONCENTRATIONS

- 3,000 - 13,000 µg/L

LEGEND

B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL (6/06)
MW-27	SHALLOW MONITORING WELL
MW-5D	DEEP MONITORING WELL
MPX-1	MPX SHALLOW TEST WELL
GP-09	GEOPROBE SAMPLE LOCATION (3/04)
	NO-FLOW BOUNDARY
	GROUNDWATER MODEL GRID
	INACTIVE FLOW
	DRAIN AREA

HYDRAULIC CONDUCTIVITY

Kx = 1.57 x 10^{-3} cm/sec

Ky = 1.47 x 10^{-3} cm/sec

Kz = 6.99 x 10^{-4} cm/sec

	BY	DATE
DRAWN	JGM	10/17/16
CHECKED		
REVISED	LMH	03/20/20
APPROVED		
APPROVED		

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5777 CENTRAL AVENUE, SUITE 200
BOULDER, COLORADO 80301
PHONE: (303) 938-5500
FAX: (303) 938-5520
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FIGURE 4

GROUNDWATER FLOW MODEL GRID DESIGN, BOUNDARY CONDITIONS, AND SOURCE AREAS FOR DEEP LAYER PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: AS SHOWN

PROJ. NO.: 1004

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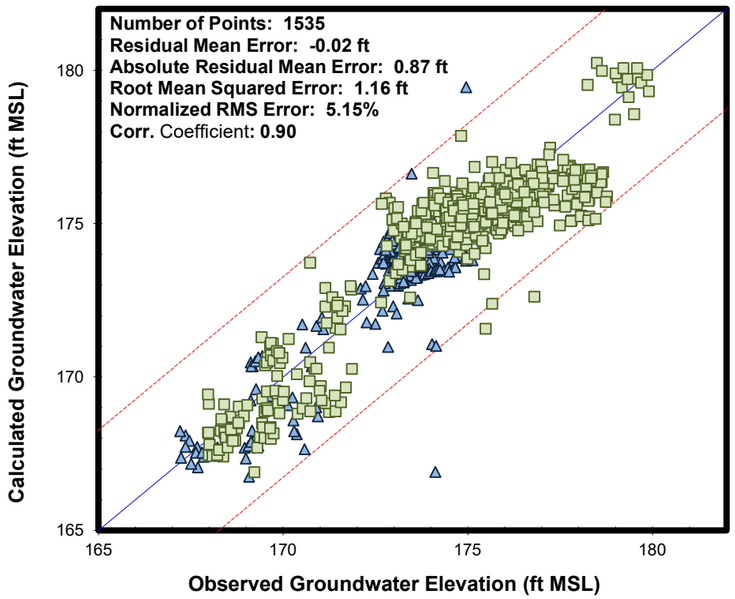
July 2006 - January 2020



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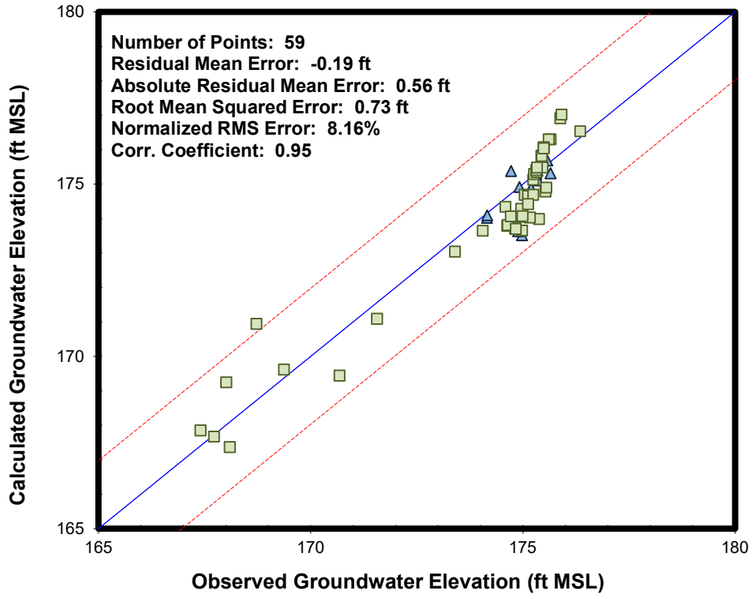

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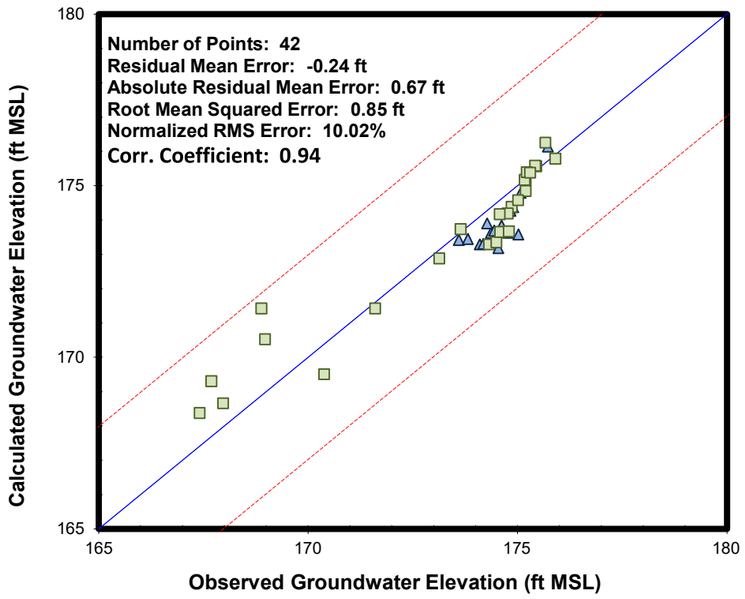

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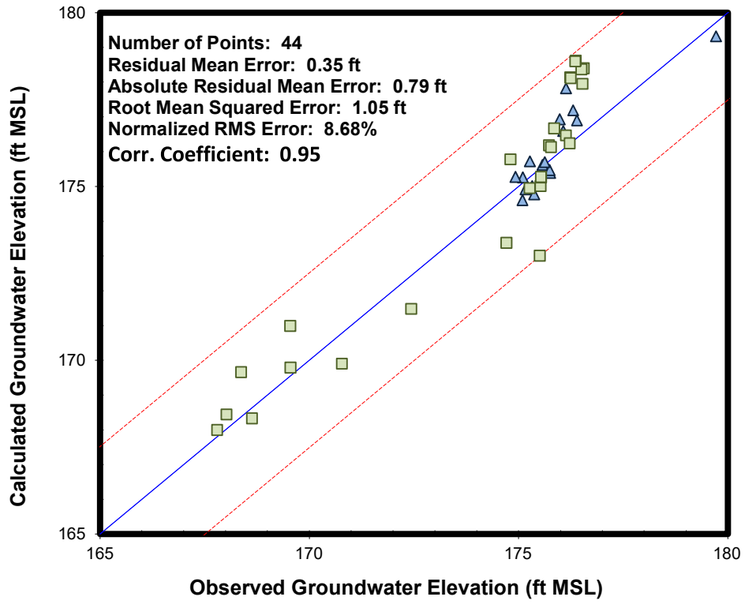

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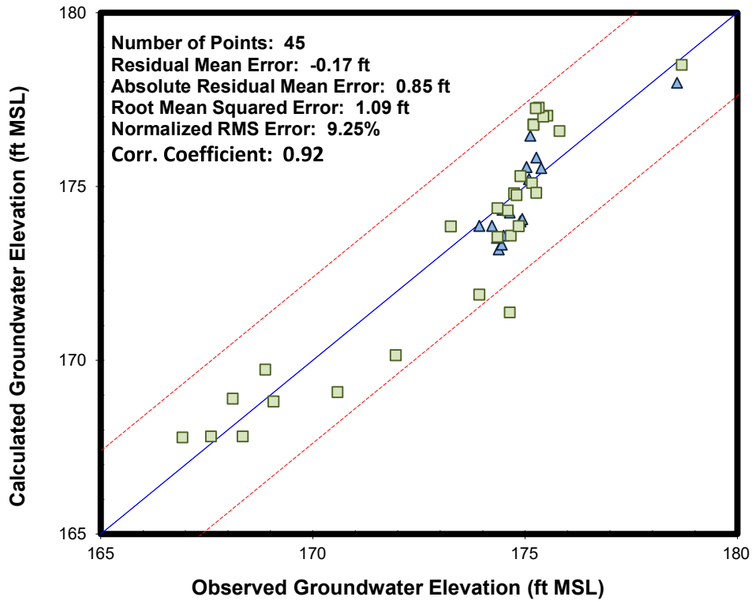
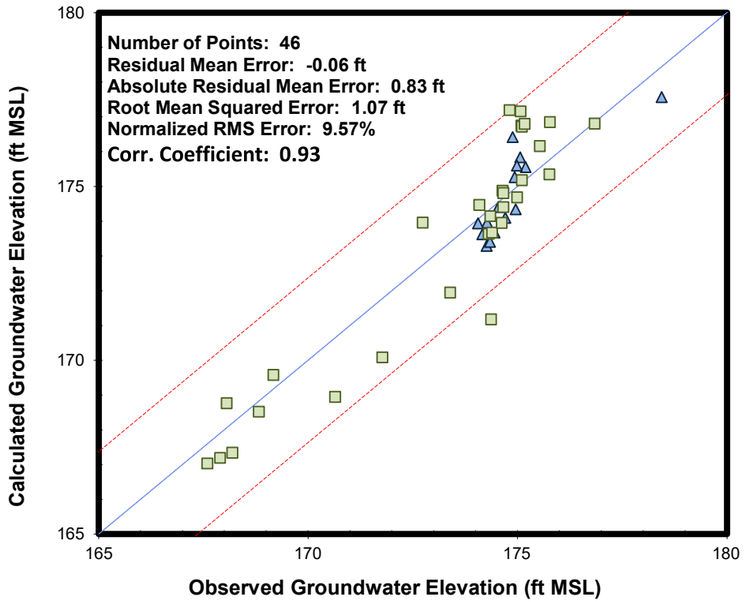


January 2020



Shallow Zone Monitoring Well
Deep Zone Monitoring Well

	BY	DATE
DRAWN	LH	3/16/20
CHECKED		
REVISED		
APPROVED		
APPROVED		
APPROVED		

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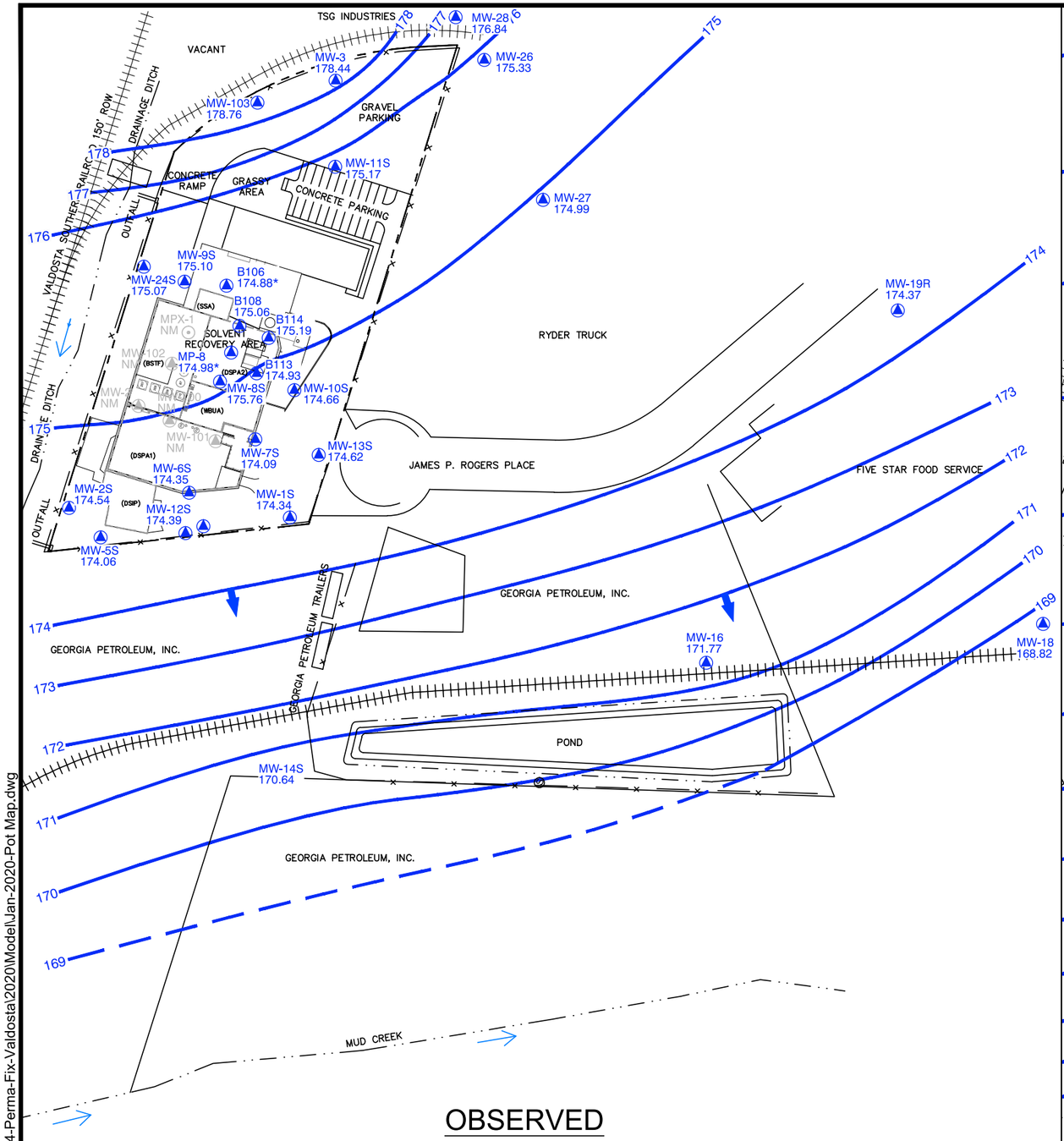
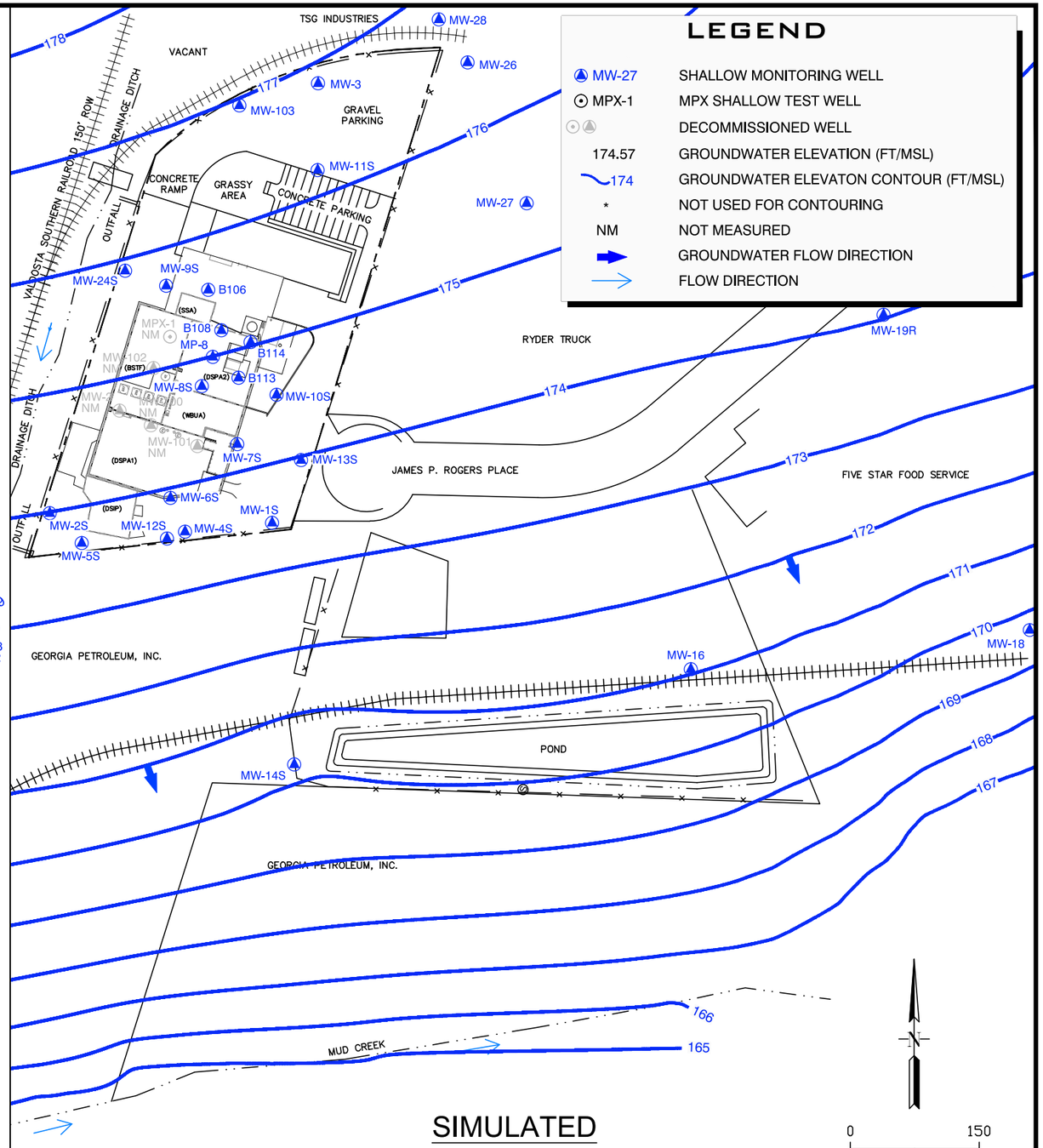
FIGURE 5

OBSERVED VS. CALCULATED GROUNDWATER ELEVATION
SCATTER PLOTS: JULY 2006 - JANUARY 2020
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE:	PROJECT:
NTS	1004



OBSERVED



SIMULATED

LEGEND

MW-27	SHALLOW MONITORING WELL
MPX-1	MPX SHALLOW TEST WELL
	DECOMMISSIONED WELL
174.57	GROUNDWATER ELEVATION (FT/MSL)
174	GROUNDWATER ELEVATON CONTOUR (FT/MSL)
*	NOT USED FOR CONTOURING
NM	NOT MEASURED
	GROUNDWATER FLOW DIRECTION
	FLOW DIRECTION

0 150
FEET

	BY	DATE
DRAWN	FR	03/17/20
CHECKED		
REVISED		
APPROVED		
APPROVED		
APPROVED		

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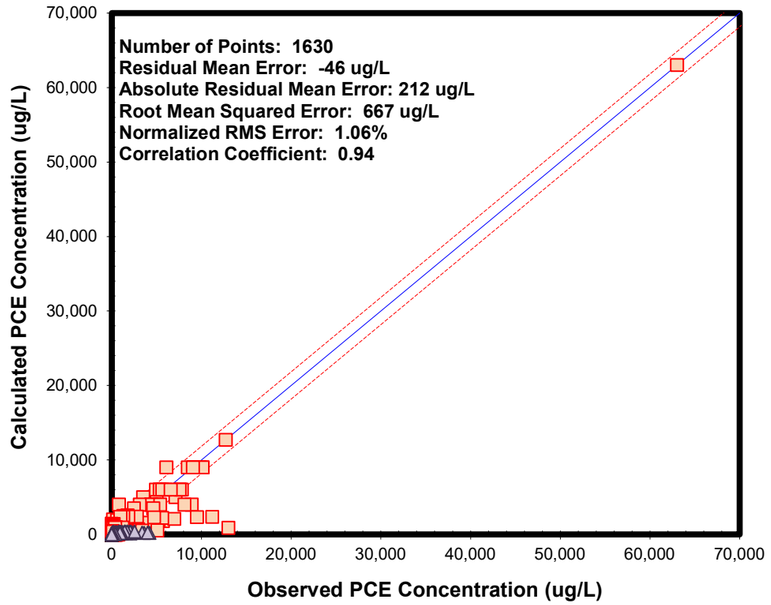
FIGURE 6

POTENTIOMETRIC SURFACE ELEVATION MAP (ft MSL)
OBSERVED vs. SIMULATED JANUARY 2020
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA GA

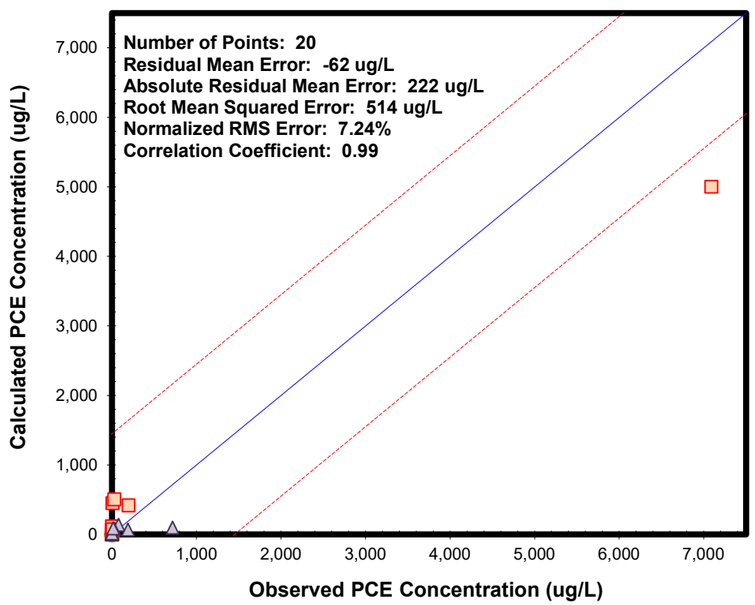
SCALE: AS SHOWN | PROJECT: 1004

M:\clients\Cameron-Cole\1004-Perma-Fix-Valdosta\2020\Model\Jan-2020-Pot Map.dwg

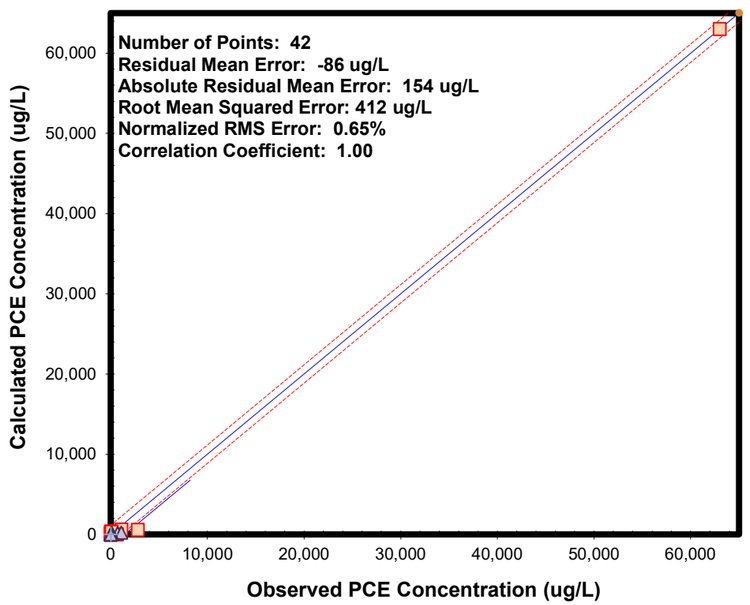
February 2003 - January 2020



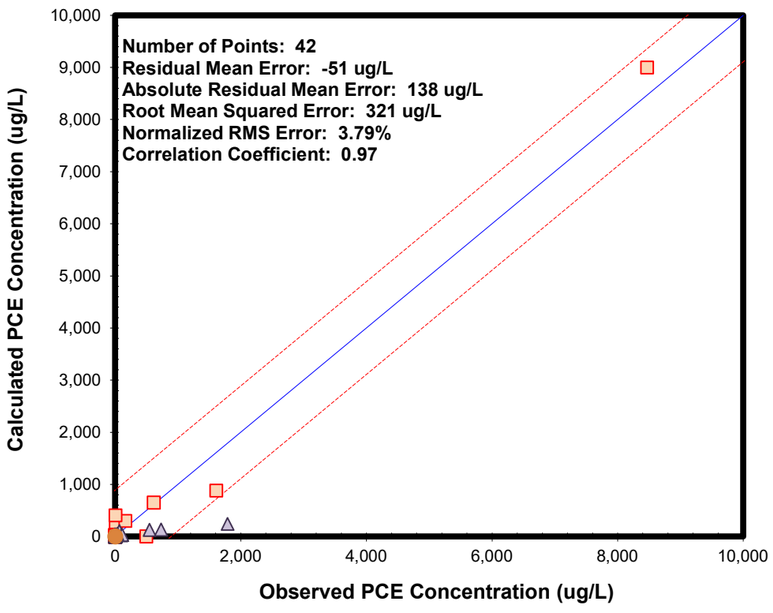
July 2006



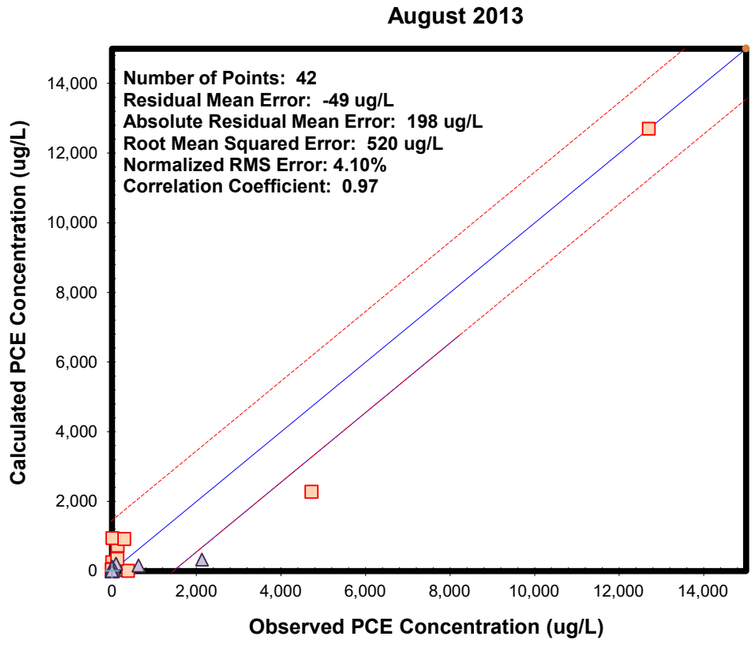
March 2008



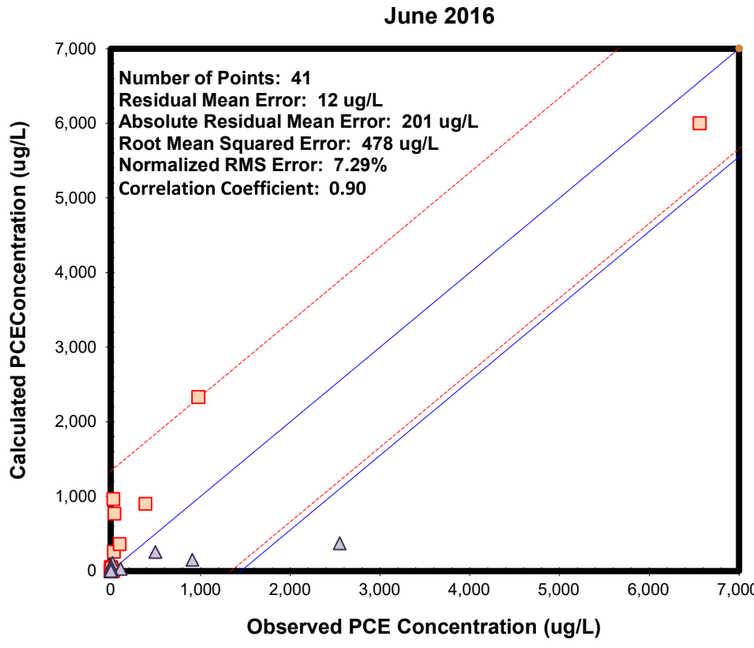
August 2010



August 2013



June 2016



Shallow Monitoring Well
Deep Monitoring Well

	BY	DATE
DRAWN	LH	3/16/20
CHECKED		
REVISED		
APPROVED		
APPROVED		
APPROVED		

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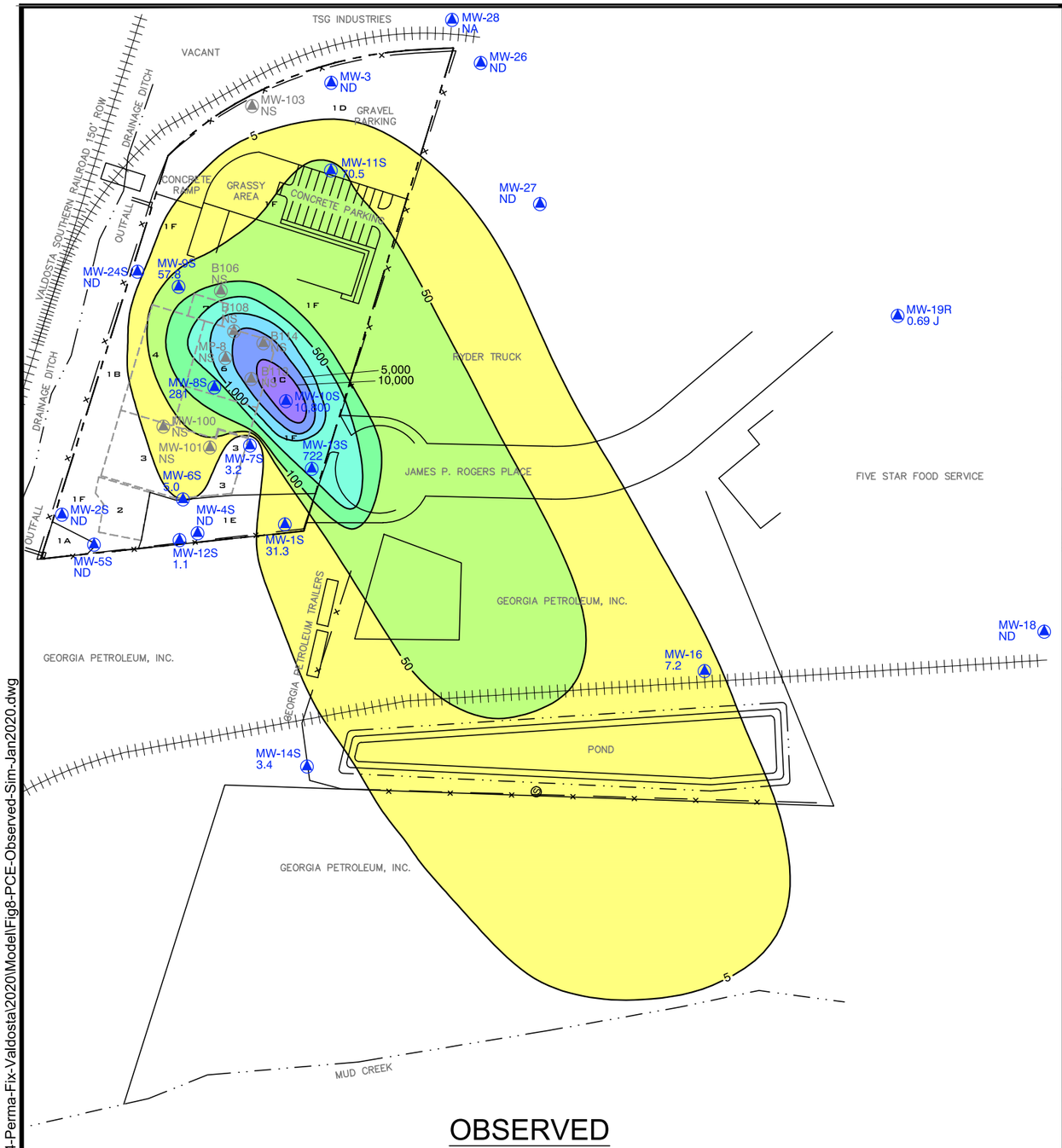
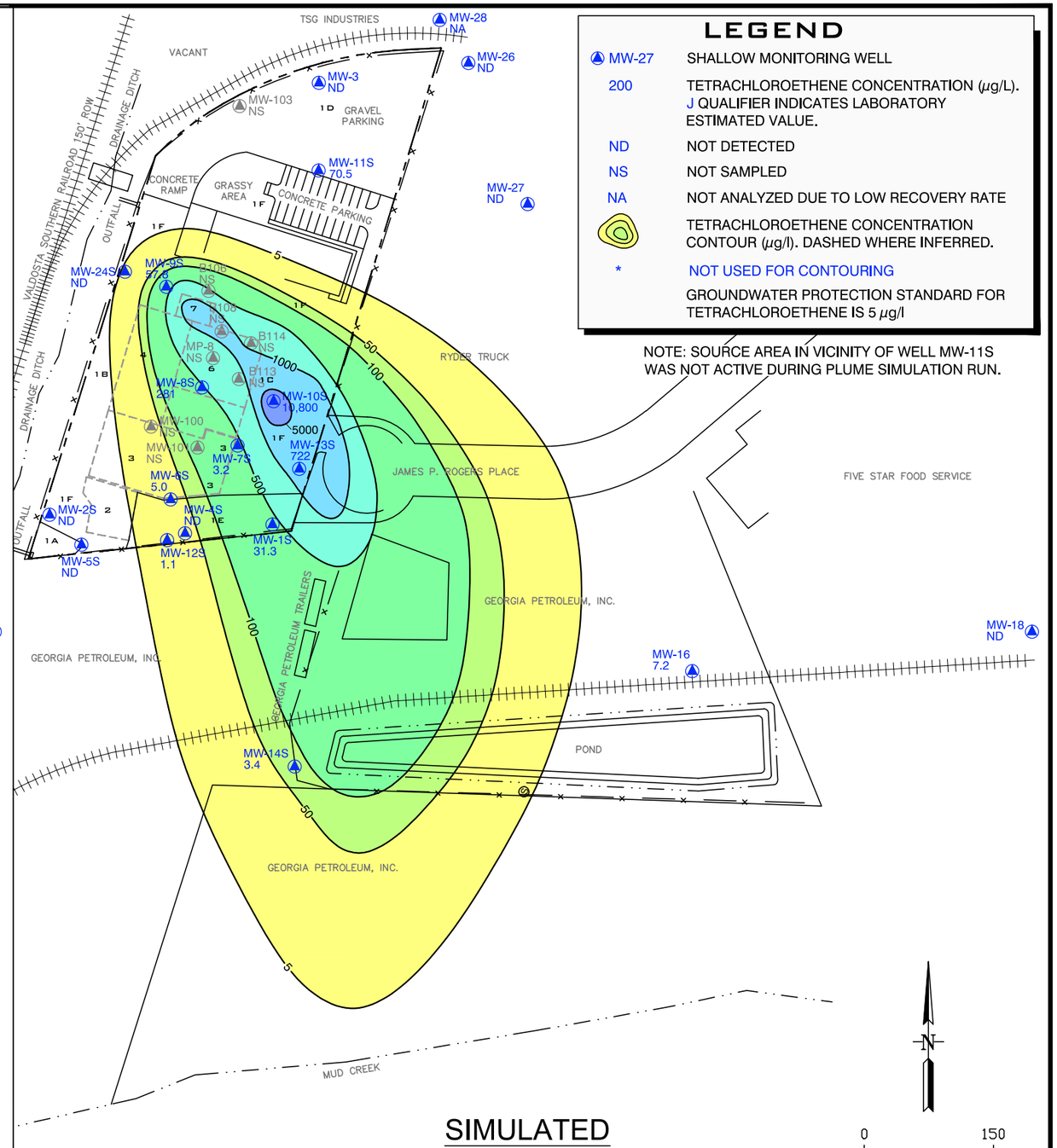
FIGURE 7

OBSERVED VS. CALCULATED PCE CONCENTRATION
SCATTER PLOTS: FEBRUARY 2003 - JANUARY 2020
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE:	PROJECT:
NTS	1004



OBSERVED



SIMULATED

LEGEND

MW-27	SHALLOW MONITORING WELL
200	TETRACHLOROETHENE CONCENTRATION (µg/L). J QUALIFIER INDICATES LABORATORY ESTIMATED VALUE.
ND	NOT DETECTED
NS	NOT SAMPLED
NA	NOT ANALYZED DUE TO LOW RECOVERY RATE
	TETRACHLOROETHENE CONCENTRATION CONTOUR (µg/l). DASHED WHERE INFERRED.
*	NOT USED FOR CONTOURING
	GROUNDWATER PROTECTION STANDARD FOR TETRACHLOROETHENE IS 5 µg/l

NOTE: SOURCE AREA IN VICINITY OF WELL MW-11S WAS NOT ACTIVE DURING PLUME SIMULATION RUN.

N

0 150

FEET

	BY	DATE
DRAWN	JGM	03/19/20
CHECKED		
REVISED		
APPROVED		
APPROVED		
APPROVED		

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FIGURE 8

PCE ISOCONCENTRATION MAP
OBSERVED vs. SIMULATED - JANUARY 2020
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA GA

SCALE: 1" = 150'

PROJECT: 1004

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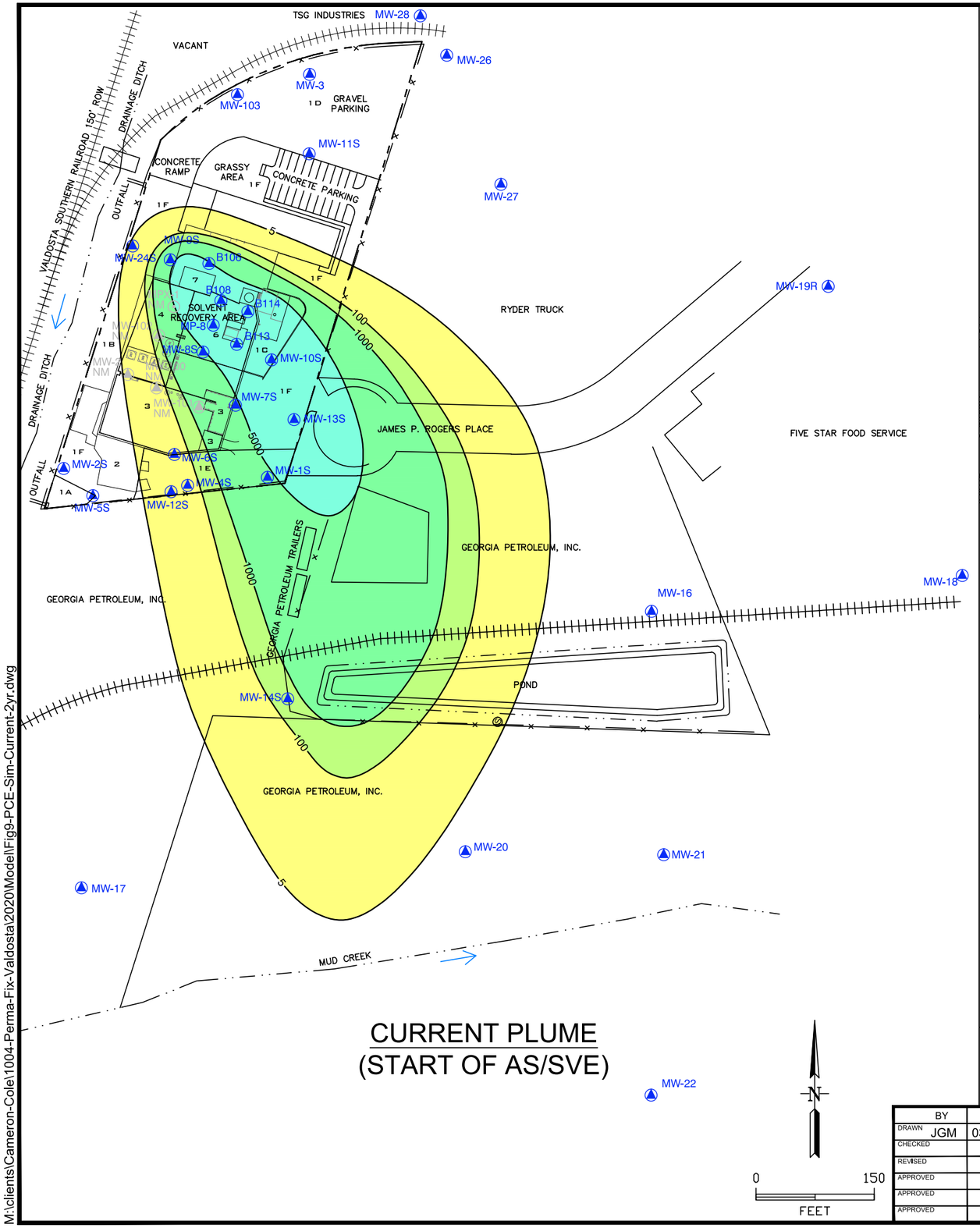
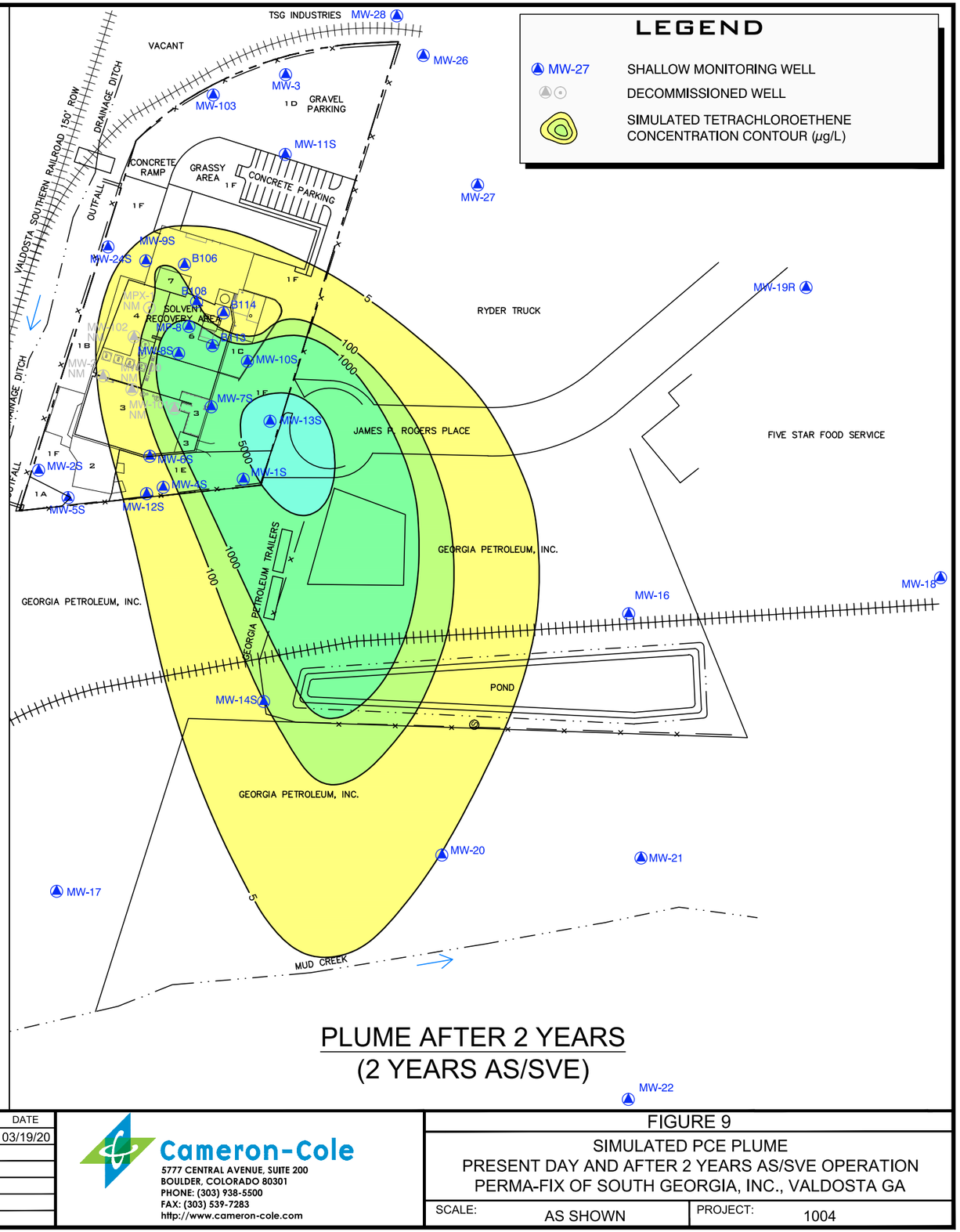


CURRENT PLUME
(START OF AS/SVE)



PLUME AFTER 2 YEARS
(2 YEARS AS/SVE)

	BY	DATE
DRAWN	JGM	03/19/20
CHECKED		
REVISED		
APPROVED		
APPROVED		
APPROVED		

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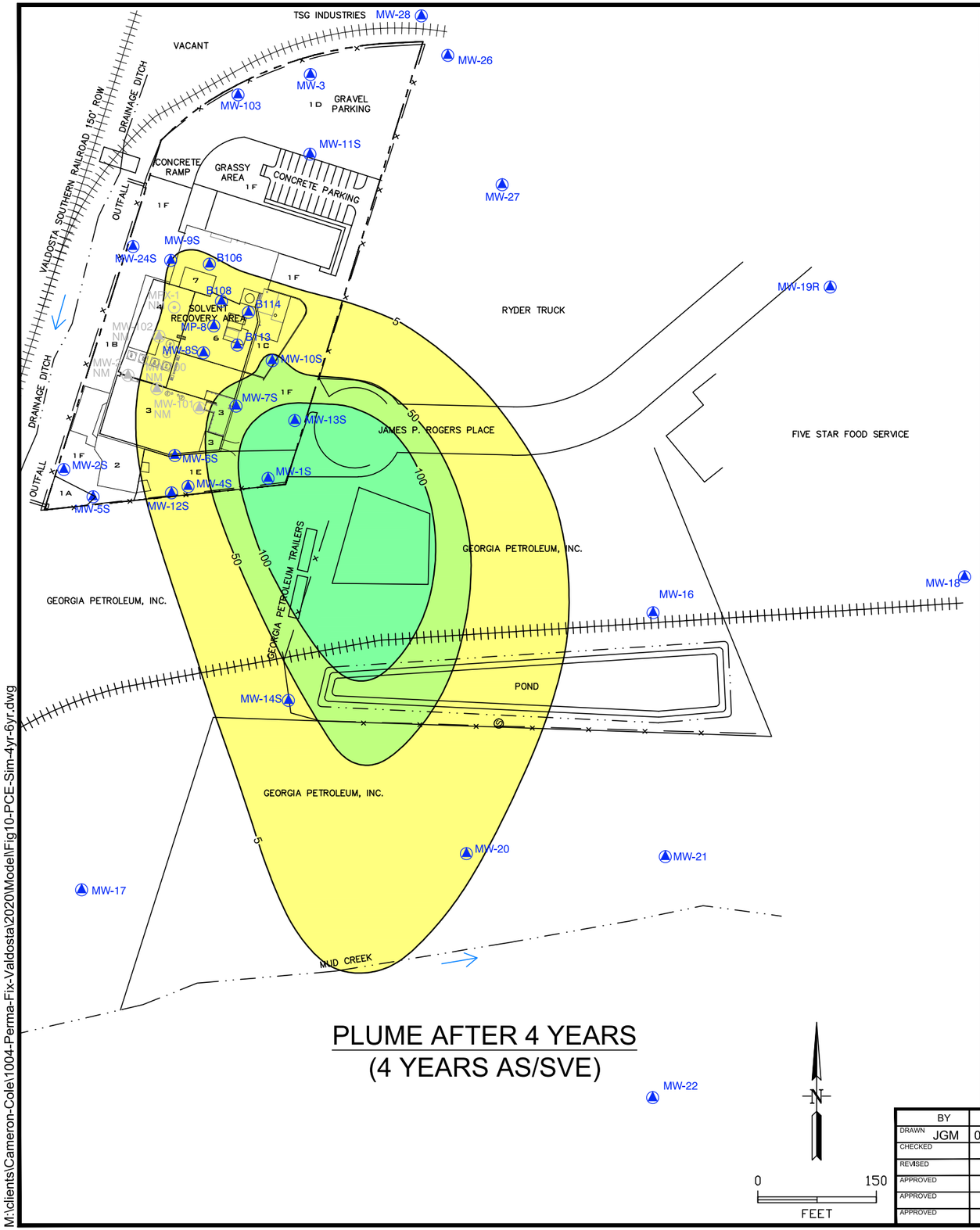
FIGURE 9

SIMULATED PCE PLUME
PRESENT DAY AND AFTER 2 YEARS AS/SVE OPERATION
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA GA

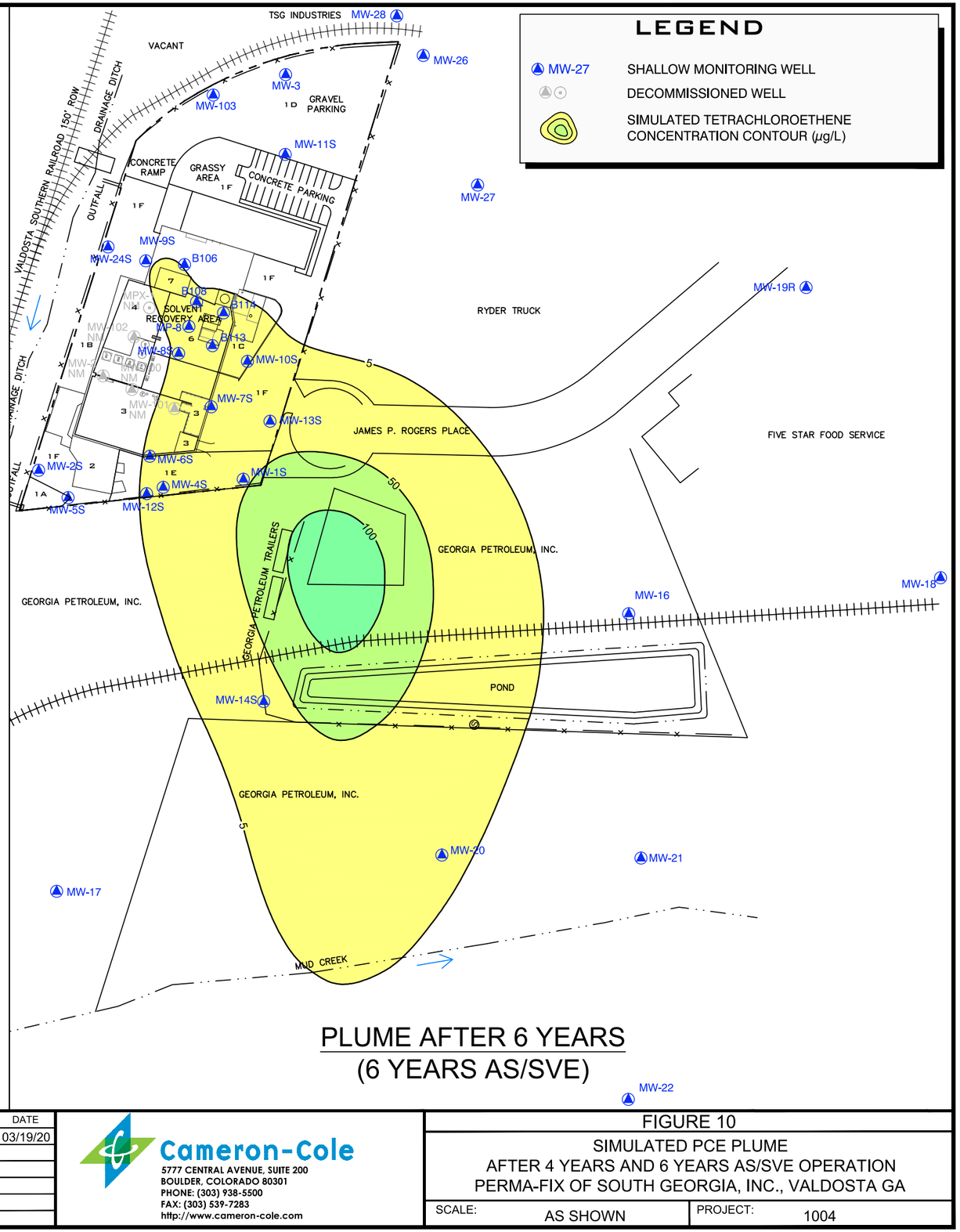
SCALE: AS SHOWN

PROJECT: 1004

M:\clients\Cameron-Cole\1004-Perma-Fix-Valdosta\2020\Model\Fig9-PCE-Sim-Current-2yr.dwg



PLUME AFTER 4 YEARS
(4 YEARS AS/SVE)



PLUME AFTER 6 YEARS
(6 YEARS AS/SVE)

	BY	DATE
DRAWN	JGM	03/19/20
CHECKED		
REVISED		
APPROVED		
APPROVED		
APPROVED		

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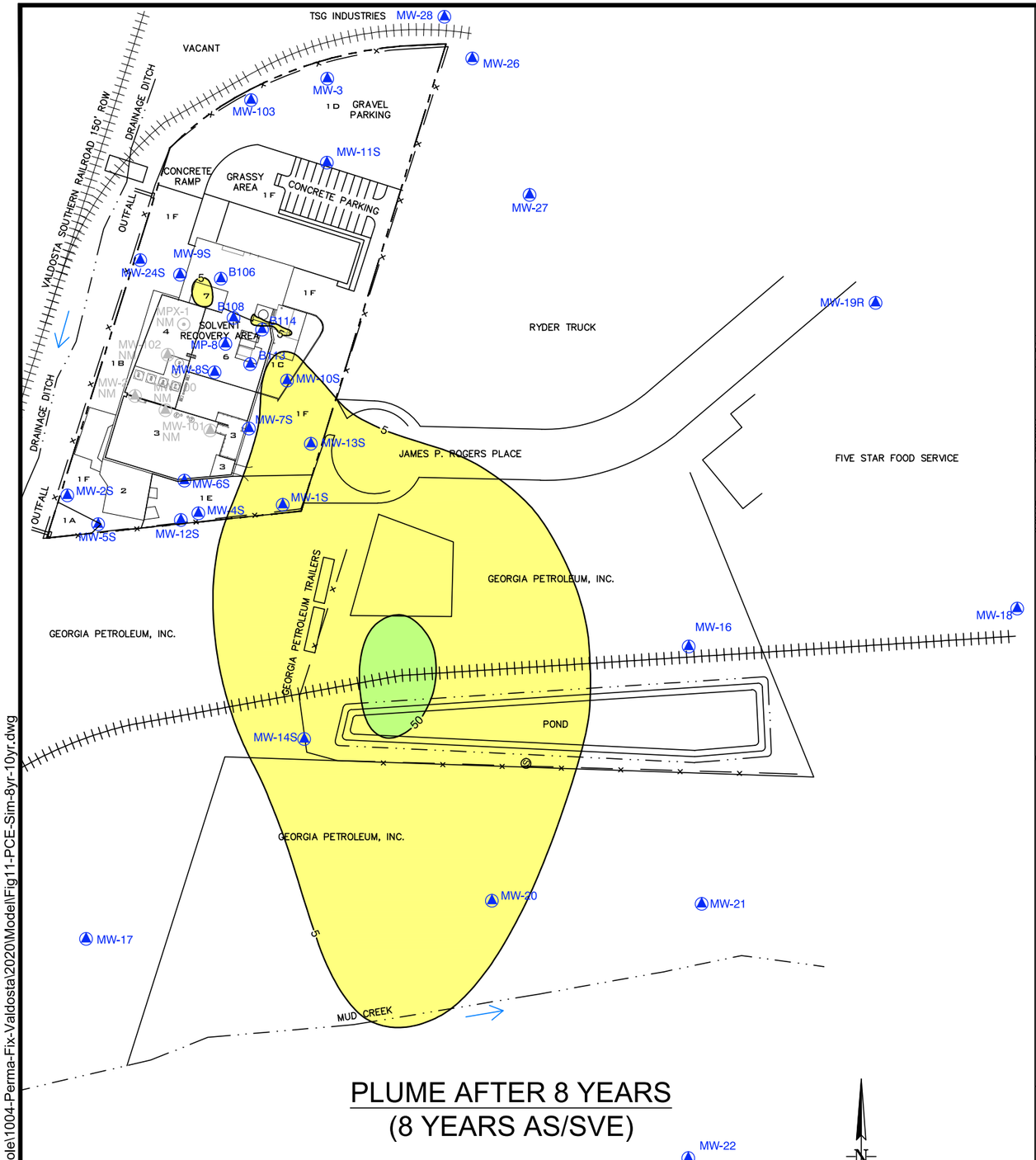
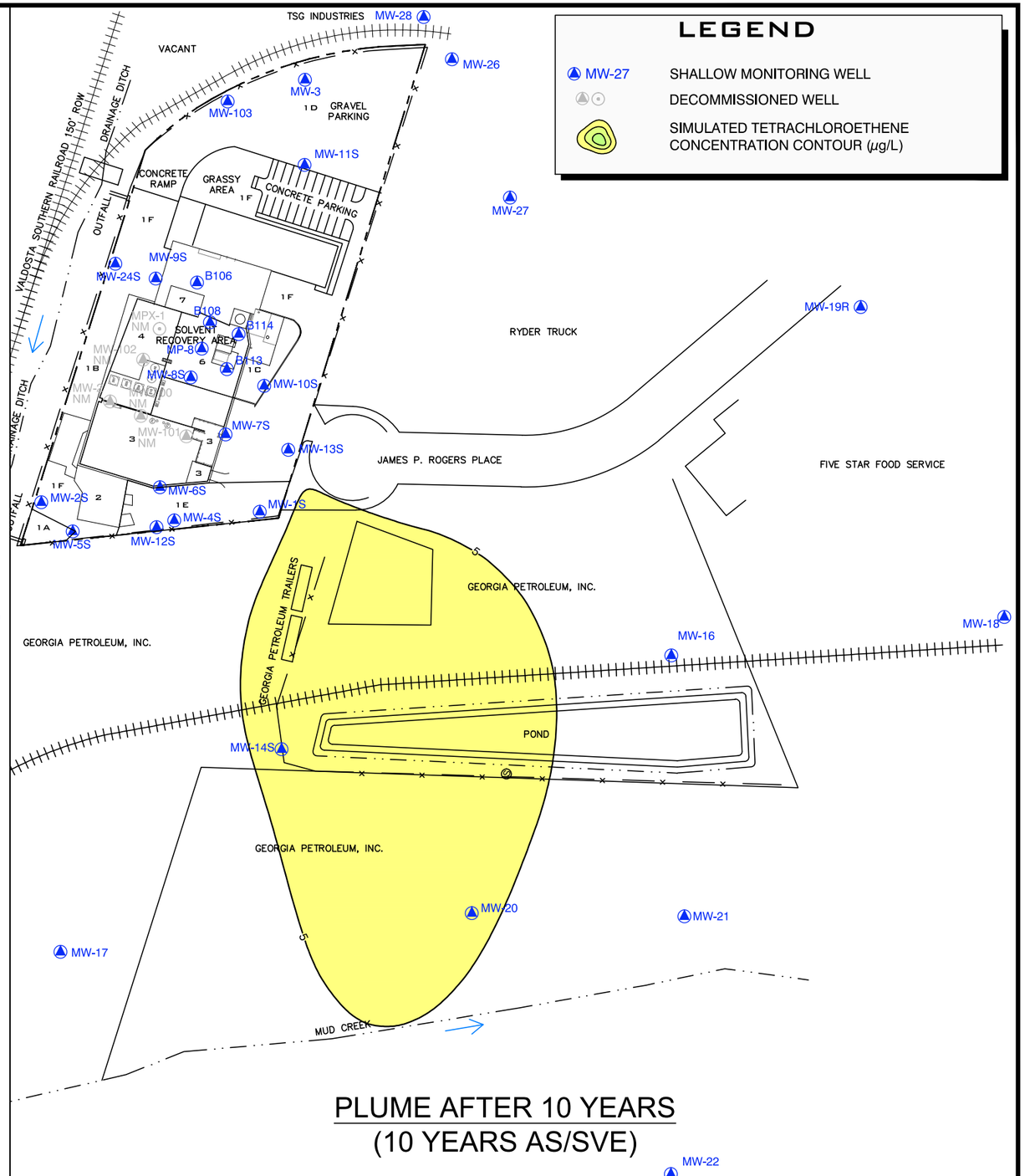
FIGURE 10
SIMULATED PCE PLUME
AFTER 4 YEARS AND 6 YEARS AS/SVE OPERATION
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA GA

SCALE: AS SHOWN | PROJECT: 1004

M:\clients\Cameron-Cole\1004-Perma-Fix-Valdosta\2020\Model\Fig10-PCE-Sim-4yr-6yr.dwg



PLUME AFTER 8 YEARS
(8 YEARS AS/SVE)



PLUME AFTER 10 YEARS
(10 YEARS AS/SVE)

LEGEND

- MW-27 — SHALLOW MONITORING WELL
- DECOMMISSIONED WELL
- SIMULATED TETRACHLOROETHENE CONCENTRATION CONTOUR (µg/L)

	BY	DATE
DRAWN	JGM	03/20/20
CHECKED		
REVISED		
APPROVED		
APPROVED		
APPROVED		

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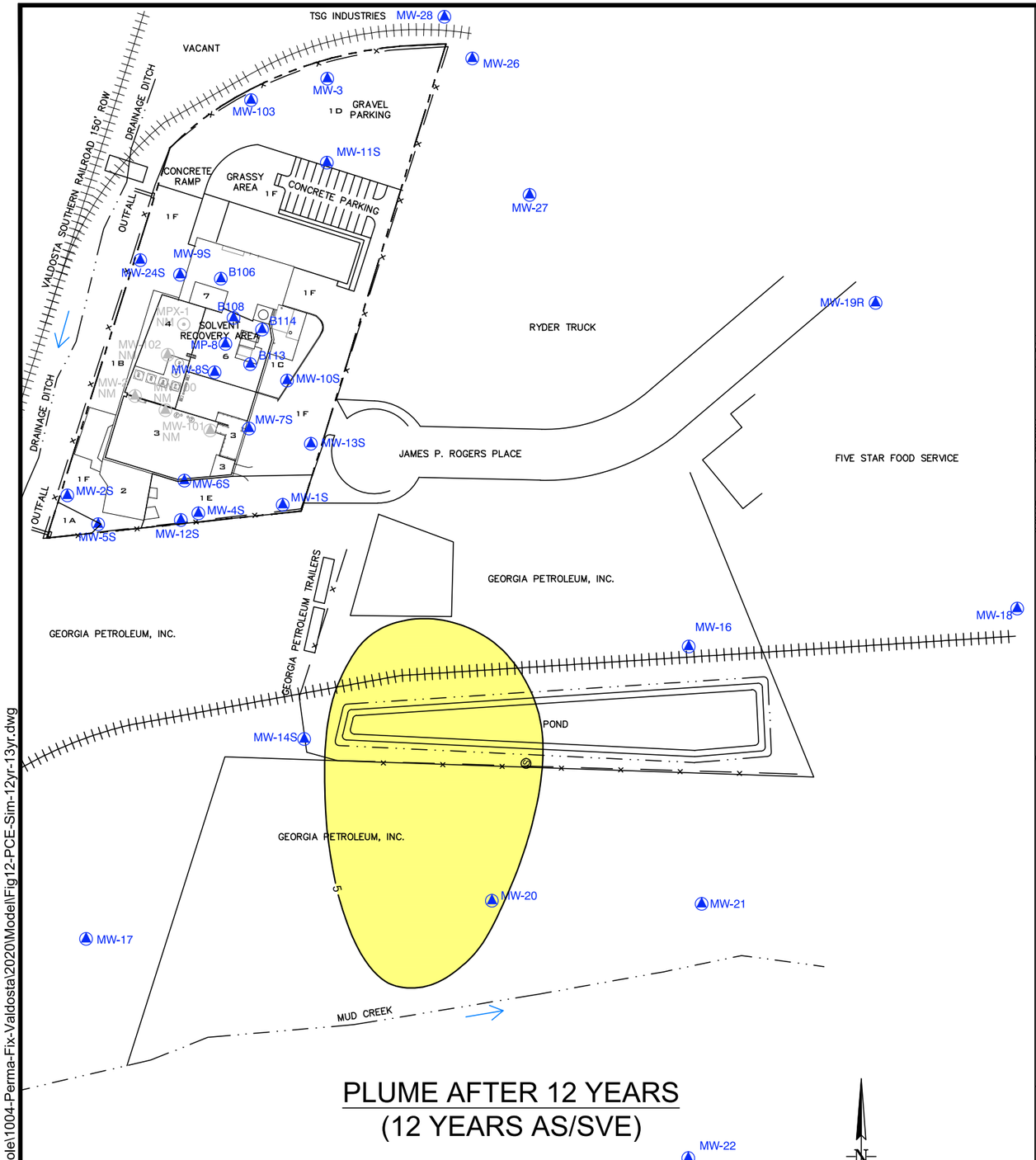
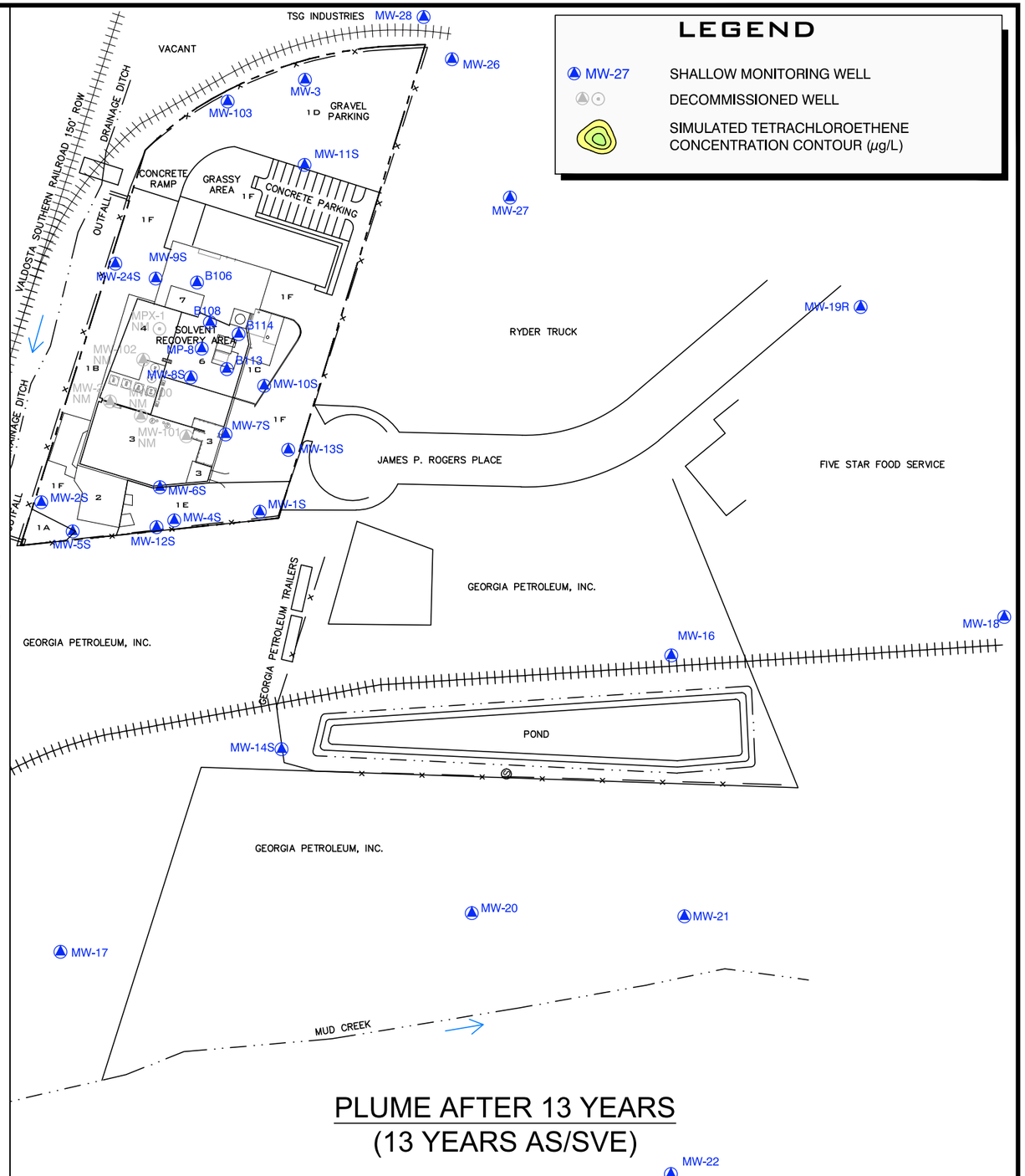
FIGURE 11
SIMULATED PCE PLUME
AFTER 8 YEARS AND 10 YEARS AS/SVE OPERATION
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA GA

SCALE: AS SHOWN | PROJECT: 1004

M:\clients\Cameron-Cole\1004-Perma-Fix-Valdosta\2020\Model\Fig11-PCE-Sim-8yr-10yr.dwg



PLUME AFTER 12 YEARS
(12 YEARS AS/SVE)



PLUME AFTER 13 YEARS
(13 YEARS AS/SVE)

	BY	DATE
DRAWN	JGM	03/20/20
CHECKED		
REVISED		
APPROVED		
APPROVED		
APPROVED		

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FIGURE 12

SIMULATED PCE PLUME
AFTER 12 YEARS AND 13 YEARS AS/SVE OPERATION
PERMA-FIX OF SOUTH GEORGIA, INC., VALDOSTA GA

SCALE: AS SHOWN | PROJECT: 1004

M:\clients\Cameron-Cole\1004-Perma-Fix-Valdosta\2020\Model\Fig12-PCE-Sim-12yr-13yr.dwg

APPENDIX B

ELECTRONIC CD-ROM COPY OF PILOT TEST REPORTS

MULTI-PHASE EXTRACTION PILOT TEST
PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GA 31601

PREPARED FOR:

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GA 31601

PREPARED BY:

5777 CENTRAL AVE. #200
BOULDER, COLORADO 80301

APRIL 30, 2008

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APPENDICES

Appendix A Boring Logs

1. INTRODUCTION

This report presents the results of the pilot test performed to evaluate multiphase extraction (MPX) for use in source area remediation and plume control at the Perma-Fix of South Georgia facility (PFSG). The objective of the MPX pilot testing was to: (1) provide pumping test data for the assessment of the aquifer hydraulic characteristics, and (2) test MPX for use in source and perimeter control to preclude further off-site migration of volatile organic compounds (VOCs) in groundwater. Source control is considered the first priority in the overall remediation approach because the aqueous-phase VOC plume is fed directly by residual dense non-aqueous phase liquid (DNAPL) and impacted soils within three Solid Waste Management Units (SWMUs). These SWMUs include the Bulk Storage Tank Farm (SWMU 4), Solvent Recovery Area (SWMU 6), and Equipment Storage and Decontamination Area (SWMU 7).

The pilot test was conducted over a 2-day period from July 12 to July 13, 2006. The hydraulic portion of this pilot test yielded specific design and site-specific hydrogeological data. The MPX pumping design data consists of the water flow rate and drawdown to be anticipated in the water bearing unit, in addition to the hydrogeologic data such as the representative transmissivity and hydraulic conductivity values. The airflow portion of this pilot test yielded specific design data regarding the vadose zone vapor removal by MPX. The MPX airflow design data consists of the radius of influence, the required applied vacuum and the resulting airflow extraction rate, and the VOC mass removal rate, in addition to the lithological data in the vadose zone such as the soil permeability to airflow.

This MPX pilot test appendix details the procedures and results of the MPX pilot test and presents conclusions and recommendations regarding the feasibility of MPX technology as a remedial alternative for the site. The MPX pilot test procedures are described in Section 2. The pilot test results and conclusions and recommendations are presented in Sections 3 and 4.

2. PILOT TEST PROCEDURE

The data collection procedures followed during the MPX pilot test are described below, including a description of the test well location rationale, equipment selection, water level and other field measurements, and soil vapor sampling for VOCs.

2.1. TEST AREA LOCATION AND WELL INSTALLATION

Available geologic, hydrogeologic, and site history information were reviewed to select a test area that was accessible and representative of the source area and that minimized disruption of normal facility operations. Based on these criteria, the Bulk Storage Tank Farm (SWMU 4) was selected as the test area. The location of the test area selected is shown on Figure 6 with an enlargement of the MPX test location in the inset in the upper right hand corner of the plate.

The pilot test was performed using an array of nine test-well locations (MPX-1, ASM-1, ASM-2, ASM-3, ASM-4, SVE-1, SVE-2, SVE-3, SVE-4), one new monitoring well (MW-102), nine new temporary wells (B-100, B-102, B-103, B-104, B-105, B-106, B-107, B-108, B-109), and five existing monitoring wells (MP-8, MW-8S, MW-8D, MW-9S, MW-9D). The 20 new test and monitoring wells were installed the week of June 12, 2006. Boring logs for the test array wells and the one new monitoring well are provided in Appendix A. Test wells consisted of one multiphase extraction well with a drop tube place 6 inches below the water table (MPX-1), ten wells used for the vadose (SVE-1, SVE-2, SVE-3, SVE-4, ASM-3b, ASM-4b, MW-102) and saturated (ASM-1, ASM-2, ASM-3a, ASM-4a) pressure measurements, and 19 wells used for the depth-to-groundwater measurements before and after the test. These 19 wells included wells screened in both the shallow and deep zones of the upper water-bearing unit and consisted of the following wells: ASM-1, ASM-2, ASM-3, ASM-4, B-100, B-102, B-103, B-104, B-105, B-106, B-107, B-108, B-109, MP-8, MW-8S, MW-8D, MW-9S, MW-9D, and MW-102.

The screened intervals of several of the wells used in this pilot test are shown in the geologic cross-sections on Plate 1 of the Interim Measures Work Plan. Five of the wells used for the vadose zone pressure observations are screened over a 15-foot interval across the water table from 10 to 25 ft bgs (SVE-1, SVE-2, SVE-3, SVE-4, MW-102), and two are screened over a 5-foot interval within the vadose zone from 9 to 14 ft bgs (ASM-3b, ASM-4b). Saturated pressure monitoring points ASM-1, ASM-2, ASM-3a, and ASM-4a were screened over a 5-foot interval in the clayey fine sand unit at a depth of approximately 5 to 10 feet below the static water table.

All of the wells used for the pressure measurements were equipped with packers to form an airtight air column above the water table. The packers were topped with PVC reducers to a manually operated valve. A flexible hose was attached to the valve and connected to a handheld pressure manometer. The saturated pressure monitoring well construction resulted in a confined column of air above the water table. This column of air would compress or expand based on movement of the water table, resulting in a measurable change in pressure of the air column.

2.2. MULTIPHASE EXTRACTION TEST

MPX pilot testing was performed on July 13, 2006. The goals of the MPX test were four-fold: (1) to determine how effectively air could be moved through the vadose zone soils during multiphase extraction; (2) to determine the soil permeability to airflow and vapor removal radius of influence (ROI) by measuring vacuum pressure at various SVE monitoring points; (3) to determine a preliminary rate of VOC mass removal by collecting and analyzing soil vapor samples; and (4) to collect aquifer pumping test information to determine the sustainable groundwater pumping rate, pumping radius of influence, and hydraulic conductivity of the upper water-bearing unit.

2.2.1. Equipment

Equipment for the MPX pilot testing included the extraction well, monitoring points, a vacuum extraction blower, a moisture separator, a peristaltic pump, Summa canisters for off-gas sampling, instrumentation, a Hermit 3000 datalogger, and four PXD-261 Pressure Transducers with 50' Teflon-coated cables. A schematic of the vacuum blower setup at the multiphase extraction well is shown on Figure 1. The extraction well (MPX-1) was connected to the vacuum extraction blower by flexible reinforced hose. Soil vapor entered the blower after a moisture separator and filter to remove entrained liquids and particles. An air dilution valve was placed between the extraction well and the blower. Since there is less resistance to pull air through the dilution valve than to pull soil vapor, opening the dilution valve effectively reduced the applied vacuum at the wellhead. Fluid collected within the moisture separator was transferred by a liquid transfer pump to a 5,000 gallon tanker truck for subsequent disposal at the facility.

The vacuum blower used for this test was a rotary claw with a 7.5-horsepower motor. The blower has a maximum vacuum of 23 inches of mercury and 75 standard cubic feet per minute (scfm) airflow. The pump curve published for this model provided the airflow rate versus vacuum relationship. The blower was powered with a portable 35 kilowatt generator.

Instrumentation used for the pilot testing included hand-held equipment, as well as the instrumentation included with the vacuum blower. The vacuum blower instrumentation was placed at the blower to measure dilution air velocity, vacuum between the dilution valve and the blower, discharge pressure, and discharge temperature. Instrumentation was also placed at the liquid transfer pump to measure the fluid flow rate, and the fluid pressure. A hand-held organic vapor meter (OVM) was used in conjunction with a peristaltic pump and Tedlar® bags for the collection and sampling of VOCs in the offgas of the well. Handheld pressure manometers were also used at the monitoring wellheads to monitor the pressure within the sealed air column within each of the wells equipped with an airtight packer.

2.2.2. Test Procedure

The procedure for the MPX test was to apply a vacuum to the drop tube within the MPX extraction well and measure the air and water flow rates, the vacuum induced at the monitoring points, the water levels before and near the end of the test within the 19 monitoring wells. In addition, continuous water level readings were collected using a datalogger in SVE-1, SVE-2, SVE-3, and SVE-4 during and after the pumping test.

Before ~~the~~ pumping was initiated, the aquifer test parameters were entered into the datalogger. Groundwater levels in monitoring wells SVE-1, SVE-2, SVE-3, and SVE-4 were initially measured using an electric groundwater level sounder. Pressure transducers were attached to the datalogger and lowered to the bottom of the monitoring wells. The drop tube was then set at 6-inches below the water table in well MPX-1. The test was commenced with a vacuum pressure of 20 inches of mercury. The datalogger was set to collect water level data regularly during the test.

The fluid flow rate was measured within the knockout tank every 15 minutes at the start of the test, increasing to every 30 minutes after one hour of pumping. Induced vacuum readings were measured in the monitoring points every 10 minutes during the start of the test, and gradually increasing to every hour near the end of the test. The monitoring points were sealed with well packers between readings to prevent airflow through the wells to the subsurface.

The test was run for a sufficient amount of time for the hydraulic cone of depression to reach quasi steady-state conditions (i.e., until there was minimal change in water levels with time). The test was performed over eight hours, from 9:00 to 17:00 on July 13, 2006. Water levels were collected before the test, during the test at approximately four hours after the start of the test, and again prior to the end of the test. When the pumping was ceased at the end of the test, the datalogger continued to collect data for another 15 hours to record groundwater recovery in the upper water-bearing units.

The pumping test data was downloaded from the datalogger onto a PC using a utility program provided by the datalogger manufacturer and formatted into Excel spreadsheets. The pumping test data was analyzed using "Aquifer Test v3.01" (Waterloo Hydrogeologic, 2001), a commercially available, interactive hydrologic software program for analyzing pumping test data collected from field aquifer tests. The Aquifer Test model was used to estimate the transmissivity from the pumping test using the Theis (1935) and Cooper-Jacob (1946) Methods.

2.3. ANCILLARY MONITORING

During the MPX pilot testing, monitoring was performed to measure VOC concentrations in the extracted soil vapor. These data were collected to provide a preliminary estimate of VOC mass removal and to provide an additional means of evaluating the effectiveness of this technology.

2.3.1. Soil Vapor Hydrocarbon-Concentration Monitoring

VOCs in the vadose zone volatilize over time at a rate based on the soil media and the specific compound. After a period of time, each compound is in equilibrium between liquid and vapor phases. When MPX pumping is initiated, VOC concentrations in the extracted off gas reflect these equilibrium concentrations. With continued MPX pumping, soil vapor concentrations diminish from equilibrium levels to mass transfer-limited concentrations as cleaner air passes through the vadose zone soils. Soil vapor samples obtained during the test are representative of VOCs present in the vadose zone, but do not provide information regarding the quantity or distribution of VOCs present. Dynamic steady-state VOC concentrations can only be obtained during extended testing. This pilot test was not designed to operate sufficiently long to obtain steady-state VOC concentration information.

Soil vapor concentrations were measured in two ways. Real-time values were obtained with an organic vapor meter (OVM). Additionally, samples were sent to ENCO Laboratories, a Georgia-certified analytical testing laboratory located in Jacksonville, Florida. All samples were collected in Tedlar® bags or Summa canisters using a peristaltic pump (Geopump II) connected to a sample port (Figure 1) at the extraction wellhead.

3. PILOT TEST RESULTS AND DISCUSSION

3.1. AIRFLOW, VACUUM, AND VOC MASS REMOVAL RESULTS

The results for the MPX pilot test performed on July 13, 2006 are presented in Table 2. The vacuum measurements in the wells along with the OVM measurements, flow rate measurements, and the gauge measurements related to the vacuum blower are all tabulated in Table 2. The MPX extraction yielded a vapor extraction rate of 9 standard cubic feet per minute (scfm) from the vadose zone at an operational vacuum of 20 inches of mercury (272 inches H_2O vacuum).

Induced vacuums were measured at each monitoring point (SVE-1, SVE-2, SVE-3, SVE-4, ASM-1, ASM-2, ASM-3a, ASM-3b, ASM-4a, ASM-4b, MW-102). By plotting the maximum vacuum versus distance of each well screened within the vadose zone with respect to the extraction well MPX-1, by the method outlined in Leeson and Hinchee (1997), the MPX vapor phase radius of influence (ROI) could be quantified at approximately 37 ft. Figure 2 presents the vacuum versus distance with a best-fit exponential line. The effect of the MPX vapor extraction extended beyond the 37 ft ROI, with induced vacuum observed at MW-102 at a distance of approximately 45 ft from the extraction well. A minimum induced vacuum of 1.0 in H_2O was determined to be the edge of the effective radius of influence. The MPX radius of influence (ROI) was determined as the vacuum at which the trendline intersects the induced vacuum limit of 1 in H_2O. Although vapor outside of the 37 ft ROI may flow toward the extraction well, the flow rates are potentially too low to adequately volatilize COCs strongly adsorbed onto the clayey and silty materials in the zone of contamination. Theoretically, at a distance of 37 feet or less, there should be sufficient airflow to reduce COC concentrations below the Preliminary RAOs established for the site for each extraction well, given sufficient time.

Real-time measurements of the hydrocarbon concentrations in the MPX off-gas were obtained during MPX testing on July 13, 2006 and are summarized in Table 2. These readings were taken at the sample port (Figure 2) using a peristaltic pump to collect the samples into Tedlar® bags. An OVM was utilized to measure the concentrations in each Tedlar® bag sample. The OVM detected total organic compounds, but did not provide individual readings for specific compounds. OVM results ranged from 430 to 850 parts per million by volume (ppm_v). The average OVM measurement is 673 ppm_v. The TVOC concentrations measured by the OVM did not decrease during the duration of the pilot test, indicating that the mass removal rate for this site may be sustained for longer periods than the pilot test duration.

Two MPX off-gas samples were submitted for laboratory analyses to characterize hydrocarbon concentrations during the MPX pilot test. Sample analytical results for these samples are summarized in Table 2. Typical straight-chain and aromatic hydrocarbons were detected consistent with the occurrence of aged hydrocarbon compounds. A number of chlorinated compounds were detected, consistent with the COCs determined for the facility. Based on the analytical TVOC data collected in the Summa canisters, up to 150 lb of VOCs may be removed from the vadose zone within this ROI each day.

This removal rate is preliminary, however, because the pilot test was not performed long enough to determine the change in mass removal rates over time. This rate is adequate as a maximum removal rate, as well as a relative removal rate to compare to SVE and AS/SVE extraction.

3.1.1. Soil Permeability to Airflow of Vadose Zone Soils

The parameters collected during the MPX pilot test were used to determine the soil permeability to airflow in the silty fine sand vadose zone unit. Using the pressure measured at the well head, the airflow rate, the screened interval, and the radius of influence, as determined in Figure 2, the soil permeability to airflow may was computed by a modified version of the equation presented by Johnson et al. (1990).

$$k = \frac{(1.15)\ Q\ \mu\ \ln\left(R_w / R_{ROI}\right)}{H\ \pi\ P_w \left[1 - \left(P_{atm} / P_w\right)^2\right]}$$

where:

k = soil permeability to airflow [cm^2]
Q = airflow rate (scfm)
H = screened interval in vadose zone (cm)
μ = dynamic viscosity of air = 1.8×10^{-4} g/cm-s
P_w = absolute pressure at extraction well [$g/cm\text{-}s^2$]
P_{atm} = absolute ambient pressure = 1.01×10^6 $g/cm\text{-}s^2$
R_w = radius of vapor extraction well (ft)
R_{ROI} = radius of influence (ft)

The soil permeability to airflow, based on the results obtained during the pilot test (Table 2) ranges from 3.59×10^{-8} cm^2 to 4.2×10^{-8} cm^2, with an average soil permeability of 3.76×10^{-8} cm^2. These values are consistent with values reported for fine to coarse sand (Freeze and Cherry, Table 2.2, p. 29, 1979). These values are also consistent with the laboratory physical properties testing performed in June 2006, and by taking into account the scale of testing. The average horizontal intrinsic permeability of the silty fine sand unit of the vadose zone was 4.29×10^{-10} cm^2, which is two orders of magnitude lower than the pilot testing results.

The difference in measured permeabilities is primarily due to the scale of testing. Laboratory-derived soil permeabilities are typically one to three orders of magnitude lower than field-derived values obtained from long-term pilot tests (Fetter, 1993; Bedient et al., 1999). This is due to the scale-dependency of soil permeability measurements, which increase in proportion to the volume of soil sampled or evaluated (i.e., field pilot tests yield larger values than laboratory tests). Also, an MPX test averages the vertical

heterogeneity within the screened interval, allowing the test to obtain water and air from any higher conductivity zones within the test interval.

3.2. PUMPING RESULTS

Pumping test results during the MPX pumping test on July 13, 2006 are provided in Tables 2, 3, and 4, and summarized in Figure 3. The MPX pumping was performed within well MPX-1 and water levels were continuously measured in wells SVE-1, SVE-2, SVE-3, and SVE-4 (Tables 3 and 4). Water level measurements for ASM-1, ASM-2, ASM-3, ASM-4, B-100, B-102, B-103, B-104, B-105, B-106, B-107, B-108, B-109, MP-8, MW-8S, MW-8D, MW-9S, MW-9D, and MW-102 were also measured before and during the test (Table 3). The datalogger results are also presented in graphical form in Figure 3. Note that the water level data in Figure 3 portrays both the pumping test data and the recovery data.

During the MPX test, well MPX-1 was pumped at a sustained flow rate of 6.24 gallons per minute (gpm), with 6 inches of drawdown (stinger was set at 6 inches below the water table). Due to the low drawdown, this pumping rate may be sustained for extended periods of time for implementation in a remedial system without dewatering the saturated unit. This flow rate, however, may not be necessary for the complete hydraulic capture of the source area, due to the high hydraulic conductivity of the upper water-bearing unit as determined by the pumping test (9.30×10^{-3} cm/sec).

The drawdown of the pumping test was extensive, with a range of drawdown in the twenty-three wells from 0.05 ft in MW-9D to 0.69 ft in ASM-3. The minimum drawdown in the shallow zone of the upper water-bearing unit was in wells MW-8S and B-106, each with a drawdown of 0.13 ft and each at an approximate distance of 70 ft from MPX-1. These wells appear to be at the edge of the hydraulic radius of influence, with a minimum drawdown of 0.1 ft at the outer edge of this hydraulic ROI. Therefore, the hydraulic ROI may be estimated to be approximately 75 feet. This large hydraulic ROI would allow the complete hydraulic capture of the groundwater plume with only a few MPX wells pumping at low flow rates (2-6 gpm), as demonstrated by the MODFLOW groundwater flow model developed for the facility (Appendix G).

The deep wells MW-8D and MW-9D both were subject to some drawdown (0.13 ft and 0.05 ft, respectively). The presence of significant drawdown in MW-8D indicates that there is some communication between the shallow zone and the deep zone of the upper water-bearing unit beneath the facility. The increasing drawdown with decreasing depth generates an upward hydraulic gradient, causing the groundwater to flow upward toward the MPX well, further precluding the downward movement of dissolved-phase VOCs.

3.2.1. Analytical Analysis

The pumping test data collected during the July 2006 investigation was analyzed using "Aquifer Test v3.01" (Waterloo Hydrogeologic, 2001). The Aquifer Test model was used to estimate the transmissivity (T) and the hydraulic conductivity (K) of the aquifer. Estimates of T and K were completed using the Theis method and the Cooper-Jacob method. The Theis method involves plotting measured time-drawdown values on a log-log scale and matching the resulting curve to type curves. Based upon this match, along with the pumping rate (Q) and the aquifer depth (b), T and K can be calculated. Figure 4 shows an example Theis curve fitting for the recovery data. The Cooper-Jacob method involves plotting the measured time-drawdown values on a semi-log scale and determining a best fit straight-line through the data points (Figure 5). Based on the slope of this line, Q, and b, values for T and K were calculated. Groundwater levels during both the pumping and the recovery stages of the tests were used as input for the well hydraulics solutions.

Table 5 presents the transmissivity and conductivity values computed from the aquifer pumping tests. The conductivity values were computed from the transmissivity values, based upon an estimated saturated thickness of 30 feet. The average transmissivity and conductivity for the two tests from both pumping and recovery data were 8.50 cm^2/sec and $9.30x10^{-3}$ cm/sec, respectively. The conductivity values ranged from $3.75x10^{-3}$ cm/sec to $1.39x10^{-2}$ cm/sec. The conductivity calculated from the primary pumping test was $7.25x10^{-3}$ cm/sec using the Theis method, and $8.28x10^{-3}$ cm/sec using the Cooper-Jacob method. A K value of $1.16x10^{-2}$ cm/sec was calculated using the groundwater recovery data after the pumping test. These hydraulic conductivity values are consistent with the range of values reported for silty fine to medium sand (Freeze and Cherry, Table 2.2, p.29, 1979).

The range in hydraulic conductivity values estimated from the July 2006 pumping test data is generally lower than the hydraulic conductivity values estimated for the pumping test data for the pumping test performed in July 1996 (HSA, 1996). The average 2006 hydraulic conductivity of the shallow zone in the upper water-bearing unit ($9.30x10^{-3}$ cm/sec) is approximately two orders of magnitude lower than the hydraulic conductivities as determined from the 1996 data (0.848 cm/sec). This difference is primarily due to lithologic variation and the method of pumping from the well. The water pumped from MW-12S and MW-5S during the 1996 pumping test was pumped by a submersible pump at a depth of approximately 20 ft bgs. The water pumped from MPX-1 during the 2006 pumping test was pumped from the water table, at a depth of 15.5 ft bgs. These two depths are in slightly different lithologies; the 1996 pumping test was performed primarily within the medium to coarse sand unit, and the 2006 pumping test was performed primarily within the clayey fine sand unit (uppermost portion of the shallow zone of the upper water-bearing unit).

The range in hydraulic conductivity values estimated from the July 2006 pumping test data is also generally higher than the hydraulic conductivity values measured by the laboratory physical properties data collected in June 2006 during the field soil investigation presented in the corrective action plan for the facility. The average 2006 hydraulic conductivity of the clayey fine sand lithologic unit ($9.30x10^{-3}$ cm/sec) is approximately three orders of magnitude higher than the average hydraulic conductivity in the clayey fine

sand unit as determined from the physical properties testing (2.03×10^{-6} cm/sec), and approximately two to three orders of magnitude higher than the average hydraulic conductivity in the medium to coarse sand unit as determined from the physical properties testing (4.74×10^{-5} cm/sec).

The difference in measured hydraulic conductivities is primarily due to the scale of testing. Laboratory-derived hydraulic conductivities are typically one to three orders of magnitude lower than field-derived values obtained from long-term pumping tests (Fetter, 1993; Bedient et al., 1999). This is due to the scale-dependency of hydraulic conductivity measurements, which increase in proportion to the volume of aquifer sampled or evaluated (i.e., pumping tests yield larger values than slug tests, which, in turn, produce larger values than laboratory tests). The differences are also due to the vertical heterogeneity within the upper water-bearing unit, allowing the pumping test to obtain water from the medium-coarse sand unit.

4. SUMMARY AND CONCLUSIONS

The purpose of the MPX pilot test was to determine if this technology could provide effective VOC source removal in a reasonable timeframe and control the movement of aqueous-phase VOCs. MPX is attractive, relative to typical pump-and-treat groundwater extraction since the MPX process removes and treats volatile chemicals within the vadose zone as wells as within the extracted groundwater.

A summary of the pilot test and its implications are discussed below.

- An MPX pilot test was conducted at an applied vacuum of 20 inches of mercury at a stinger depth of 6 inches below the water table. This vacuum resulted in 9 scfm of vapor extraction, and 6.24 gpm of water extraction, indicating that the vadose and saturated units are very amenable to both vapor and groundwater collection.
- The pilot test yielded an average soil permeability to airflow of 4.20×10^{-8} cm^2, which is consistent with fine to medium sand. This airflow will allow the vapor to freely move through the vadose zone, where VOCs can be collected for removal.
- The MPX pumping test yielded an average hydraulic conductivity of 9.3×10^{-3} cm/sec, assuming a uniform aquifer saturated thickness of 30 ft, which is consistent with the conductivity of a medium to coarse sand.
- By plotting the maximum vacuum versus distance, the MPX airflow ROI was quantified at approximately 37 ft. This moderately large ROI provides the capture of the vadose zone COCs with a minimum number of MPX wells.
- The hydraulic ROI was determined to be approximately 75 ft. This large hydraulic ROI is indicative of a sandy saturated unit, and would provide the hydraulic capture of the plume with a minimal number of MPX wells pumping at low flow rates (2-6 gpm).
- Deep wells responded to the groundwater extraction at MPX-1. The deep well response indicated an upward hydraulic gradient during pumping, precluding the migration of VOCs to deeper zones.
- Up to 150 lb of VOCs may be removed may be removed each day through MPX vapor extraction based on a single extraction well. This value provides a preliminary estimate of the initial VOC mass removal that can be expected from an MPX well.

Based on these test results, MPX would be an effective technology to remediate source area groundwater and to hydraulically control VOC-impacted groundwater. A full-scale MPX system would be able to strip VOCs from the vadose zone, while providing a hydraulic capture zone encompassing the source of the groundwater plume. Based on these test results, MPX is retained as a possible remedial alternative for consideration at the Perma-Fix of South Georgia facility. However, the VOC mass removal rate of the SVE pilot test (975 lb/day) was 6.5 times higher than the MPX test (150 lb/day). The AS/SVE technology may be a better choice than MPX for the remediation of the vadose zone and saturated zone at the facility.

5. REFERENCES

Bedient, P.B., Rifai, H.S., and Newell, C.J., 1994. Ground Water Contamination: Transport and Remediation. PTR Prentice Hall, 1994.

Fetter, C.W., 1993. Contaminant Hydrology, Macmillian Publishing Company. 458p.

Johnson, P.C., Stanley, C.C., Kemblowski, M.W., Byers, D.L, and Colthart, J.D., 1990. A Practical Approach to the Design, Operation and Monitoring of In Situ Soil-Venting Systems, GWMR, Spring 1990. pp 159-178.

McConnell, J.B. and Hacke, C.M., 1993. Hydrogeology, Water Quality and Water-Resources Development Potential of the Upper Floridan Aquifer in the Valdosta Area, South-Central Georgia: U.S. Geological Survey, WRI Report 93-4044, 1993.

Grubb, Dennis G. and Nicholas Sitar, August 1994. Evaluation of Technologies for In-Situ Cleanup of DNAPL Contaminated Sites. EPA/600/R-94/120.

Nyer, Evan K., 1992, Practical Techniques for Groundwater and Soil Remediation, CRC Press. 306p.

Olsen, S.R., Sommers, L.E., Page A.L., Miller, R.H. and Keeney, D.R., editors., 1982. Methods of Soil Analysis, Part 2- Chemical and Microbiological Properties , Second Edition. American Society of Agronomy, Inc, SSSA, Inc.1982. p.416-418

Pankow, James F. and John A. Cherry 1996. Dense Chlorinated Solvents and other DNAPLs in Groundwater. Waterloo Press. 522 pages.

U.S. Army Corps of Engineers, 2002. Soil Vapor Extraction and Bioventing: Engineering and Design, EM 1110-1-4001, June 3, 2002.

United States Environmental Protection Agency, February 1992. Dense Nonaqueous Phase Liquids – A Workshop Summary, Dallas, Texas, April 16 - 18, 1991, EPA/600/-92/030

U.S. EPA, May 1995. How to Evaluate Alternative Cleanup Technologies for Underground Storage Tank Sites: A Guide for Corrective Action Plan Reviewers. EPA 510-B-95-007.

U.S. EPA, 2002. List of Drinking Water Contaminants and MCLs: National Primary Drinking Water Standards. EPA 816-F-02-013. Online: http://www.epa.gov/safewater/mcl.html#mcls, June 30, 2005

U.S. EPA, October 2004. U.S. EPA Region 9 Preliminary Remediation Goals. Online: http://www.epa.gov/region09/waste/sfund/prg/files/04prgtable.pdf, June 30, 2005

TABLES

TABLE 1
Monitoring Well Construction Details and July 2006 Water Levels, Perma-Fix of South Georgia, Inc., Valdosta, GA

		Monitor Well Designation	Date of Installation	Casing Diameter (Inches)	Total Depth (Ft BTOC)	Screened Interval (ft bgs)	Elevation of Top of Casing (ft MSL)	Ground Elevation (ft MSL)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft MSL)
On-Site Monitoring Wells	Shallow Monitoring Wells	MP-8	8/1/04	1.25	22.13	17 - 19	191.889	191.889	16.53	175.36
		MW-1S*	NA	2	27.79	NA	190.55	187.485	15.66	174.89
		MW-2*	NA	2	27.7	NA	193.053	190.701	17.86	175.19
		MW-2S*	NA	2	22.82	NA	187.99	186.21	13.83	174.16
		MW-3*	NA	2	25.35	NA	194.457	191.996	18.58	175.88
		MW-4S*	NA	2	28.02	NA	189.391	189.391	14.58	174.81
		MW-5S	3/22/96	2	27.36	10 - 25	188.809	185.951	14.17	174.64
		MW-6S	3/21/96	2	26.9	10 - 25	191.332	187.878	16.17	175.16
		MW-7S	3/27/96	2	24.68	10 - 25	187.45	188.311	12.86	174.59
		MW-8S	3/22/96	2	27.6	10 - 25	194.61	191.339	19.06	175.55
		MW-9S	3/22/96	2	22.25	10 - 25	190.17	190.66	14.73	175.44
		MW-10S	3/23/96	2	24.9	10 - 25	190.17	190.416	15.05	175.12
		MW-11S	3/21/96	2	24.67	10 - 25	195.115	192.224	19.51	175.6
		MW-12S	3/23/96	2	27.49	10 - 25	189.04	186.35	14.21	174.83
		MW-13S	6/6/97	2	24.51	10 - 25	187.71	187.852	12.72	174.99
		MW-24S*	NA	2	22.82	NA	189.5	NA	14.01	175.49
		MW-100	6/17/06	2	23.35	10 - 25	190.218	190.218	14.98	175.24
		MW-101	6/17/06	2	25.17	10 - 25	190.167	190.167	15.05	175.12
		MW-102	6/13/06	2	27.15	10 - 25	192.962	190.266	17.72	175.24
		MW-103	6/16/06	2	27.29	10 - 25	193.315	190.473	17.41	175.91
	Deep Monitoring Wells	MW-1D*	NA	2	46.28	37 - 47	190.59	187.53	15.61	174.98
		MW-2D*	NA	2	44.37	NA	189.18	186.3	15.03	174.15
		MW-4D*	NA	2	44.7	NA	189.47	186.53	14.49	174.98
		MW-5D	3/28/96	2	43.5	31 - 41	188.9	185.96	14.27	174.63
		MW-6D	3/21/96	2	42.82	31 - 41	191	188.01	15.62	175.38
		MW-7D	3/27/96	2	40.69	31 - 41	188.06	188.35	13.1	174.96
		MW-8D	3/27/96	2	39.6	31 - 41	194.57	191.36	19.04	175.53
		MW-9D	3/27/96	2	40.75	31 - 41	190.39	190.6	14.96	175.43
		MW-10D	3/24/96	2	40.83	31 - 41	190.17	190.45	15.13	175.04
		MW-11D	3/20/96	2	43.4	31 - 41	195.14	192.29	19.49	175.65
		MW-12D	3/24/96	2	42.4	31 - 41	189.04	186.38	14.99	174.05
		MW-13D	6/3/97	2	41.42	31 - 41	187.61	187.86	12.71	174.9
		MW-13DD	12/23/00	2	67.6	60 - 65	187.65	187.86	19.83	167.82
		MW-13D3*	NA	2	135.55	122 - 138	187.5	187.86	95.3	92.2
		MW-24D	9/8/04	2	39.51	35 - 40	189.42	189.67	13.93	175.49
	Pilot Test Wells	ASI-1	6/14/06	2	37.6	30 - 35	193.547	190.686	18.83	174.72
		MPX-1	6/12/06	4	31.32	15 - 30	193.503	190.493	18.18	175.32
		ASM-1	6/16/06	2	23.65	18 - 23	193.452	190.612	18.11	175.34
		ASM-2	6/16/06	2	23.65	18 - 23	193.486	190.596	18.11	175.38
		ASM-3	6/16/06	2	26.89	18 - 23	193.874	190.586	18.22	175.65
		ASM-4	6/16/06	2	26.21	18 - 23	193.794	190.774	18.41	175.38
		SVE-1	6/15/06	2	23.2	10 - 25	193.524	190.591	18.26	175.26
		SVE-2	6/15/06	2	25.7	10 - 25	193.262	190.395	17.94	175.32
		SVE-3	6/15/06	2	26.61	10 - 25	193.4	190.575	18.09	175.31
		SVE-4	6/16/06	2	24.86	10 - 25	193.33	190.487	18	175.33
	Temporary Wells	B-100	6/13/06	2	29.51	15 - 25	195.19	190.481	20.82	174.37
		B-101	6/16/06	2	23.19	15 - 25	190.4	190.6	15.08	175.32
		B-102	6/13/06	2	29.56	15 - 25	196.87	190.366	19.11	177.76
		B-103	6/19/06	2	25.21	15 - 25	190.85	190.895	15.31	175.54
		B-104	6/14/06	2	26.41	15 - 25	195.84	190.669	20.5	175.34
		B-105	6/15/06	2	26.37	15 - 25	195.51	190.673	20.15	175.36
		B-106	6/19/06	2	25.2	15 - 25	190.596	191.139	15.03	175.57
		B-107	6/19/06	2	24.7	15 - 25	191.202	191.488	15.96	175.24
		B-108	6/20/06	2	23.99	15 - 25	191.973	192.085	16.66	175.31
		B-109	6/19/06	2	25.09	15 - 25	189.557	190.012	14.17	175.39
		B-110	6/20/06	2	21.87	15 - 25	191.738	191.896	16.87	174.87
		B-111	6/19/06	2	22.69	15 - 25	191.392	191.505	16.14	175.25
		B-112	6/20/06	2	25.18	15 - 25	191.887	192.139	16.12	175.77
		B-113	6/20/06	2	24.35	15 - 25	191.493	191.527	16.57	174.92
		B-114	6/20/06	2	25.15	15 - 25	192.23	192.066	16.91	175.32

* = No well logs available for these wells
NA = Not Available
NS = Not Sampled

TABLE 1
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		Monitor Well Designation	Date of Installation	Casing Diameter (Inches)	Total Depth (Ft BTOC)	Screened Interval (ft bgs)	Elevation of Top of Casing (ft MSL)	Ground Elevation (ft MSL)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft MSL)
Off-Site Monitoring Wells	Shallow	MW-14S*	NA	2	24.45	NA	175.86	NA	5.18	170.68
		MW-16	12/22/00	2	36.81	20 - 35	181.45	178.77	9.89	171.56
		MW-17*	NA	2	42.6	NA	171.7	NA	4.3	167.4
		MW-18*	NA	2	41.76	NA	181.47	NA	12.1	169.37
		MW-19*	NA	2	39.9	NA	188.84	NA	14.13	174.71
		MW-20*	NA	2	42.21	28 - 38	170.13	170	2.41	167.72
		MW-21*	NA	2	42.14	NA	169.43	NA	1.34	168.09
		MW-22	4/16/03	2	39.5	29.5 - 39.5	171.02	167.79	NS	NS
		MW-25*	NA	2	NA	NA	NA	NA	NS	NS
		MW-26	9/9/04	2	22.3	12.75 - 22.75	192.55	192.95	16.2	176.35
		MW-27	9/9/04	2	22.32	12.7 - 22.7	191.44	191.96	15.98	175.46
		MW-28	9/9/04	2	24	14 - 24	194.97	195.21	NS	NS
	Deep	MW-14D*	NA	2	38.8	NA	175.79	NA	7.78	168.01
		MW-15	12/19/00	2	43.4	24 - 39	186.98	184.18	13.58	173.4
		MW-23	9/2/04	2	79.5	68 - 78	175.21	176	28.28	146.93
		MW-29	9/10/04	2	40.09	35.5 - 40.5	175.68	176.32	6.96	168.72

* = No well logs available for these wells
NA = Not Available
NS = Not Sampled

TABLE 2
MPX Pump Test Data, Perma-Fix of South Georgia, Inc.

Gauge Readings																							
		SVE Vaccuum Blower									Pressure Readings at Wells												
Time	Elapsed Time (hr:min)	Pw (in H2O)	P1 (in Hg)	T1 (^{o}F)	ΔP (in H2O)	Qair (SCFM)	Qw (gpm)	Tamb (^{o}F)	OVM (ppm)	k (cm^{2})	MPX-1 (in H2O)	SVE-1 (in H2O)	SVE-2 (in H2O)	SVE-3 (in H2O)	SVE-4 (in H2O)	ASM-1 (in H2O)	ASM-2 (in H2O)	ASM-3a (in H2O)	ASM-3b (in H2O)	ASM-4a (in H2O)	ASM-4b (in H2O)	MW-102 (in H2O)	Comments
9:00	0:00	46	20	80	0.1	9	6.7	90	600	4.20E-08													
9:10	0:10										-46.6	-3.78	-5.77	-8.53	-3.74	-3.46	-3.76	-3.56	-7.27	-2.33	-4.1	-0.26	
9:15	0:15	47	20	82	0.1	9	6.4	90		4.10E-08													
9:20	0:20										-48	-3.76	-5.68	-8.59	-3.66	-2.72	-3.61	-3.45	-7.3	-1.65	-3.96	-0.39	
9:30	0:30	50	20	82	0.1	9	6.6	90	760	3.83E-08	-44.3	-3.84	-5.61	-8.38	-3.72	-2.13	-3.55	-3.33	-7.13	-1.28	-3.96	-0.51	
9:40	0:40										-51.3	-3.99	-5.87	-8.9	-3.84	-2.03	-3.81	-3.72	-7.58	-1.14	-4.11	-0.55	
9:45	0:45	50	20	85	0.1	9	6.5	90	670	3.83E-08													
9:50	0:50										-51.2	-4.09	-5.97	-9.04	-3.93	-1.72	-3.93	-3.81	-7.64	-0.91	-4.2	-0.63	
10:00	1:00	49	20	88	0.1	9	6.3	90	800	3.91E-08	-51.2	-4.12	-6.01	-9.14	-3.95	-1.49	-3.97	-3.87	-7.75	-0.75	-4.21	-0.6	Gate valve loosened @ 10:10 to 10:
10:15	1:15										-50.3	-3.6	-5.16	-7.99	-3.42	-0.72	-3.49	-3.39	-7.08	-0.29	-3.75	-0.61	Low pressure due to loose valve
10:30	1:30	50	20	88	0.1	9	6.2	90	775	3.83E-08	-52.4	-3.98	-5.82	-8.94	-3.79	-0.83	-3.82	-3.66	-7.56	-0.35	-4.08	-0.57	
10:45	1:45										-50.2	-4	-5.8	-8.91	-3.8	-0.62	-3.78	-3.61	-7.55	-0.21	-4.08	-0.61	
11:00	2:00	51	20	90	0.1	9	6.3	90	850	3.75E-08	-52.3	-4.01	-5.85	-9	-3.81	-0.48	-3.8	-3.65	-7.62	-0.14	-4.08	-0.58	
11:30	2:30	52	20	90	0.1	9	6.3	90	760	3.67E-08	-52.5	-4.02	-5.86	-9.02	-3.82	-0.25	-3.75	-3.62	-7.66	-0.03	-4.11	-0.63	
12:00	3:00	52	20	90	0.1	9	6.1	90	430	3.67E-08	-51.5	-4.02	-5.85	-8.98	-3.8	-0.09	-3.68	-3.55	-7.68	0	-4.1	-0.65	
12:30	3:30	52	20	92	0.1	9	6.2	90	475	3.67E-08													
13:00	4:00	52	20	92	0.1	9	6.2	90	700	3.67E-08	-51.8	-4.02	-5.88	-9.08	-3.78	0.04	-3.5	-3.37	-7.68	0.09	-4.08	-0.6	
13:30	4:30	53	20	94	0.15	10	6.2	90	675	3.99E-08													
14:00	5:00	52	20	94	0.1	9	6.3	90	820	3.67E-08	-52.5	-4	-5.88	-9.13	-3.83	0.13	-3.26	-3.16	-7.75	0.1	-4.08	-0.58	
14:30	5:30	52	20	95	0.1	9	6.2	90	490	3.67E-08													
15:00	6:00	53	20	96	0.1	9	6.2	90	745	3.59E-08	-53	-4.02	-5.94	-9.22	-3.76	0.14	-3.09	-2.96	-7.8	0.11	-4.11	-0.62	
15:30	6:30	53	20	96	0.1	9	6.1	90	630	3.59E-08													
16:00	7:00	52	20	96	0.1	9	6.2	90	700	3.67E-08	-52.5	-3.98	-5.9	-9.18	-3.72	0.17	-2.79	-1.54	-7.75	0.13	-4.09	-0.59	
16:30	7:30	53	20	96	0.1	9	6	90	620	3.59E-08													
17:00	8:00	53	20	96	0.1	9	6.2	90	620	3.59E-08	-53	-4.02	-5.96	-9.25	-3.76	0.11	0.23	0.24	-7.81	0.08	-4.11	-0.6	Packers disrupted in ASM wells
										Maximum Vacuum (in H2O)	53	4.12	6.01	9.25	3.95	2.03	3.97	3.87	7.81	1.14	4.21	0.65	
										Distance from MPX-1	0	3.94	9.77	5.83	18.65	9	10.38	4.71	4.71	15.02	15.02	45.22	

Water Level Measurements									
WELL	DTW	DTP	Time	DTW	DTP	Time	DTW	DTP	Time
B-100	19.96		7:30	20.2	20.195	13:09	20.2	20.195	16:21
B-102*	23.79		7:30	22.16		13:11	22.19		16:23
B-103	15.43		7:30	15.57		13:24	15.56		16:34
B-104	20.65		7:30	21.07		13:13	21.07		16:25
B-105	20.25		7:30	20.58		13:15	20.58		16:26
B-106	15.27		7:30	15.41		13:26	15.39		16:35
B-107	16.09		7:30	16.35		13:32	16.35		16:40
B-108	16.8		7:30	16.98		13:28	16.96		16:37
B-109	14.28		7:30	14.46		13:17	14.45		16:28
ASM-1	18.225	18.22	7:30				18.78		16:18
ASM-2	18.33		7:30				18.83		16:16
ASM-3	18.36		7:30				19.05		16:15
ASM-4	18.555	18.55	7:30				18.955	18.95	16:13
MW-102	17.9		7:30				18.09		16:20
MP-8	16.72		7:30	16.91		13:30	16.89		16:39
SVE-1	19.22		7:30		Datalogger			Datalogger	
SVE-2	18.94		7:30		Datalogger			Datalogger	
SVE-3	19.05	19.045	7:30		Datalogger			Datalogger	
SVE-4	18.94		7:30		Datalogger			Datalogger	
MW-8S	19.59		7:30	19.74		13:34	19.73		16:41
MW-8D	19.56		7:30	19.7		13:36	19.69		16:42
MW-9S	14.74		7:30	14.97		13:21	14.97		16:30
MW-9D	15.12		7:30	15.16		13:22	15.17		16:32

Offgass VOC Concentrations (ppm)																	
	Chloroform	Methylene Chloride	1,1,1-Trichloroethane	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	1,1-Dichloroethane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylenes	Total Xylenes	Total Light Petroleum	Total VOCs
Test Start	0.545	6.85	12.2	1.21	0.569	12.2	0.127	0.747	0.591	0.577	18.7	0.4	1.36	6.85	8.21	126	184
Test End	ND	6.06	18.5	1.90	ND	6.87	ND	ND	ND	0.529	4.40	ND	ND	ND	ND	144	190

Notes:
Pw = Air pressure at multiphase extraction well
P1 = Air and water pressure at extraction well
T1 = Temperature of extracted air
ΔP = Piezometer pressure differential
Q= Water flow rate from multiphase extraction well
Tamb = Ambient temperature
OVM = Total VOCs concentration as measured by an organic vapor meter
k = Soil Horizontal Permeability to air flow.
* = Water levels are incorrect due to mud contamination of probe

TABLE 3
Datalogger Results During MPX Pump Test,
Perma-Fix of South Georgia, Inc.

Datalogger Water Levels During Test														
		Elapsed Time	SVE-1			SVE-2			SVE-3			SVE-4		
Date	Time	(hr:min:sec)	dd (m)	ft BTOC	ft MSL	dd (m)	ft BTOC	ft MSL	dd (m)	ft BTOC	ft MSL	dd (m)	ft BTOC	ft MSL
7/13/2006	8:56	0:00:00	0	19.220	175.179	0	18.940	175.197	0	19.050	175.225	0	18.940	175.265
7/13/2006	8:58	0:02:00	-0.001	19.223	175.176	-0.001	18.943	175.194	-0.003	19.060	175.215	0.001	18.937	175.268
7/13/2006	9:00	0:04:00	-0.05	19.384	175.015	-0.101	19.271	174.866	-0.174	19.621	174.654	-0.044	19.084	175.121
7/13/2006	9:02	0:06:00	-0.077	19.473	174.926	-0.131	19.370	174.767	-0.208	19.732	174.543	-0.072	19.176	175.029
7/13/2006	9:04	0:08:00	-0.097	19.538	174.861	-0.145	19.416	174.721	-0.222	19.778	174.497	-0.089	19.232	174.973
7/13/2006	9:06	0:10:00	-0.11	19.581	174.818	-0.153	19.442	174.695	-0.233	19.814	174.461	-0.099	19.265	174.940
7/13/2006	9:08	0:12:00	-0.119	19.610	174.789	-0.157	19.455	174.682	-0.233	19.814	174.461	-0.106	19.288	174.917
7/13/2006	9:10	0:14:00	-0.123	19.624	174.775	-0.158	19.458	174.679	-0.231	19.808	174.467	-0.11	19.301	174.904
7/13/2006	9:12	0:16:00	-0.127	19.637	174.762	-0.161	19.468	174.669	-0.236	19.824	174.451	-0.114	19.314	174.891
7/13/2006	9:14	0:18:00	-0.13	19.647	174.752	-0.164	19.478	174.659	-0.239	19.834	174.441	-0.117	19.324	174.881
7/13/2006	9:16	0:20:00	-0.133	19.656	174.743	-0.17	19.498	174.639	-0.246	19.857	174.418	-0.121	19.337	174.868
7/13/2006	9:18	0:22:00	-0.136	19.666	174.733	-0.172	19.504	174.633	-0.248	19.864	174.411	-0.124	19.347	174.858
7/13/2006	9:20	0:24:00	-0.138	19.673	174.726	-0.174	19.511	174.626	-0.249	19.867	174.408	-0.126	19.353	174.852
7/13/2006	9:22	0:26:00	-0.141	19.683	174.716	-0.176	19.517	174.620	-0.252	19.877	174.398	-0.127	19.357	174.848
7/13/2006	9:24	0:28:00	-0.142	19.686	174.713	-0.177	19.521	174.616	-0.253	19.880	174.395	-0.129	19.363	174.842
7/13/2006	9:26	0:30:00	-0.143	19.689	174.710	-0.178	19.524	174.613	-0.254	19.883	174.392	-0.131	19.370	174.835
7/13/2006	9:28	0:32:00	-0.144	19.692	174.707	-0.178	19.524	174.613	-0.253	19.880	174.395	-0.132	19.373	174.832
7/13/2006	9:30	0:34:00	-0.141	19.683	174.716	-0.17	19.498	174.639	-0.238	19.831	174.444	-0.129	19.363	174.842
7/13/2006	9:32	0:36:00	-0.143	19.689	174.710	-0.18	19.531	174.606	-0.256	19.890	174.385	-0.132	19.373	174.832
7/13/2006	9:34	0:38:00	-0.147	19.702	174.697	-0.184	19.544	174.593	-0.259	19.900	174.375	-0.135	19.383	174.822
7/13/2006	9:36	0:40:00	-0.15	19.712	174.687	-0.185	19.547	174.590	-0.261	19.906	174.369	-0.137	19.389	174.816
7/13/2006	9:38	0:42:00	-0.151	19.715	174.684	-0.186	19.550	174.587	-0.262	19.910	174.365	-0.139	19.396	174.809
7/13/2006	9:40	0:44:00	-0.152	19.719	174.680	-0.187	19.554	174.583	-0.263	19.913	174.362	-0.139	19.396	174.809
7/13/2006	9:42	0:46:00	-0.155	19.729	174.670	-0.19	19.563	174.574	-0.267	19.926	174.349	-0.14	19.399	174.806
7/13/2006	9:44	0:48:00	-0.156	19.732	174.667	-0.191	19.567	174.570	-0.267	19.926	174.349	-0.142	19.406	174.799
7/13/2006	9:46	0:50:00	-0.156	19.732	174.667	-0.191	19.567	174.570	-0.267	19.926	174.349	-0.143	19.409	174.796
7/13/2006	9:48	0:52:00	-0.157	19.735	174.664	-0.192	19.570	174.567	-0.266	19.923	174.352	-0.143	19.409	174.796
7/13/2006	9:50	0:54:00	-0.157	19.735	174.664	-0.192	19.570	174.567	-0.267	19.926	174.349	-0.144	19.412	174.793
7/13/2006	9:52	0:56:00	-0.158	19.738	174.661	-0.193	19.573	174.564	-0.267	19.926	174.349	-0.145	19.416	174.789
7/13/2006	9:54	0:58:00	-0.158	19.738	174.661	-0.193	19.573	174.564	-0.268	19.929	174.346	-0.145	19.416	174.789
7/13/2006	9:56	1:00:00	-0.16	19.745	174.654	-0.195	19.580	174.557	-0.271	19.939	174.336	-0.146	19.419	174.786
7/13/2006	9:58	1:02:00	-0.161	19.748	174.651	-0.196	19.583	174.554	-0.272	19.942	174.333	-0.147	19.422	174.783
7/13/2006	10:00	1:04:00	-0.162	19.751	174.648	-0.197	19.586	174.551	-0.272	19.942	174.333	-0.147	19.422	174.783
7/13/2006	10:02	1:06:00	-0.161	19.748	174.651	-0.193	19.573	174.564	-0.263	19.913	174.362	-0.146	19.419	174.786
7/13/2006	10:04	1:08:00	-0.156	19.732	174.667	-0.187	19.554	174.583	-0.25	19.870	174.405	-0.143	19.409	174.796
7/13/2006	10:06	1:10:00	-0.147	19.702	174.697	-0.176	19.517	174.620	-0.23	19.805	174.470	-0.136	19.386	174.819
7/13/2006	10:08	1:12:00	-0.14	19.679	174.720	-0.172	19.504	174.633	-0.221	19.775	174.500	-0.131	19.370	174.835
7/13/2006	10:10	1:14:00	-0.135	19.663	174.736	-0.168	19.491	174.646	-0.215	19.755	174.520	-0.126	19.353	174.852
7/13/2006	10:12	1:16:00	-0.132	19.653	174.746	-0.165	19.481	174.656	-0.212	19.746	174.529	-0.124	19.347	174.858
7/13/2006	10:14	1:18:00	-0.13	19.647	174.752	-0.163	19.475	174.662	-0.208	19.732	174.543	-0.121	19.337	174.868
7/13/2006	10:16	1:20:00	-0.135	19.663	174.736	-0.178	19.524	174.613	-0.243	19.847	174.428	-0.128	19.360	174.845
7/13/2006	10:18	1:22:00	-0.146	19.699	174.700	-0.185	19.547	174.590	-0.254	19.883	174.392	-0.135	19.383	174.822
7/13/2006	10:20	1:24:00	-0.15	19.712	174.687	-0.189	19.560	174.577	-0.258	19.896	174.379	-0.139	19.396	174.809
7/13/2006	10:22	1:26:00	-0.154	19.725	174.674	-0.192	19.570	174.567	-0.26	19.903	174.372	-0.141	19.403	174.802
7/13/2006	10:24	1:28:00	-0.156	19.732	174.667	-0.193	19.573	174.564	-0.261	19.906	174.369	-0.143	19.409	174.796
7/13/2006	10:26	1:30:00	-0.156	19.732	174.667	-0.195	19.580	174.557	-0.261	19.906	174.369	-0.144	19.412	174.793
7/13/2006	10:28	1:32:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.265	19.919	174.356	-0.145	19.416	174.789
7/13/2006	10:30	1:34:00	-0.159	19.742	174.657	-0.198	19.590	174.547	-0.265	19.919	174.356	-0.145	19.416	174.789
7/13/2006	10:32	1:36:00	-0.159	19.742	174.657	-0.198	19.590	174.547	-0.264	19.916	174.359	-0.146	19.419	174.786
7/13/2006	10:34	1:38:00	-0.159	19.742	174.657	-0.198	19.590	174.547	-0.263	19.913	174.362	-0.147	19.422	174.783
7/13/2006	10:36	1:40:00	-0.159	19.742	174.657	-0.198	19.590	174.547	-0.263	19.913	174.362	-0.146	19.419	174.786
7/13/2006	10:38	1:42:00	-0.159	19.742	174.657	-0.198	19.590	174.547	-0.264	19.916	174.359	-0.147	19.422	174.783
7/13/2006	10:40	1:44:00	-0.16	19.745	174.654	-0.198	19.590	174.547	-0.263	19.913	174.362	-0.146	19.419	174.786
7/13/2006	10:42	1:46:00	-0.16	19.745	174.654	-0.199	19.593	174.544	-0.265	19.919	174.356	-0.147	19.422	174.783
7/13/2006	10:44	1:48:00	-0.16	19.745	174.654	-0.199	19.593	174.544	-0.263	19.913	174.362	-0.147	19.422	174.783
7/13/2006	10:46	1:50:00	-0.16	19.745	174.654	-0.199	19.593	174.544	-0.263	19.913	174.362	-0.147	19.422	174.783
7/13/2006	10:48	1:52:00	-0.161	19.748	174.651	-0.199	19.593	174.544	-0.263	19.913	174.362	-0.148	19.426	174.779
7/13/2006	10:50	1:54:00	-0.161	19.748	174.651	-0.201	19.599	174.538	-0.264	19.916	174.359	-0.147	19.422	174.783
7/13/2006	10:52	1:56:00	-0.162	19.751	174.648	-0.201	19.599	174.538	-0.265	19.919	174.356	-0.148	19.426	174.779
7/13/2006	10:54	1:58:00	-0.162	19.751	174.648	-0.202	19.603	174.534	-0.266	19.923	174.352	-0.148	19.426	174.779
7/13/2006	10:56	2:00:00	-0.162	19.751	174.648	-0.203	19.606	174.531	-0.267	19.926	174.349	-0.149	19.429	174.776
7/13/2006	10:58	2:02:00	-0.163	19.755	174.644	-0.203	19.606	174.531	-0.267	19.926	174.349	-0.149	19.429	174.776

TABLE 3
Datalogger Results During MPX Pump Test,
Perma-Fix of South Georgia, Inc.

Datalogger Water Levels During Test															
		Elapsed Time	SVE-1			SVE-2			SVE-3			SVE-4			
Date	Time	(hr:min:sec)	dd (m)	ft BTOC	ft MSL	dd (m)	ft BTOC	ft MSL	dd (m)	ft BTOC	ft MSL	dd (m)	ft BTOC	ft MSL	
7/13/2006	11:00	2:04:00	-0.163	19.755	174.644	-0.203	19.606	174.531	-0.268	19.929	174.346	-0.15	19.432	174.773	
7/13/2006	11:02	2:06:00	-0.163	19.755	174.644	-0.203	19.606	174.531	-0.266	19.923	174.352	-0.15	19.432	174.773	
7/13/2006	11:04	2:08:00	-0.163	19.755	174.644	-0.203	19.606	174.531	-0.265	19.919	174.356	-0.149	19.429	174.776	
7/13/2006	11:06	2:10:00	-0.163	19.755	174.644	-0.203	19.606	174.531	-0.264	19.916	174.359	-0.149	19.429	174.776	
7/13/2006	11:08	2:12:00	-0.163	19.755	174.644	-0.202	19.603	174.534	-0.264	19.916	174.359	-0.149	19.429	174.776	
7/13/2006	11:10	2:14:00	-0.163	19.755	174.644	-0.203	19.606	174.531	-0.265	19.919	174.356	-0.149	19.429	174.776	
7/13/2006	11:12	2:16:00	-0.163	19.755	174.644	-0.203	19.606	174.531	-0.265	19.919	174.356	-0.149	19.429	174.776	
7/13/2006	11:14	2:18:00	-0.163	19.755	174.644	-0.203	19.606	174.531	-0.264	19.916	174.359	-0.15	19.432	174.773	
7/13/2006	11:16	2:20:00	-0.163	19.755	174.644	-0.203	19.606	174.531	-0.265	19.919	174.356	-0.149	19.429	174.776	
7/13/2006	11:18	2:22:00	-0.163	19.755	174.644	-0.203	19.606	174.531	-0.264	19.916	174.359	-0.15	19.432	174.773	
7/13/2006	11:20	2:24:00	-0.163	19.755	174.644	-0.203	19.606	174.531	-0.264	19.916	174.359	-0.15	19.432	174.773	
7/13/2006	11:22	2:26:00	-0.163	19.755	174.644	-0.203	19.606	174.531	-0.265	19.919	174.356	-0.15	19.432	174.773	
7/13/2006	11:24	2:28:00	-0.162	19.751	174.648	-0.203	19.606	174.531	-0.264	19.916	174.359	-0.15	19.432	174.773	
7/13/2006	11:26	2:30:00	-0.162	19.751	174.648	-0.204	19.609	174.528	-0.266	19.923	174.352	-0.151	19.435	174.770	
7/13/2006	11:28	2:32:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.267	19.926	174.349	-0.151	19.435	174.770	
7/13/2006	11:30	2:34:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.268	19.929	174.346	-0.152	19.439	174.766	
7/13/2006	11:32	2:36:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.267	19.926	174.349	-0.152	19.439	174.766	
7/13/2006	11:34	2:38:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.152	19.439	174.766	
7/13/2006	11:36	2:40:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.152	19.439	174.766	
7/13/2006	11:38	2:42:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.264	19.916	174.359	-0.151	19.435	174.770	
7/13/2006	11:40	2:44:00	-0.163	19.755	174.644	-0.204	19.609	174.528	-0.265	19.919	174.356	-0.152	19.439	174.766	
7/13/2006	11:42	2:46:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.152	19.439	174.766	
7/13/2006	11:44	2:48:00	-0.162	19.751	174.648	-0.204	19.609	174.528	-0.264	19.916	174.359	-0.151	19.435	174.770	
7/13/2006	11:46	2:50:00	-0.162	19.751	174.648	-0.204	19.609	174.528	-0.264	19.916	174.359	-0.152	19.439	174.766	
7/13/2006	11:48	2:52:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.264	19.916	174.359	-0.152	19.439	174.766	
7/13/2006	11:50	2:54:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.152	19.439	174.766	
7/13/2006	11:52	2:56:00	-0.163	19.755	174.644	-0.204	19.609	174.528	-0.265	19.919	174.356	-0.152	19.439	174.766	
7/13/2006	11:54	2:58:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.152	19.439	174.766	
7/13/2006	11:56	3:00:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.266	19.923	174.352	-0.152	19.439	174.766	
7/13/2006	11:58	3:02:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.264	19.916	174.359	-0.152	19.439	174.766	
7/13/2006	12:00	3:04:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.268	19.929	174.346	-0.152	19.439	174.766	
7/13/2006	12:02	3:06:00	-0.164	19.758	174.641	-0.206	19.616	174.521	-0.269	19.933	174.342	-0.153	19.442	174.763	
7/13/2006	12:04	3:08:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.264	19.916	174.359	-0.152	19.439	174.766	
7/13/2006	12:06	3:10:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.266	19.923	174.352	-0.152	19.439	174.766	
7/13/2006	12:08	3:12:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.264	19.916	174.359	-0.152	19.439	174.766	
7/13/2006	12:10	3:14:00	-0.163	19.755	174.644	-0.204	19.609	174.528	-0.264	19.916	174.359	-0.152	19.439	174.766	
7/13/2006	12:12	3:16:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.152	19.439	174.766	
7/13/2006	12:14	3:18:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.264	19.916	174.359	-0.152	19.439	174.766	
7/13/2006	12:16	3:20:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.264	19.916	174.359	-0.152	19.439	174.766	
7/13/2006	12:18	3:22:00	-0.162	19.751	174.648	-0.203	19.606	174.531	-0.262	19.910	174.365	-0.152	19.439	174.766	
7/13/2006	12:20	3:24:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.152	19.439	174.766	
7/13/2006	12:22	3:26:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.266	19.923	174.352	-0.153	19.442	174.763	
7/13/2006	12:24	3:28:00	-0.164	19.758	174.641	-0.205	19.613	174.524	-0.266	19.923	174.352	-0.153	19.442	174.763	
7/13/2006	12:26	3:30:00	-0.164	19.758	174.641	-0.206	19.616	174.521	-0.267	19.926	174.349	-0.153	19.442	174.763	
7/13/2006	12:28	3:32:00	-0.164	19.758	174.641	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.153	19.442	174.763	
7/13/2006	12:30	3:34:00	-0.164	19.758	174.641	-0.205	19.613	174.524	-0.266	19.923	174.352	-0.153	19.442	174.763	
7/13/2006	12:32	3:36:00	-0.164	19.758	174.641	-0.206	19.616	174.521	-0.266	19.923	174.352	-0.153	19.442	174.763	
7/13/2006	12:34	3:38:00	-0.164	19.758	174.641	-0.206	19.616	174.521	-0.266	19.923	174.352	-0.153	19.442	174.763	
7/13/2006	12:36	3:40:00	-0.164	19.758	174.641	-0.205	19.613	174.524	-0.267	19.926	174.349	-0.152	19.439	174.766	
7/13/2006	12:38	3:42:00	-0.164	19.758	174.641	-0.206	19.616	174.521	-0.267	19.926	174.349	-0.153	19.442	174.763	
7/13/2006	12:40	3:44:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.266	19.923	174.352	-0.152	19.439	174.766	
7/13/2006	12:42	3:46:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.153	19.442	174.763	
7/13/2006	12:44	3:48:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.153	19.442	174.763	
7/13/2006	12:46	3:50:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.152	19.439	174.766	
7/13/2006	12:48	3:52:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.152	19.439	174.766	
7/13/2006	12:50	3:54:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.152	19.439	174.766	
7/13/2006	12:52	3:56:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.152	19.439	174.766	
7/13/2006	12:54	3:58:00	-0.163	19.755	174.644	-0.206	19.616	174.521	-0.265	19.919	174.356	-0.153	19.442	174.763	
7/13/2006	12:56	4:00:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.266	19.923	174.352	-0.153	19.442	174.763	
7/13/2006	12:58	4:02:00	-0.163	19.755	174.644	-0.206	19.616	174.521	-0.265	19.919	174.356	-0.153	19.442	174.763	
7/13/2006	13:00	4:04:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.153	19.442	174.763	
7/13/2006	13:02	4:06:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.264	19.916	174.359	-0.153	19.442	174.763	

TABLE 3
Datalogger Results During MPX Pump Test,
Perma-Fix of South Georgia, Inc.

Datalogger Water Levels During Test															
		Elapsed Time	SVE-1			SVE-2			SVE-3			SVE-4			
Date	Time	(hr:min:sec)	dd (m)	ft BTOC	ft MSL	dd (m)	ft BTOC	ft MSL	dd (m)	ft BTOC	ft MSL	dd (m)	ft BTOC	ft MSL	
7/13/2006	13:04	4:08:00	-0.163	19.755	174.644	-0.207	19.619	174.518	-0.267	19.926	174.349	-0.154	19.445	174.760	
7/13/2006	13:06	4:10:00	-0.164	19.758	174.641	-0.207	19.619	174.518	-0.268	19.929	174.346	-0.155	19.449	174.756	
7/13/2006	13:08	4:12:00	-0.164	19.758	174.641	-0.206	19.616	174.521	-0.266	19.923	174.352	-0.154	19.445	174.760	
7/13/2006	13:10	4:14:00	-0.163	19.755	174.644	-0.206	19.616	174.521	-0.265	19.919	174.356	-0.154	19.445	174.760	
7/13/2006	13:12	4:16:00	-0.161	19.748	174.651	-0.206	19.616	174.521	-0.264	19.916	174.359	-0.154	19.445	174.760	
7/13/2006	13:14	4:18:00	-0.16	19.745	174.654	-0.205	19.613	174.524	-0.264	19.916	174.359	-0.153	19.442	174.763	
7/13/2006	13:16	4:20:00	-0.16	19.745	174.654	-0.206	19.616	174.521	-0.265	19.919	174.356	-0.154	19.445	174.760	
7/13/2006	13:18	4:22:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.263	19.913	174.362	-0.153	19.442	174.763	
7/13/2006	13:20	4:24:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.263	19.913	174.362	-0.152	19.439	174.766	
7/13/2006	13:22	4:26:00	-0.162	19.751	174.648	-0.204	19.609	174.528	-0.262	19.910	174.365	-0.152	19.439	174.766	
7/13/2006	13:24	4:28:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.265	19.919	174.356	-0.153	19.442	174.763	
7/13/2006	13:26	4:30:00	-0.163	19.755	174.644	-0.206	19.616	174.521	-0.267	19.926	174.349	-0.154	19.445	174.760	
7/13/2006	13:28	4:32:00	-0.165	19.761	174.638	-0.206	19.616	174.521	-0.266	19.923	174.352	-0.155	19.449	174.756	
7/13/2006	13:30	4:34:00	-0.165	19.761	174.638	-0.206	19.616	174.521	-0.266	19.923	174.352	-0.153	19.442	174.763	
7/13/2006	13:32	4:36:00	-0.162	19.751	174.648	-0.204	19.609	174.528	-0.263	19.913	174.362	-0.152	19.439	174.766	
7/13/2006	13:34	4:38:00	-0.161	19.748	174.651	-0.204	19.609	174.528	-0.262	19.910	174.365	-0.152	19.439	174.766	
7/13/2006	13:36	4:40:00	-0.161	19.748	174.651	-0.205	19.613	174.524	-0.263	19.913	174.362	-0.152	19.439	174.766	
7/13/2006	13:38	4:42:00	-0.161	19.748	174.651	-0.204	19.609	174.528	-0.263	19.913	174.362	-0.152	19.439	174.766	
7/13/2006	13:40	4:44:00	-0.161	19.748	174.651	-0.205	19.613	174.524	-0.263	19.913	174.362	-0.152	19.439	174.766	
7/13/2006	13:42	4:46:00	-0.161	19.748	174.651	-0.204	19.609	174.528	-0.262	19.910	174.365	-0.152	19.439	174.766	
7/13/2006	13:44	4:48:00	-0.161	19.748	174.651	-0.203	19.606	174.531	-0.261	19.906	174.369	-0.152	19.439	174.766	
7/13/2006	13:46	4:50:00	-0.16	19.745	174.654	-0.203	19.606	174.531	-0.26	19.903	174.372	-0.152	19.439	174.766	
7/13/2006	13:48	4:52:00	-0.159	19.742	174.657	-0.201	19.599	174.538	-0.258	19.896	174.379	-0.15	19.432	174.773	
7/13/2006	13:50	4:54:00	-0.159	19.742	174.657	-0.202	19.603	174.534	-0.26	19.903	174.372	-0.15	19.432	174.773	
7/13/2006	13:52	4:56:00	-0.16	19.745	174.654	-0.203	19.606	174.531	-0.262	19.910	174.365	-0.152	19.439	174.766	
7/13/2006	13:54	4:58:00	-0.161	19.748	174.651	-0.202	19.603	174.534	-0.26	19.903	174.372	-0.151	19.435	174.770	
7/13/2006	13:56	5:00:00	-0.159	19.742	174.657	-0.201	19.599	174.538	-0.26	19.903	174.372	-0.15	19.432	174.773	
7/13/2006	13:58	5:02:00	-0.161	19.748	174.651	-0.202	19.603	174.534	-0.26	19.903	174.372	-0.151	19.435	174.770	
7/13/2006	14:00	5:04:00	-0.16	19.745	174.654	-0.203	19.606	174.531	-0.263	19.913	174.362	-0.151	19.435	174.770	
7/13/2006	14:02	5:06:00	-0.162	19.751	174.648	-0.204	19.609	174.528	-0.264	19.916	174.359	-0.152	19.439	174.766	
7/13/2006	14:04	5:08:00	-0.161	19.748	174.651	-0.204	19.609	174.528	-0.263	19.913	174.362	-0.152	19.439	174.766	
7/13/2006	14:06	5:10:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.266	19.923	174.352	-0.154	19.445	174.760	
7/13/2006	14:08	5:12:00	-0.164	19.758	174.641	-0.206	19.616	174.521	-0.266	19.923	174.352	-0.154	19.445	174.760	
7/13/2006	14:10	5:14:00	-0.165	19.761	174.638	-0.207	19.619	174.518	-0.268	19.929	174.346	-0.156	19.452	174.753	
7/13/2006	14:12	5:16:00	-0.165	19.761	174.638	-0.206	19.616	174.521	-0.267	19.926	174.349	-0.155	19.449	174.756	
7/13/2006	14:14	5:18:00	-0.165	19.761	174.638	-0.206	19.616	174.521	-0.266	19.923	174.352	-0.154	19.445	174.760	
7/13/2006	14:16	5:20:00	-0.163	19.755	174.644	-0.206	19.616	174.521	-0.265	19.919	174.356	-0.154	19.445	174.760	
7/13/2006	14:18	5:22:00	-0.163	19.755	174.644	-0.206	19.616	174.521	-0.266	19.923	174.352	-0.154	19.445	174.760	
7/13/2006	14:20	5:24:00	-0.163	19.755	174.644	-0.206	19.616	174.521	-0.266	19.923	174.352	-0.155	19.449	174.756	
7/13/2006	14:22	5:26:00	-0.163	19.755	174.644	-0.206	19.616	174.521	-0.265	19.919	174.356	-0.154	19.445	174.760	
7/13/2006	14:24	5:28:00	-0.163	19.755	174.644	-0.207	19.619	174.518	-0.266	19.923	174.352	-0.155	19.449	174.756	
7/13/2006	14:26	5:30:00	-0.164	19.758	174.641	-0.206	19.616	174.521	-0.266	19.923	174.352	-0.155	19.449	174.756	
7/13/2006	14:28	5:32:00	-0.163	19.755	174.644	-0.206	19.616	174.521	-0.265	19.919	174.356	-0.155	19.449	174.756	
7/13/2006	14:30	5:34:00	-0.163	19.755	174.644	-0.206	19.616	174.521	-0.265	19.919	174.356	-0.155	19.449	174.756	
7/13/2006	14:32	5:36:00	-0.163	19.755	174.644	-0.206	19.616	174.521	-0.265	19.919	174.356	-0.154	19.445	174.760	
7/13/2006	14:34	5:38:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.264	19.916	174.359	-0.154	19.445	174.760	
7/13/2006	14:36	5:40:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.264	19.916	174.359	-0.154	19.445	174.760	
7/13/2006	14:38	5:42:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.264	19.916	174.359	-0.154	19.445	174.760	
7/13/2006	14:40	5:44:00	-0.163	19.755	174.644	-0.205	19.613	174.524	-0.264	19.916	174.359	-0.153	19.442	174.763	
7/13/2006	14:42	5:46:00	-0.162	19.751	174.648	-0.204	19.609	174.528	-0.262	19.910	174.365	-0.153	19.442	174.763	
7/13/2006	14:44	5:48:00	-0.162	19.751	174.648	-0.204	19.609	174.528	-0.262	19.910	174.365	-0.152	19.439	174.766	
7/13/2006	14:46	5:50:00	-0.161	19.748	174.651	-0.203	19.606	174.531	-0.259	19.900	174.375	-0.152	19.439	174.766	
7/13/2006	14:48	5:52:00	-0.161	19.748	174.651	-0.203	19.606	174.531	-0.259	19.900	174.375	-0.152	19.439	174.766	
7/13/2006	14:50	5:54:00	-0.161	19.748	174.651	-0.202	19.603	174.534	-0.259	19.900	174.375	-0.152	19.439	174.766	
7/13/2006	14:52	5:56:00	-0.16	19.745	174.654	-0.202	19.603	174.534	-0.258	19.896	174.379	-0.152	19.439	174.766	
7/13/2006	14:54	5:58:00	-0.161	19.748	174.651	-0.203	19.606	174.531	-0.26	19.903	174.372	-0.152	19.439	174.766	
7/13/2006	14:56	6:00:00	-0.16	19.745	174.654	-0.202	19.603	174.534	-0.259	19.900	174.375	-0.152	19.439	174.766	
7/13/2006	14:58	6:02:00	-0.16	19.745	174.654	-0.203	19.606	174.531	-0.26	19.903	174.372	-0.152	19.439	174.766	
7/13/2006	15:00	6:04:00	-0.161	19.748	174.651	-0.203	19.606	174.531	-0.262	19.910	174.365	-0.152	19.439	174.766	
7/13/2006	15:02	6:06:00	-0.161	19.748	174.651	-0.203	19.606	174.531	-0.259	19.900	174.375	-0.152	19.439	174.766	
7/13/2006	15:04	6:08:00	-0.161	19.748	174.651	-0.201	19.599	174.538	-0.26	19.903	174.372	-0.152	19.439	174.766	
7/13/2006	15:06	6:10:00	-0.16	19.745	174.654	-0.2	19.596	174.541	-0.258	19.896	174.379	-0.152	19.439	174.766	

TABLE 3
Datalogger Results During MPX Pump Test,
Perma-Fix of South Georgia, Inc.

Datalogger Water Levels During Test															
		Elapsed Time	SVE-1			SVE-2			SVE-3			SVE-4			
Date	Time	(hr:min:sec)	dd (m)	ft BTOC	ft MSL	dd (m)	ft BTOC	ft MSL	dd (m)	ft BTOC	ft MSL	dd (m)	ft BTOC	ft MSL	
7/13/2006	15:08	6:12:00	-0.16	19.745	174.654	-0.2	19.596	174.541	-0.258	19.896	174.379	-0.152	19.439	174.766	
7/13/2006	15:10	6:14:00	-0.159	19.742	174.657	-0.2	19.596	174.541	-0.257	19.893	174.382	-0.152	19.439	174.766	
7/13/2006	15:12	6:16:00	-0.159	19.742	174.657	-0.199	19.593	174.544	-0.257	19.893	174.382	-0.152	19.439	174.766	
7/13/2006	15:14	6:18:00	-0.158	19.738	174.661	-0.199	19.593	174.544	-0.256	19.890	174.385	-0.151	19.435	174.770	
7/13/2006	15:16	6:20:00	-0.159	19.742	174.657	-0.199	19.593	174.544	-0.256	19.890	174.385	-0.151	19.435	174.770	
7/13/2006	15:18	6:22:00	-0.158	19.738	174.661	-0.199	19.593	174.544	-0.256	19.890	174.385	-0.151	19.435	174.770	
7/13/2006	15:20	6:24:00	-0.159	19.742	174.657	-0.199	19.593	174.544	-0.256	19.890	174.385	-0.151	19.435	174.770	
7/13/2006	15:22	6:26:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.256	19.890	174.385	-0.151	19.435	174.770	
7/13/2006	15:24	6:28:00	-0.157	19.735	174.664	-0.198	19.590	174.547	-0.256	19.890	174.385	-0.15	19.432	174.773	
7/13/2006	15:26	6:30:00	-0.159	19.742	174.657	-0.199	19.593	174.544	-0.258	19.896	174.379	-0.152	19.439	174.766	
7/13/2006	15:28	6:32:00	-0.159	19.742	174.657	-0.2	19.596	174.541	-0.257	19.893	174.382	-0.152	19.439	174.766	
7/13/2006	15:30	6:34:00	-0.159	19.742	174.657	-0.199	19.593	174.544	-0.257	19.893	174.382	-0.152	19.439	174.766	
7/13/2006	15:32	6:36:00	-0.159	19.742	174.657	-0.199	19.593	174.544	-0.257	19.893	174.382	-0.152	19.439	174.766	
7/13/2006	15:34	6:38:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.255	19.887	174.388	-0.151	19.435	174.770	
7/13/2006	15:36	6:40:00	-0.157	19.735	174.664	-0.198	19.590	174.547	-0.255	19.887	174.388	-0.151	19.435	174.770	
7/13/2006	15:38	6:42:00	-0.157	19.735	174.664	-0.198	19.590	174.547	-0.254	19.883	174.392	-0.15	19.432	174.773	
7/13/2006	15:40	6:44:00	-0.157	19.735	174.664	-0.198	19.590	174.547	-0.254	19.883	174.392	-0.15	19.432	174.773	
7/13/2006	15:42	6:46:00	-0.157	19.735	174.664	-0.197	19.586	174.551	-0.254	19.883	174.392	-0.15	19.432	174.773	
7/13/2006	15:44	6:48:00	-0.156	19.732	174.667	-0.197	19.586	174.551	-0.254	19.883	174.392	-0.15	19.432	174.773	
7/13/2006	15:46	6:50:00	-0.157	19.735	174.664	-0.197	19.586	174.551	-0.253	19.880	174.395	-0.15	19.432	174.773	
7/13/2006	15:48	6:52:00	-0.156	19.732	174.667	-0.197	19.586	174.551	-0.253	19.880	174.395	-0.149	19.429	174.776	
7/13/2006	15:50	6:54:00	-0.156	19.732	174.667	-0.197	19.586	174.551	-0.253	19.880	174.395	-0.15	19.432	174.773	
7/13/2006	15:52	6:56:00	-0.156	19.732	174.667	-0.198	19.590	174.547	-0.255	19.887	174.388	-0.15	19.432	174.773	
7/13/2006	15:54	6:58:00	-0.156	19.732	174.667	-0.198	19.590	174.547	-0.255	19.887	174.388	-0.15	19.432	174.773	
7/13/2006	15:56	7:00:00	-0.157	19.735	174.664	-0.198	19.590	174.547	-0.255	19.887	174.388	-0.151	19.435	174.770	
7/13/2006	15:58	7:02:00	-0.157	19.735	174.664	-0.198	19.590	174.547	-0.255	19.887	174.388	-0.15	19.432	174.773	
7/13/2006	16:00	7:04:00	-0.157	19.735	174.664	-0.198	19.590	174.547	-0.255	19.887	174.388	-0.151	19.435	174.770	
7/13/2006	16:02	7:06:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.256	19.890	174.385	-0.151	19.435	174.770	
7/13/2006	16:04	7:08:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.256	19.890	174.385	-0.151	19.435	174.770	
7/13/2006	16:06	7:10:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.255	19.887	174.388	-0.151	19.435	174.770	
7/13/2006	16:08	7:12:00	-0.157	19.735	174.664	-0.198	19.590	174.547	-0.254	19.883	174.392	-0.149	19.429	174.776	
7/13/2006	16:10	7:14:00	-0.156	19.732	174.667	-0.197	19.586	174.551	-0.253	19.880	174.395	-0.149	19.429	174.776	
7/13/2006	16:12	7:16:00	-0.155	19.729	174.670	-0.197	19.586	174.551	-0.252	19.877	174.398	-0.148	19.426	174.779	
7/13/2006	16:14	7:18:00	-0.159	19.742	174.657	-0.202	19.603	174.534	-0.261	19.906	174.369	-0.152	19.439	174.766	
7/13/2006	16:16	7:20:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.256	19.890	174.385	-0.152	19.439	174.766	
7/13/2006	16:18	7:22:00	-0.159	19.742	174.657	-0.198	19.590	174.547	-0.255	19.887	174.388	-0.152	19.439	174.766	
7/13/2006	16:20	7:24:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.256	19.890	174.385	-0.152	19.439	174.766	
7/13/2006	16:22	7:26:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.255	19.887	174.388	-0.15	19.432	174.773	
7/13/2006	16:24	7:28:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.254	19.883	174.392	-0.151	19.435	174.770	
7/13/2006	16:26	7:30:00	-0.158	19.738	174.661	-0.199	19.593	174.544	-0.256	19.890	174.385	-0.151	19.435	174.770	
7/13/2006	16:28	7:32:00	-0.159	19.742	174.657	-0.199	19.593	174.544	-0.257	19.893	174.382	-0.151	19.435	174.770	
7/13/2006	16:30	7:34:00	-0.159	19.742	174.657	-0.199	19.593	174.544	-0.257	19.893	174.382	-0.151	19.435	174.770	
7/13/2006	16:32	7:36:00	-0.159	19.742	174.657	-0.198	19.590	174.547	-0.256	19.890	174.385	-0.151	19.435	174.770	
7/13/2006	16:34	7:38:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.254	19.883	174.392	-0.151	19.435	174.770	
7/13/2006	16:36	7:40:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.254	19.883	174.392	-0.151	19.435	174.770	
7/13/2006	16:38	7:42:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.254	19.883	174.392	-0.151	19.435	174.770	
7/13/2006	16:40	7:44:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.254	19.883	174.392	-0.151	19.435	174.770	
7/13/2006	16:42	7:46:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.254	19.883	174.392	-0.151	19.435	174.770	
7/13/2006	16:44	7:48:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.255	19.887	174.388	-0.151	19.435	174.770	
7/13/2006	16:46	7:50:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.254	19.883	174.392	-0.151	19.435	174.770	
7/13/2006	16:48	7:52:00	-0.158	19.738	174.661	-0.199	19.593	174.544	-0.256	19.890	174.385	-0.151	19.435	174.770	
7/13/2006	16:50	7:54:00	-0.159	19.742	174.657	-0.199	19.593	174.544	-0.257	19.893	174.382	-0.152	19.439	174.766	
7/13/2006	16:52	7:56:00	-0.16	19.745	174.654	-0.2	19.596	174.541	-0.257	19.893	174.382	-0.152	19.439	174.766	
7/13/2006	16:54	7:58:00	-0.159	19.742	174.657	-0.199	19.593	174.544	-0.256	19.890	174.385	-0.152	19.439	174.766	
7/13/2006	16:56	8:00:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.254	19.883	174.392	-0.151	19.435	174.770	
7/13/2006	16:58	8:02:00	-0.156	19.732	174.667	-0.198	19.590	174.547	-0.253	19.880	174.395	-0.15	19.432	174.773	
7/13/2006	17:00	8:04:00	-0.158	19.738	174.661	-0.198	19.590	174.547	-0.252	19.877	174.398	-0.15	19.432	174.773	

TABLE 4
Datalogger Results for Aquifer Recovery, Perma-Fix of South Georgia, Inc.

Datalogger Water Levels During Recovery															
		Elapsed Time From Test Start	Elapsed Time From Test End	SVE-1			SVE-2			SVE-3			SVE-4		
Date	Time	(hr:min:sec)	(hr:min:sec)	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL
7/13/2006	17:01	8:04:49	0:00:00	0	19.738	174.661	0	19.590	174.547	0	19.877	174.398	0	19.432	174.773
7/13/2006	17:01	8:04:50	0:00:01	-0.003	19.748	174.651	0	19.590	174.547	0	19.877	174.398	0	19.432	174.773
7/13/2006	17:01	8:04:52	0:00:03	-0.003	19.748	174.651	0	19.590	174.547	0.001	19.873	174.402	-0.001	19.435	174.770
7/13/2006	17:01	8:04:53	0:00:04	-0.003	19.748	174.651	0.001	19.586	174.551	0.004	19.864	174.411	-0.001	19.435	174.770
7/13/2006	17:01	8:04:55	0:00:06	-0.003	19.748	174.651	0.003	19.580	174.557	0.01	19.844	174.431	0	19.432	174.773
7/13/2006	17:01	8:04:57	0:00:08	-0.003	19.748	174.651	0.004	19.576	174.561	0.015	19.828	174.447	0	19.432	174.773
7/13/2006	17:01	8:04:58	0:00:09	-0.003	19.748	174.651	0.006	19.570	174.567	0.021	19.808	174.467	0.001	19.429	174.776
7/13/2006	17:01	8:05:00	0:00:11	-0.003	19.748	174.651	0.009	19.560	174.577	0.028	19.785	174.490	0.001	19.429	174.776
7/13/2006	17:02	8:05:01	0:00:12	-0.003	19.748	174.651	0.01	19.557	174.580	0.034	19.765	174.510	0.002	19.426	174.779
7/13/2006	17:02	8:05:03	0:00:14	-0.003	19.748	174.651	0.011	19.554	174.583	0.039	19.749	174.526	0.002	19.426	174.779
7/13/2006	17:02	8:05:05	0:00:16	-0.003	19.748	174.651	0.013	19.547	174.590	0.044	19.732	174.543	0.003	19.422	174.783
7/13/2006	17:02	8:05:06	0:00:17	-0.003	19.748	174.651	0.014	19.544	174.593	0.05	19.713	174.562	0.003	19.422	174.783
7/13/2006	17:02	8:05:08	0:00:19	-0.002	19.745	174.654	0.016	19.537	174.600	0.055	19.696	174.579	0.004	19.419	174.786
7/13/2006	17:02	8:05:09	0:00:20	-0.001	19.742	174.657	0.016	19.537	174.600	0.059	19.683	174.592	0.005	19.416	174.789
7/13/2006	17:02	8:05:11	0:00:22	0	19.738	174.661	0.017	19.534	174.603	0.063	19.670	174.605	0.005	19.416	174.789
7/13/2006	17:02	8:05:13	0:00:24	0.001	19.735	174.664	0.018	19.531	174.606	0.067	19.657	174.618	0.006	19.412	174.793
7/13/2006	17:02	8:05:14	0:00:25	0.001	19.735	174.664	0.019	19.527	174.610	0.071	19.644	174.631	0.008	19.406	174.799
7/13/2006	17:02	8:05:16	0:00:27	0.002	19.732	174.667	0.02	19.524	174.613	0.075	19.631	174.644	0.009	19.403	174.802
7/13/2006	17:02	8:05:17	0:00:28	0.003	19.729	174.670	0.021	19.521	174.616	0.079	19.618	174.657	0.009	19.403	174.802
7/13/2006	17:02	8:05:19	0:00:30	0.003	19.729	174.670	0.022	19.517	174.620	0.083	19.604	174.671	0.01	19.399	174.806
7/13/2006	17:02	8:05:21	0:00:32	0.004	19.725	174.674	0.023	19.514	174.623	0.086	19.595	174.680	0.01	19.399	174.806
7/13/2006	17:02	8:05:22	0:00:33	0.005	19.722	174.677	0.024	19.511	174.626	0.09	19.581	174.694	0.011	19.396	174.809
7/13/2006	17:02	8:05:24	0:00:35	0.007	19.715	174.684	0.024	19.511	174.626	0.092	19.575	174.700	0.012	19.393	174.812
7/13/2006	17:02	8:05:26	0:00:37	0.007	19.715	174.684	0.024	19.511	174.626	0.096	19.562	174.713	0.013	19.389	174.816
7/13/2006	17:02	8:05:28	0:00:39	0.009	19.709	174.690	0.025	19.508	174.629	0.099	19.552	174.723	0.014	19.386	174.819
7/13/2006	17:02	8:05:30	0:00:41	0.01	19.706	174.693	0.025	19.508	174.629	0.103	19.539	174.736	0.017	19.376	174.829
7/13/2006	17:02	8:05:32	0:00:43	0.01	19.706	174.693	0.026	19.504	174.633	0.106	19.529	174.746	0.017	19.376	174.829
7/13/2006	17:02	8:05:35	0:00:46	0.015	19.689	174.710	0.027	19.501	174.636	0.109	19.519	174.756	0.018	19.373	174.832
7/13/2006	17:02	8:05:37	0:00:48	0.017	19.683	174.716	0.027	19.501	174.636	0.112	19.509	174.766	0.02	19.367	174.838
7/13/2006	17:02	8:05:40	0:00:51	0.016	19.686	174.713	0.028	19.498	174.639	0.113	19.506	174.769	0.021	19.363	174.842
7/13/2006	17:02	8:05:43	0:00:54	0.021	19.669	174.730	0.029	19.494	174.643	0.118	19.490	174.785	0.023	19.357	174.848
7/13/2006	17:02	8:05:46	0:00:57	0.024	19.660	174.739	0.03	19.491	174.646	0.12	19.483	174.792	0.024	19.353	174.852
7/13/2006	17:02	8:05:49	0:01:00	0.026	19.653	174.746	0.03	19.491	174.646	0.123	19.473	174.802	0.025	19.350	174.855
7/13/2006	17:02	8:05:52	0:01:03	0.027	19.650	174.749	0.03	19.491	174.646	0.126	19.463	174.812	0.026	19.347	174.858
7/13/2006	17:02	8:05:56	0:01:07	0.029	19.643	174.756	0.031	19.488	174.649	0.129	19.454	174.821	0.028	19.340	174.865
7/13/2006	17:02	8:06:00	0:01:11	0.03	19.640	174.759	0.032	19.485	174.652	0.132	19.444	174.831	0.03	19.334	174.871
7/13/2006	17:03	8:06:04	0:01:15	0.03	19.640	174.759	0.047	19.435	174.702	0.134	19.437	174.838	0.031	19.330	174.875
7/13/2006	17:03	8:06:08	0:01:19	0.031	19.637	174.762	0.048	19.432	174.705	0.136	19.431	174.844	0.032	19.327	174.878
7/13/2006	17:03	8:06:12	0:01:23	0.033	19.630	174.769	0.048	19.432	174.705	0.139	19.421	174.854	0.034	19.321	174.884
7/13/2006	17:03	8:06:17	0:01:28	0.034	19.627	174.772	0.049	19.429	174.708	0.141	19.414	174.861	0.036	19.314	174.891
7/13/2006	17:03	8:06:22	0:01:33	0.037	19.617	174.782	0.049	19.429	174.708	0.143	19.408	174.867	0.038	19.307	174.898
7/13/2006	17:03	8:06:27	0:01:38	0.038	19.614	174.785	0.049	19.429	174.708	0.146	19.398	174.877	0.04	19.301	174.904
7/13/2006	17:03	8:06:33	0:01:44	0.039	19.610	174.789	0.05	19.426	174.711	0.148	19.391	174.884	0.042	19.294	174.911
7/13/2006	17:03	8:06:39	0:01:50	0.041	19.604	174.795	0.05	19.426	174.711	0.15	19.385	174.890	0.044	19.288	174.917
7/13/2006	17:03	8:06:45	0:01:56	0.043	19.597	174.802	0.066	19.373	174.764	0.152	19.378	174.897	0.045	19.284	174.921
7/13/2006	17:03	8:06:52	0:02:03	0.044	19.594	174.805	0.066	19.373	174.764	0.154	19.372	174.903	0.046	19.281	174.924
7/13/2006	17:03	8:06:59	0:02:10	0.047	19.584	174.815	0.067	19.370	174.767	0.157	19.362	174.913	0.049	19.271	174.934
7/13/2006	17:04	8:07:06	0:02:17	0.049	19.578	174.821	0.067	19.370	174.767	0.159	19.355	174.920	0.051	19.265	174.940
7/13/2006	17:04	8:07:14	0:02:25	0.05	19.574	174.825	0.068	19.367	174.770	0.161	19.349	174.926	0.052	19.262	174.943
7/13/2006	17:04	8:07:23	0:02:34	0.053	19.564	174.835	0.068	19.367	174.770	0.164	19.339	174.936	0.054	19.255	174.950
7/13/2006	17:04	8:07:32	0:02:43	0.062	19.535	174.864	0.068	19.367	174.770	0.166	19.332	174.943	0.057	19.245	174.960
7/13/2006	17:04	8:07:41	0:02:52	0.064	19.528	174.871	0.069	19.363	174.774	0.169	19.322	174.953	0.059	19.239	174.966
7/13/2006	17:04	8:07:51	0:03:02	0.066	19.522	174.877	0.069	19.363	174.774	0.171	19.316	174.959	0.06	19.235	174.970
7/13/2006	17:05	8:08:02	0:03:13	0.068	19.515	174.884	0.085	19.311	174.826	0.174	19.306	174.969	0.063	19.225	174.980
7/13/2006	17:05	8:08:13	0:03:24	0.07	19.509	174.890	0.086	19.307	174.830	0.175	19.303	174.972	0.064	19.222	174.983
7/13/2006	17:05	8:08:25	0:03:36	0.073	19.499	174.900	0.086	19.307	174.830	0.178	19.293	174.982	0.067	19.212	174.993
7/13/2006	17:05	8:08:38	0:03:49	0.077	19.486	174.913	0.087	19.304	174.833	0.18	19.286	174.989	0.069	19.206	174.999
7/13/2006	17:05	8:08:51	0:04:02	0.079	19.479	174.920	0.087	19.304	174.833	0.182	19.280	174.995	0.071	19.199	175.006
7/13/2006	17:06	8:09:05	0:04:16	0.082	19.469	174.930	0.087	19.304	174.833	0.184	19.273	175.002	0.073	19.193	175.012
7/13/2006	17:06	8:09:20	0:04:31	0.084	19.463	174.936	0.088	19.301	174.836	0.187	19.263	175.012	0.075	19.186	175.019
7/13/2006	17:06	8:09:36	0:04:47	0.086	19.456	174.943	0.089	19.298	174.839	0.189	19.257	175.018	0.078	19.176	175.029
7/13/2006	17:06	8:09:53	0:05:04	0.084	19.463	174.936	0.089	19.298	174.839	0.191	19.250	175.025	0.08	19.170	175.035
7/13/2006	17:07	8:10:11	0:05:22	0.086	19.456	174.943	0.089	19.298	174.839	0.194	19.240	175.035	0.083	19.160	175.045
7/13/2006	17:07	8:10:30	0:05:41	0.089	19.446	174.953	0.106	19.242	174.895	0.195	19.237	175.038	0.084	19.157	175.048
7/13/2006	17:07	8:10:49	0:06:00	0.09	19.443	174.956	0.106	19.242	174.895	0.197	19.230	175.045	0.086	19.150	175.055
7/13/2006	17:08	8:11:11	0:06:22	0.094	19.430	174.969	0.107	19.239	174.898	0.199	19.224	175.051	0.089	19.140	175.065
7/13/2006	17:08	8:11:33	0:06:44	0.096	19.423	174.976	0.107	19.239	174.898	0.201	19.217	175.058	0.091	19.134	175.071
7/13/2006	17:08	8:11:57	0:07:08	0.098	19.417	174.982	0.108	19.235	174.902	0.202	19.214	175.061	0.092	19.130	175.075

TABLE 4
Datalogger Results for Aquifer Recovery, Perma-Fix of South Georgia, Inc.

Datalogger Water Levels During Recovery															
		Elapsed Time From Test Start	Elapsed Time From Test End	SVE-1			SVE-2			SVE-3			SVE-4		
Date	Time	(hr:min:sec)	(hr:min:sec)	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL
7/13/2006	17:09	8:12:22	0:07:33	0.101	19.407	174.992	0.109	19.232	174.905	0.204	19.207	175.068	0.094	19.124	175.081
7/13/2006	17:09	8:12:49	0:08:00	0.103	19.400	174.999	0.109	19.232	174.905	0.206	19.201	175.074	0.097	19.114	175.091
7/13/2006	17:10	8:13:17	0:08:28	0.105	19.394	175.005	0.109	19.232	174.905	0.207	19.198	175.077	0.098	19.111	175.094
7/13/2006	17:10	8:13:47	0:08:58	0.107	19.387	175.012	0.11	19.229	174.908	0.209	19.191	175.084	0.099	19.107	175.098
7/13/2006	17:11	8:14:19	0:09:30	0.109	19.381	175.018	0.11	19.229	174.908	0.21	19.188	175.087	0.101	19.101	175.104
7/13/2006	17:11	8:14:52	0:10:03	0.111	19.374	175.025	0.111	19.225	174.912	0.212	19.181	175.094	0.103	19.094	175.111
7/13/2006	17:12	8:15:28	0:10:39	0.113	19.368	175.031	0.111	19.225	174.912	0.213	19.178	175.097	0.105	19.088	175.117
7/13/2006	17:13	8:16:05	0:11:16	0.115	19.361	175.038	0.111	19.225	174.912	0.215	19.171	175.104	0.107	19.081	175.124
7/13/2006	17:13	8:16:45	0:11:56	0.117	19.355	175.044	0.111	19.225	174.912	0.217	19.165	175.110	0.11	19.071	175.134
7/13/2006	17:14	8:17:27	0:12:38	0.118	19.351	175.048	0.128	19.170	174.967	0.218	19.162	175.113	0.111	19.068	175.137
7/13/2006	17:15	8:18:12	0:13:23	0.12	19.345	175.054	0.129	19.166	174.971	0.22	19.155	175.120	0.112	19.065	175.140
7/13/2006	17:15	8:19:00	0:14:11	0.122	19.338	175.061	0.13	19.163	174.974	0.222	19.148	175.127	0.114	19.058	175.147
7/13/2006	17:16	8:19:50	0:15:01	0.123	19.335	175.064	0.13	19.163	174.974	0.222	19.148	175.127	0.115	19.055	175.150
7/13/2006	17:17	8:20:43	0:15:54	0.124	19.332	175.067	0.131	19.160	174.977	0.223	19.145	175.130	0.117	19.048	175.157
7/13/2006	17:18	8:21:39	0:16:50	0.126	19.325	175.074	0.131	19.160	174.977	0.225	19.139	175.136	0.118	19.045	175.160
7/13/2006	17:19	8:22:39	0:17:50	0.128	19.318	175.081	0.132	19.157	174.980	0.226	19.135	175.140	0.119	19.042	175.163
7/13/2006	17:20	8:23:42	0:18:53	0.129	19.315	175.084	0.133	19.153	174.984	0.228	19.129	175.146	0.121	19.035	175.170
7/13/2006	17:21	8:24:49	0:20:00	0.13	19.312	175.087	0.134	19.150	174.987	0.228	19.129	175.146	0.123	19.029	175.176
7/13/2006	17:22	8:26:00	0:21:11	0.132	19.305	175.094	0.135	19.147	174.990	0.229	19.125	175.150	0.125	19.022	175.183
7/13/2006	17:24	8:27:15	0:22:26	0.134	19.299	175.100	0.136	19.143	174.994	0.231	19.119	175.156	0.125	19.022	175.183
7/13/2006	17:25	8:28:35	0:23:46	0.135	19.295	175.104	0.137	19.140	174.997	0.232	19.116	175.159	0.126	19.019	175.186
7/13/2006	17:26	8:29:59	0:25:10	0.136	19.292	175.107	0.138	19.137	175.000	0.233	19.112	175.163	0.127	19.015	175.190
7/13/2006	17:28	8:31:28	0:26:39	0.137	19.289	175.110	0.138	19.137	175.000	0.234	19.109	175.166	0.129	19.009	175.196
7/13/2006	17:30	8:33:03	0:28:14	0.139	19.282	175.117	0.139	19.134	175.003	0.235	19.106	175.169	0.13	19.006	175.199
7/13/2006	17:31	8:34:43	0:29:54	0.14	19.279	175.120	0.14	19.130	175.007	0.235	19.106	175.169	0.132	18.999	175.206
7/13/2006	17:33	8:36:29	0:31:40	0.143	19.269	175.130	0.141	19.127	175.010	0.237	19.099	175.176	0.132	18.999	175.206
7/13/2006	17:35	8:38:22	0:33:33	0.144	19.266	175.133	0.142	19.124	175.013	0.238	19.096	175.179	0.133	18.996	175.209
7/13/2006	17:37	8:40:21	0:35:32	0.145	19.263	175.136	0.144	19.117	175.020	0.239	19.093	175.182	0.135	18.989	175.216
7/13/2006	17:39	8:42:27	0:37:38	0.146	19.259	175.140	0.144	19.117	175.020	0.24	19.089	175.186	0.136	18.986	175.219
7/13/2006	17:41	8:44:41	0:39:52	0.147	19.256	175.143	0.145	19.114	175.023	0.24	19.089	175.186	0.136	18.986	175.219
7/13/2006	17:44	8:47:02	0:42:13	0.147	19.256	175.143	0.145	19.114	175.023	0.241	19.086	175.189	0.137	18.983	175.222
7/13/2006	17:46	8:49:32	0:44:43	0.149	19.250	175.149	0.146	19.111	175.026	0.242	19.083	175.192	0.138	18.979	175.226
7/13/2006	17:49	8:52:11	0:47:22	0.15	19.246	175.153	0.148	19.104	175.033	0.243	19.080	175.195	0.138	18.979	175.226
7/13/2006	17:51	8:54:59	0:50:10	0.151	19.243	175.156	0.149	19.101	175.036	0.244	19.076	175.199	0.14	18.973	175.232
7/13/2006	17:54	8:57:57	0:53:08	0.152	19.240	175.159	0.151	19.094	175.043	0.244	19.076	175.199	0.141	18.970	175.235
7/13/2006	17:58	9:01:06	0:56:17	0.153	19.236	175.163	0.152	19.091	175.046	0.245	19.073	175.202	0.142	18.966	175.239
7/13/2006	18:01	9:04:26	0:59:37	0.154	19.233	175.166	0.154	19.084	175.053	0.246	19.070	175.205	0.142	18.966	175.239
7/13/2006	18:04	9:07:58	1:03:09	0.155	19.230	175.169	0.156	19.078	175.059	0.246	19.070	175.205	0.143	18.963	175.242
7/13/2006	18:08	9:11:42	1:06:53	0.156	19.227	175.172	0.158	19.071	175.066	0.247	19.066	175.209	0.144	18.960	175.245
7/13/2006	18:12	9:15:40	1:10:51	0.156	19.227	175.172	0.16	19.065	175.072	0.247	19.066	175.209	0.144	18.960	175.245
7/13/2006	18:16	9:19:51	1:15:02	0.157	19.223	175.176	0.163	19.055	175.082	0.249	19.060	175.215	0.145	18.956	175.249
7/13/2006	18:21	9:24:18	1:19:29	0.158	19.220	175.179	0.166	19.045	175.092	0.249	19.060	175.215	0.146	18.953	175.252
7/13/2006	18:25	9:29:00	1:24:11	0.159	19.217	175.182	0.17	19.032	175.105	0.249	19.060	175.215	0.147	18.950	175.255
7/13/2006	18:30	9:33:59	1:29:10	0.16	19.213	175.186	0.174	19.019	175.118	0.25	19.057	175.218	0.148	18.947	175.258
7/13/2006	18:35	9:38:59	1:34:10	0.16	19.213	175.186	0.176	19.012	175.125	0.25	19.057	175.218	0.148	18.947	175.258
7/13/2006	18:40	9:43:59	1:39:10	0.161	19.210	175.189	0.179	19.002	175.135	0.251	19.053	175.222	0.149	18.943	175.262
7/13/2006	18:45	9:48:59	1:44:10	0.162	19.207	175.192	0.181	18.996	175.141	0.251	19.053	175.222	0.149	18.943	175.262
7/13/2006	18:50	9:53:59	1:49:10	0.162	19.207	175.192	0.184	18.986	175.151	0.251	19.053	175.222	0.149	18.943	175.262
7/13/2006	18:55	9:58:59	1:54:10	0.162	19.207	175.192	0.189	18.970	175.167	0.251	19.053	175.222	0.149	18.943	175.262
7/13/2006	19:00	10:03:59	1:59:10	0.162	19.207	175.192	0.193	18.956	175.181	0.251	19.053	175.222	0.149	18.943	175.262
7/13/2006	19:05	10:08:59	2:04:10	0.162	19.207	175.192	0.195	18.950	175.187	0.251	19.053	175.222	0.15	18.940	175.265
7/13/2006	19:10	10:13:59	2:09:10	0.162	19.207	175.192	0.195	18.950	175.187	0.251	19.053	175.222	0.15	18.940	175.265
7/13/2006	19:15	10:18:59	2:14:10	0.161	19.210	175.189	0.195	18.950	175.187	0.25	19.057	175.218	0.149	18.943	175.262
7/13/2006	19:20	10:23:59	2:19:10	0.162	19.207	175.192	0.195	18.950	175.187	0.25	19.057	175.218	0.149	18.943	175.262
7/13/2006	19:25	10:28:59	2:24:10	0.162	19.207	175.192	0.196	18.947	175.190	0.25	19.057	175.218	0.149	18.943	175.262
7/13/2006	19:30	10:33:59	2:29:10	0.162	19.207	175.192	0.196	18.947	175.190	0.25	19.057	175.218	0.149	18.943	175.262
7/13/2006	19:35	10:38:59	2:34:10	0.162	19.207	175.192	0.196	18.947	175.190	0.25	19.057	175.218	0.15	18.940	175.265
7/13/2006	19:40	10:43:59	2:39:10	0.162	19.207	175.192	0.196	18.947	175.190	0.25	19.057	175.218	0.151	18.937	175.268
7/13/2006	19:45	10:48:59	2:44:10	0.162	19.207	175.192	0.196	18.947	175.190	0.25	19.057	175.218	0.151	18.937	175.268
7/13/2006	19:50	10:53:59	2:49:10	0.161	19.210	175.189	0.196	18.947	175.190	0.25	19.057	175.218	0.15	18.940	175.265
7/13/2006	19:55	10:58:59	2:54:10	0.163	19.204	175.195	0.196	18.947	175.190	0.249	19.060	175.215	0.15	18.940	175.265
7/13/2006	20:00	11:03:59	2:59:10	0.163	19.204	175.195	0.196	18.947	175.190	0.251	19.053	175.222	0.151	18.937	175.268
7/13/2006	20:05	11:08:59	3:04:10	0.163	19.204	175.195	0.195	18.950	175.187	0.251	19.053	175.222	0.15	18.940	175.265
7/13/2006	20:10	11:13:59	3:09:10	0.163	19.204	175.195	0.195	18.950	175.187	0.249	19.060	175.215	0.15	18.940	175.265
7/13/2006	20:15	11:18:59	3:14:10	0.163	19.204	175.195	0.195	18.950	175.187	0.25	19.057	175.218	0.15	18.940	175.265
7/13/2006	20:20	11:23:59	3:19:10	0.163	19.204	175.195	0.195	18.950	175.187	0.249	19.060	175.215	0.15	18.940	175.265
7/13/2006	20:25	11:28:59	3:24:10	0.163	19.204	175.195	0.195	18.950	175.187	0.249	19.060	175.215	0.15	18.940	175.265
7/13/2006	20:30	11:33:59	3:29:10	0.163	19.204	175.195	0.196	18.947	175.190	0.249	19.060	175.215	0.15	18.940	175.265

TABLE 4
Datalogger Results for Aquifer Recovery, Perma-Fix of South Georgia, Inc.

Datalogger Water Levels During Recovery															
		Elapsed Time From Test Start	Elapsed Time From Test End	SVE-1			SVE-2			SVE-3			SVE-4		
Date	Time	(hr:min:sec)	(hr:min:sec)	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL
7/13/2006	20:35	11:38:59	3:34:10	0.163	19.204	175.195	0.196	18.947	175.190	0.25	19.057	175.218	0.15	18.940	175.265
7/13/2006	20:40	11:43:59	3:39:10	0.163	19.204	175.195	0.196	18.947	175.190	0.249	19.060	175.215	0.15	18.940	175.265
7/13/2006	20:45	11:48:59	3:44:10	0.163	19.204	175.195	0.195	18.950	175.187	0.25	19.057	175.218	0.15	18.940	175.265
7/13/2006	20:50	11:53:59	3:49:10	0.163	19.204	175.195	0.195	18.950	175.187	0.249	19.060	175.215	0.15	18.940	175.265
7/13/2006	20:55	11:58:59	3:54:10	0.163	19.204	175.195	0.195	18.950	175.187	0.25	19.057	175.218	0.15	18.940	175.265
7/13/2006	21:00	12:03:59	3:59:10	0.163	19.204	175.195	0.195	18.950	175.187	0.249	19.060	175.215	0.15	18.940	175.265
7/13/2006	21:05	12:08:59	4:04:10	0.162	19.207	175.192	0.194	18.953	175.184	0.249	19.060	175.215	0.149	18.943	175.262
7/13/2006	21:10	12:13:59	4:09:10	0.162	19.207	175.192	0.194	18.953	175.184	0.248	19.063	175.212	0.149	18.943	175.262
7/13/2006	21:15	12:18:59	4:14:10	0.162	19.207	175.192	0.193	18.956	175.181	0.248	19.063	175.212	0.148	18.947	175.258
7/13/2006	21:20	12:23:59	4:19:10	0.161	19.210	175.189	0.192	18.960	175.177	0.247	19.066	175.209	0.147	18.950	175.255
7/13/2006	21:25	12:28:59	4:24:10	0.161	19.210	175.189	0.192	18.960	175.177	0.247	19.066	175.209	0.148	18.947	175.258
7/13/2006	21:30	12:33:59	4:29:10	0.161	19.210	175.189	0.193	18.956	175.181	0.248	19.063	175.212	0.148	18.947	175.258
7/13/2006	21:35	12:38:59	4:34:10	0.162	19.207	175.192	0.193	18.956	175.181	0.247	19.066	175.209	0.148	18.947	175.258
7/13/2006	21:40	12:43:59	4:39:10	0.16	19.213	175.186	0.192	18.960	175.177	0.247	19.066	175.209	0.148	18.947	175.258
7/13/2006	21:45	12:48:59	4:44:10	0.16	19.213	175.186	0.192	18.960	175.177	0.247	19.066	175.209	0.147	18.950	175.255
7/13/2006	21:50	12:53:59	4:49:10	0.161	19.210	175.189	0.192	18.960	175.177	0.247	19.066	175.209	0.148	18.947	175.258
7/13/2006	21:55	12:58:59	4:54:10	0.159	19.217	175.182	0.192	18.960	175.177	0.246	19.070	175.205	0.147	18.950	175.255
7/13/2006	22:00	13:03:59	4:59:10	0.159	19.217	175.182	0.192	18.960	175.177	0.245	19.073	175.202	0.146	18.953	175.252
7/13/2006	22:05	13:08:59	5:04:10	0.159	19.217	175.182	0.192	18.960	175.177	0.245	19.073	175.202	0.145	18.956	175.249
7/13/2006	22:10	13:13:59	5:09:10	0.159	19.217	175.182	0.191	18.963	175.174	0.246	19.070	175.205	0.146	18.953	175.252
7/13/2006	22:15	13:18:59	5:14:10	0.159	19.217	175.182	0.19	18.966	175.171	0.245	19.073	175.202	0.145	18.956	175.249
7/13/2006	22:20	13:23:59	5:19:10	0.159	19.217	175.182	0.19	18.966	175.171	0.245	19.073	175.202	0.145	18.956	175.249
7/13/2006	22:25	13:28:59	5:24:10	0.158	19.220	175.179	0.19	18.966	175.171	0.245	19.073	175.202	0.145	18.956	175.249
7/13/2006	22:30	13:33:59	5:29:10	0.158	19.220	175.179	0.19	18.966	175.171	0.245	19.073	175.202	0.145	18.956	175.249
7/13/2006	22:35	13:38:59	5:34:10	0.159	19.217	175.182	0.19	18.966	175.171	0.244	19.076	175.199	0.145	18.956	175.249
7/13/2006	22:40	13:43:59	5:39:10	0.158	19.220	175.179	0.19	18.966	175.171	0.244	19.076	175.199	0.145	18.956	175.249
7/13/2006	22:45	13:48:59	5:44:10	0.158	19.220	175.179	0.192	18.960	175.177	0.244	19.076	175.199	0.146	18.953	175.252
7/13/2006	22:50	13:53:59	5:49:10	0.158	19.220	175.179	0.19	18.966	175.171	0.244	19.076	175.199	0.146	18.953	175.252
7/13/2006	22:55	13:58:59	5:54:10	0.158	19.220	175.179	0.19	18.966	175.171	0.244	19.076	175.199	0.146	18.953	175.252
7/13/2006	23:00	14:03:59	5:59:10	0.158	19.220	175.179	0.189	18.970	175.167	0.243	19.080	175.195	0.145	18.956	175.249
7/13/2006	23:05	14:08:59	6:04:10	0.157	19.223	175.176	0.189	18.970	175.167	0.243	19.080	175.195	0.144	18.960	175.245
7/13/2006	23:10	14:13:59	6:09:10	0.158	19.220	175.179	0.19	18.966	175.171	0.244	19.076	175.199	0.145	18.956	175.249
7/13/2006	23:15	14:18:59	6:14:10	0.158	19.220	175.179	0.191	18.963	175.174	0.244	19.076	175.199	0.145	18.956	175.249
7/13/2006	23:20	14:23:59	6:19:10	0.158	19.220	175.179	0.191	18.963	175.174	0.244	19.076	175.199	0.145	18.956	175.249
7/13/2006	23:25	14:28:59	6:24:10	0.159	19.217	175.182	0.191	18.963	175.174	0.244	19.076	175.199	0.145	18.956	175.249
7/13/2006	23:30	14:33:59	6:29:10	0.158	19.220	175.179	0.19	18.966	175.171	0.245	19.073	175.202	0.145	18.956	175.249
7/13/2006	23:35	14:38:59	6:34:10	0.158	19.220	175.179	0.19	18.966	175.171	0.244	19.076	175.199	0.145	18.956	175.249
7/13/2006	23:40	14:43:59	6:39:10	0.159	19.217	175.182	0.189	18.970	175.167	0.245	19.073	175.202	0.146	18.953	175.252
7/13/2006	23:45	14:48:59	6:44:10	0.159	19.217	175.182	0.189	18.970	175.167	0.244	19.076	175.199	0.145	18.956	175.249
7/13/2006	23:50	14:53:59	6:49:10	0.158	19.220	175.179	0.19	18.966	175.171	0.244	19.076	175.199	0.145	18.956	175.249
7/13/2006	23:55	14:58:59	6:54:10	0.159	19.217	175.182	0.19	18.966	175.171	0.245	19.073	175.202	0.145	18.956	175.249
7/14/2006	0:00	15:03:59	6:59:10	0.159	19.217	175.182	0.191	18.963	175.174	0.245	19.073	175.202	0.146	18.953	175.252
7/14/2006	0:05	15:08:59	7:04:10	0.159	19.217	175.182	0.191	18.963	175.174	0.245	19.073	175.202	0.147	18.950	175.255
7/14/2006	0:10	15:13:59	7:09:10	0.158	19.220	175.179	0.191	18.963	175.174	0.244	19.076	175.199	0.146	18.953	175.252
7/14/2006	0:15	15:18:59	7:14:10	0.159	19.217	175.182	0.191	18.963	175.174	0.244	19.076	175.199	0.146	18.953	175.252
7/14/2006	0:20	15:23:59	7:19:10	0.158	19.220	175.179	0.191	18.963	175.174	0.244	19.076	175.199	0.145	18.956	175.249
7/14/2006	0:25	15:28:59	7:24:10	0.158	19.220	175.179	0.19	18.966	175.171	0.243	19.080	175.195	0.146	18.953	175.252
7/14/2006	0:30	15:33:59	7:29:10	0.158	19.220	175.179	0.191	18.963	175.174	0.244	19.076	175.199	0.146	18.953	175.252
7/14/2006	0:35	15:38:59	7:34:10	0.159	19.217	175.182	0.191	18.963	175.174	0.244	19.076	175.199	0.146	18.953	175.252
7/14/2006	0:40	15:43:59	7:39:10	0.158	19.220	175.179	0.191	18.963	175.174	0.244	19.076	175.199	0.146	18.953	175.252
7/14/2006	0:45	15:48:59	7:44:10	0.159	19.217	175.182	0.191	18.963	175.174	0.244	19.076	175.199	0.146	18.953	175.252
7/14/2006	0:50	15:53:59	7:49:10	0.158	19.220	175.179	0.191	18.963	175.174	0.244	19.076	175.199	0.146	18.953	175.252
7/14/2006	0:55	15:58:59	7:54:10	0.159	19.217	175.182	0.191	18.963	175.174	0.244	19.076	175.199	0.145	18.956	175.249
7/14/2006	1:00	16:03:59	7:59:10	0.16	19.213	175.186	0.192	18.960	175.177	0.245	19.073	175.202	0.148	18.947	175.258
7/14/2006	1:05	16:08:59	8:04:10	0.16	19.213	175.186	0.192	18.960	175.177	0.245	19.073	175.202	0.146	18.953	175.252
7/14/2006	1:10	16:13:59	8:09:10	0.159	19.217	175.182	0.192	18.960	175.177	0.245	19.073	175.202	0.146	18.953	175.252
7/14/2006	1:15	16:18:59	8:14:10	0.159	19.217	175.182	0.192	18.960	175.177	0.245	19.073	175.202	0.146	18.953	175.252
7/14/2006	1:20	16:23:59	8:19:10	0.16	19.213	175.186	0.192	18.960	175.177	0.245	19.073	175.202	0.146	18.953	175.252
7/14/2006	1:25	16:28:59	8:24:10	0.16	19.213	175.186	0.192	18.960	175.177	0.246	19.070	175.205	0.147	18.950	175.255
7/14/2006	1:30	16:33:59	8:29:10	0.161	19.210	175.189	0.191	18.963	175.174	0.245	19.073	175.202	0.147	18.950	175.255
7/14/2006	1:35	16:38:59	8:34:10	0.16	19.213	175.186	0.191	18.963	175.174	0.245	19.073	175.202	0.147	18.950	175.255
7/14/2006	1:40	16:43:59	8:39:10	0.16	19.213	175.186	0.191	18.963	175.174	0.245	19.073	175.202	0.147	18.950	175.255
7/14/2006	1:45	16:48:59	8:44:10	0.16	19.213	175.186	0.19	18.966	175.171	0.245	19.073	175.202	0.146	18.953	175.252
7/14/2006	1:50	16:53:59	8:49:10	0.161	19.210	175.189	0.192	18.960	175.177	0.247	19.066	175.209	0.148	18.947	175.258
7/14/2006	1:55	16:58:59	8:54:10	0.161	19.210	175.189	0.192	18.960	175.177	0.246	19.070	175.205	0.147	18.950	175.255
7/14/2006	2:00	17:03:59	8:59:10	0.161	19.210	175.189	0.192	18.960	175.177	0.246	19.070	175.205	0.147	18.950	175.255
7/14/2006	2:05	17:08:59	9:04:10	0.161	19.210	175.189	0.192	18.960	175.177	0.247	19.066	175.209	0.148	18.947	175.258
7/14/2006	2:10	17:13:59	9:09:10	0.161	19.210	175.189	0.192	18.960	175.177	0.246	19.070	175.205	0.148	18.947	175.258

TABLE 4
Datalogger Results for Aquifer Recovery, Perma-Fix of South Georgia, Inc.

Datalogger Water Levels During Recovery															
		Elapsed Time From Test Start	Elapsed Time From Test End	SVE-1			SVE-2			SVE-3			SVE-4		
Date	Time	(hr:min:sec)	(hr:min:sec)	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL
7/14/2006	2:15	17:18:59	9:14:10	0.161	19.210	175.189	0.192	18.960	175.177	0.246	19.070	175.205	0.147	18.950	175.255
7/14/2006	2:20	17:23:59	9:19:10	0.162	19.207	175.192	0.192	18.960	175.177	0.247	19.066	175.209	0.148	18.947	175.258
7/14/2006	2:25	17:28:59	9:24:10	0.161	19.210	175.189	0.192	18.960	175.177	0.245	19.073	175.202	0.148	18.947	175.258
7/14/2006	2:30	17:33:59	9:29:10	0.161	19.210	175.189	0.192	18.960	175.177	0.246	19.070	175.205	0.148	18.947	175.258
7/14/2006	2:35	17:38:59	9:34:10	0.16	19.213	175.186	0.192	18.960	175.177	0.246	19.070	175.205	0.148	18.947	175.258
7/14/2006	2:40	17:43:59	9:39:10	0.16	19.213	175.186	0.192	18.960	175.177	0.246	19.070	175.205	0.148	18.947	175.258
7/14/2006	2:45	17:48:59	9:44:10	0.16	19.213	175.186	0.192	18.960	175.177	0.246	19.070	175.205	0.148	18.947	175.258
7/14/2006	2:50	17:53:59	9:49:10	0.16	19.213	175.186	0.192	18.960	175.177	0.246	19.070	175.205	0.147	18.950	175.255
7/14/2006	2:55	17:58:59	9:54:10	0.161	19.210	175.189	0.192	18.960	175.177	0.246	19.070	175.205	0.148	18.947	175.258
7/14/2006	3:00	18:03:59	9:59:10	0.162	19.207	175.192	0.193	18.956	175.181	0.247	19.066	175.209	0.149	18.943	175.262
7/14/2006	3:05	18:08:59	10:04:10	0.161	19.210	175.189	0.192	18.960	175.177	0.246	19.070	175.205	0.149	18.943	175.262
7/14/2006	3:10	18:13:59	10:09:10	0.161	19.210	175.189	0.192	18.960	175.177	0.246	19.070	175.205	0.149	18.943	175.262
7/14/2006	3:15	18:18:59	10:14:10	0.161	19.210	175.189	0.192	18.960	175.177	0.247	19.066	175.209	0.149	18.943	175.262
7/14/2006	3:20	18:23:59	10:19:10	0.161	19.210	175.189	0.192	18.960	175.177	0.246	19.070	175.205	0.148	18.947	175.258
7/14/2006	3:25	18:28:59	10:24:10	0.16	19.213	175.186	0.192	18.960	175.177	0.246	19.070	175.205	0.147	18.950	175.255
7/14/2006	3:30	18:33:59	10:29:10	0.16	19.213	175.186	0.192	18.960	175.177	0.246	19.070	175.205	0.148	18.947	175.258
7/14/2006	3:35	18:38:59	10:34:10	0.16	19.213	175.186	0.192	18.960	175.177	0.246	19.070	175.205	0.148	18.947	175.258
7/14/2006	3:40	18:43:59	10:39:10	0.16	19.213	175.186	0.192	18.960	175.177	0.245	19.073	175.202	0.148	18.947	175.258
7/14/2006	3:45	18:48:59	10:44:10	0.161	19.210	175.189	0.192	18.960	175.177	0.245	19.073	175.202	0.148	18.947	175.258
7/14/2006	3:50	18:53:59	10:49:10	0.161	19.210	175.189	0.192	18.960	175.177	0.245	19.073	175.202	0.147	18.950	175.255
7/14/2006	3:55	18:58:59	10:54:10	0.16	19.213	175.186	0.192	18.960	175.177	0.246	19.070	175.205	0.147	18.950	175.255
7/14/2006	4:00	19:03:59	10:59:10	0.161	19.210	175.189	0.192	18.960	175.177	0.246	19.070	175.205	0.148	18.947	175.258
7/14/2006	4:05	19:08:59	11:04:10	0.161	19.210	175.189	0.193	18.956	175.181	0.246	19.070	175.205	0.147	18.950	175.255
7/14/2006	4:10	19:13:59	11:09:10	0.161	19.210	175.189	0.192	18.960	175.177	0.246	19.070	175.205	0.147	18.950	175.255
7/14/2006	4:15	19:18:59	11:14:10	0.162	19.207	175.192	0.192	18.960	175.177	0.247	19.066	175.209	0.148	18.947	175.258
7/14/2006	4:20	19:23:59	11:19:10	0.162	19.207	175.192	0.193	18.956	175.181	0.247	19.066	175.209	0.148	18.947	175.258
7/14/2006	4:25	19:28:59	11:24:10	0.161	19.210	175.189	0.193	18.956	175.181	0.246	19.070	175.205	0.148	18.947	175.258
7/14/2006	4:30	19:33:59	11:29:10	0.161	19.210	175.189	0.192	18.960	175.177	0.246	19.070	175.205	0.148	18.947	175.258
7/14/2006	4:35	19:38:59	11:34:10	0.161	19.210	175.189	0.192	18.960	175.177	0.246	19.070	175.205	0.148	18.947	175.258
7/14/2006	4:40	19:43:59	11:39:10	0.161	19.210	175.189	0.191	18.963	175.174	0.245	19.073	175.202	0.147	18.950	175.255
7/14/2006	4:45	19:48:59	11:44:10	0.16	19.213	175.186	0.192	18.960	175.177	0.246	19.070	175.205	0.147	18.950	175.255
7/14/2006	4:50	19:53:59	11:49:10	0.16	19.213	175.186	0.191	18.963	175.174	0.245	19.073	175.202	0.147	18.950	175.255
7/14/2006	4:55	19:58:59	11:54:10	0.16	19.213	175.186	0.19	18.966	175.171	0.245	19.073	175.202	0.146	18.953	175.252
7/14/2006	5:00	20:03:59	11:59:10	0.16	19.213	175.186	0.19	18.966	175.171	0.244	19.076	175.199	0.146	18.953	175.252
7/14/2006	5:05	20:08:59	12:04:10	0.16	19.213	175.186	0.19	18.966	175.171	0.244	19.076	175.199	0.145	18.956	175.249
7/14/2006	5:10	20:13:59	12:09:10	0.159	19.217	175.182	0.19	18.966	175.171	0.244	19.076	175.199	0.145	18.956	175.249
7/14/2006	5:15	20:18:59	12:14:10	0.16	19.213	175.186	0.19	18.966	175.171	0.244	19.076	175.199	0.146	18.953	175.252
7/14/2006	5:20	20:23:59	12:19:10	0.16	19.213	175.186	0.19	18.966	175.171	0.244	19.076	175.199	0.146	18.953	175.252
7/14/2006	5:25	20:28:59	12:24:10	0.16	19.213	175.186	0.19	18.966	175.171	0.244	19.076	175.199	0.146	18.953	175.252
7/14/2006	5:30	20:33:59	12:29:10	0.16	19.213	175.186	0.191	18.963	175.174	0.245	19.073	175.202	0.146	18.953	175.252
7/14/2006	5:35	20:38:59	12:34:10	0.16	19.213	175.186	0.191	18.963	175.174	0.245	19.073	175.202	0.147	18.950	175.255
7/14/2006	5:40	20:43:59	12:39:10	0.161	19.210	175.189	0.192	18.960	175.177	0.244	19.076	175.199	0.147	18.950	175.255
7/14/2006	5:45	20:48:59	12:44:10	0.16	19.213	175.186	0.191	18.963	175.174	0.245	19.073	175.202	0.147	18.950	175.255
7/14/2006	5:50	20:53:59	12:49:10	0.161	19.210	175.189	0.191	18.963	175.174	0.245	19.073	175.202	0.147	18.950	175.255
7/14/2006	5:55	20:58:59	12:54:10	0.161	19.210	175.189	0.191	18.963	175.174	0.244	19.076	175.199	0.147	18.950	175.255
7/14/2006	6:00	21:03:59	12:59:10	0.159	19.217	175.182	0.191	18.963	175.174	0.244	19.076	175.199	0.146	18.953	175.252
7/14/2006	6:05	21:08:59	13:04:10	0.158	19.220	175.179	0.19	18.966	175.171	0.243	19.080	175.195	0.146	18.953	175.252
7/14/2006	6:10	21:13:59	13:09:10	0.159	19.217	175.182	0.19	18.966	175.171	0.243	19.080	175.195	0.146	18.953	175.252
7/14/2006	6:15	21:18:59	13:14:10	0.157	19.223	175.176	0.189	18.970	175.167	0.242	19.083	175.192	0.145	18.956	175.249
7/14/2006	6:20	21:23:59	13:19:10	0.157	19.223	175.176	0.189	18.970	175.167	0.242	19.083	175.192	0.145	18.956	175.249
7/14/2006	6:25	21:28:59	13:24:10	0.157	19.223	175.176	0.189	18.970	175.167	0.242	19.083	175.192	0.145	18.956	175.249
7/14/2006	6:30	21:33:59	13:29:10	0.157	19.223	175.176	0.188	18.973	175.164	0.242	19.083	175.192	0.145	18.956	175.249
7/14/2006	6:35	21:38:59	13:34:10	0.156	19.227	175.172	0.188	18.973	175.164	0.242	19.083	175.192	0.145	18.956	175.249
7/14/2006	6:40	21:43:59	13:39:10	0.157	19.223	175.176	0.189	18.970	175.167	0.242	19.083	175.192	0.145	18.956	175.249
7/14/2006	6:45	21:48:59	13:44:10	0.158	19.220	175.179	0.189	18.970	175.167	0.242	19.083	175.192	0.145	18.956	175.249
7/14/2006	6:50	21:53:59	13:49:10	0.158	19.220	175.179	0.19	18.966	175.171	0.242	19.083	175.192	0.145	18.956	175.249
7/14/2006	6:55	21:58:59	13:54:10	0.158	19.220	175.179	0.189	18.970	175.167	0.242	19.083	175.192	0.145	18.956	175.249
7/14/2006	7:00	22:03:59	13:59:10	0.158	19.220	175.179	0.189	18.970	175.167	0.242	19.083	175.192	0.145	18.956	175.249
7/14/2006	7:05	22:08:59	14:04:10	0.157	19.223	175.176	0.19	18.966	175.171	0.243	19.080	175.195	0.145	18.956	175.249
7/14/2006	7:10	22:13:59	14:09:10	0.158	19.220	175.179	0.189	18.970	175.167	0.242	19.083	175.192	0.145	18.956	175.249
7/14/2006	7:15	22:18:59	14:14:10	0.157	19.223	175.176	0.188	18.973	175.164	0.242	19.083	175.192	0.144	18.960	175.245
7/14/2006	7:20	22:23:59	14:19:10	0.157	19.223	175.176	0.188	18.973	175.164	0.242	19.083	175.192	0.143	18.963	175.242
7/14/2006	7:25	22:28:59	14:24:10	0.156	19.227	175.172	0.187	18.976	175.161	0.241	19.086	175.189	0.143	18.963	175.242
7/14/2006	7:30	22:33:59	14:29:10	0.156	19.227	175.172	0.188	18.973	175.164	0.242	19.083	175.192	0.143	18.963	175.242
7/14/2006	7:35	22:38:59	14:34:10	0.156	19.227	175.172	0.187	18.976	175.161	0.242	19.083	175.192	0.143	18.963	175.242
7/14/2006	7:40	22:43:59	14:39:10	0.156	19.227	175.172	0.187	18.976	175.161	0.242	19.083	175.192	0.144	18.960	175.245
7/14/2006	7:45	22:48:59	14:44:10	0.156	19.227	175.172	0.188	18.973	175.164	0.241	19.086	175.189	0.143	18.963	175.242
7/14/2006	7:50	22:53:59	14:49:10	0.156	19.227	175.172	0.187	18.976	175.161	0.241	19.086	175.189	0.142	18.966	175.239

TABLE 4
Datalogger Results for Aquifer Recovery, Perma-Fix of South Georgia, Inc.

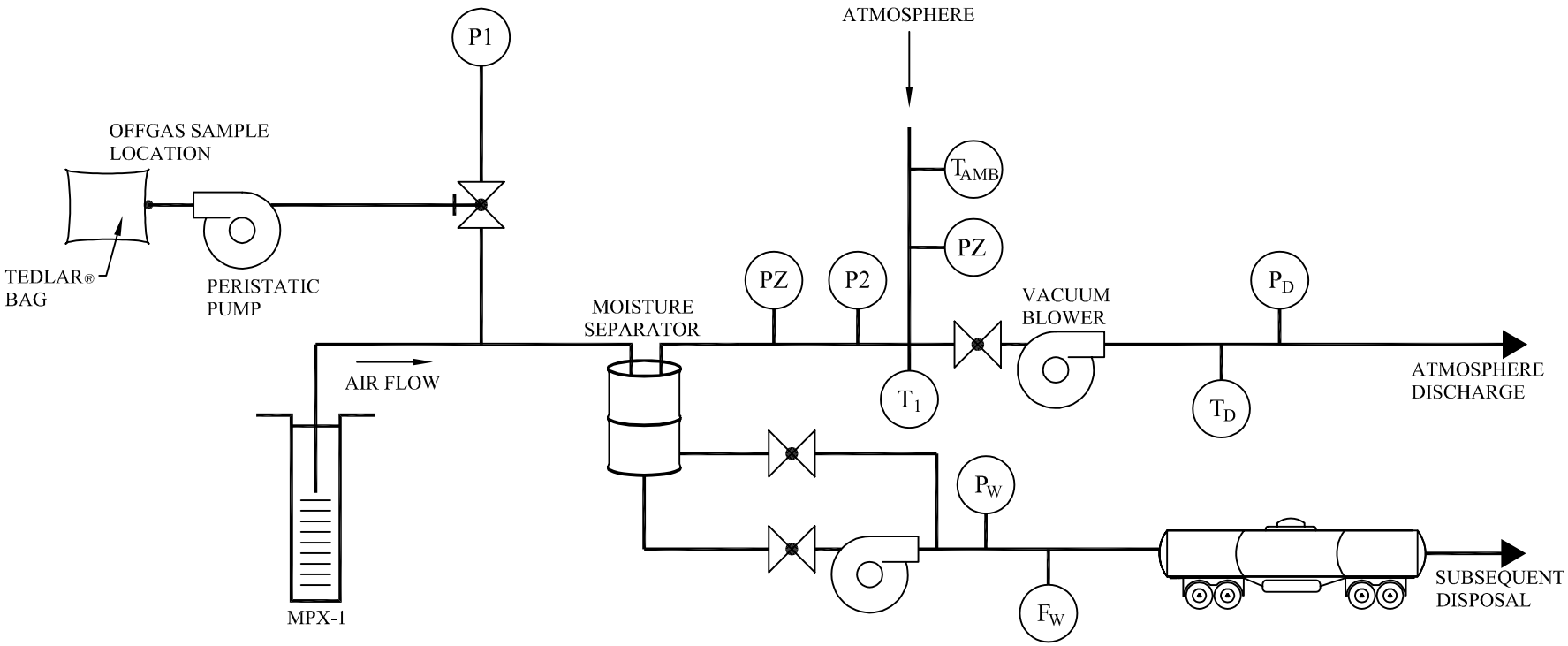
Datalogger Water Levels During Recovery															
		Elapsed Time From Test Start	Elapsed Time From Test End	SVE-1			SVE-2			SVE-3			SVE-4		
Date	Time	(hr:min:sec)	(hr:min:sec)	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL	dd (m)	ft bgs	ft MSL
7/14/2006	7:55	22:58:59	14:54:10	0.154	19.233	175.166	0.185	18.983	175.154	0.239	19.093	175.182	0.141	18.970	175.235

TABLE 5
Groundwater Aquifer MPX Pumping Tests and Results - July 2006
Perma-Fix of South Georgia, Inc., Valdosta, GA

Test Well	Observation Well	Test Type	Aquifer Model	Solution Method	Test Data Q (gpm)	r (ft)	rc (ft)	rw (ft)	b (ft)	Parameter Estimates Transmissivity (ft^2/min)	Transmissivity (cm^2/sec)	Conductivity (ft/min)	Conductivity (cm/sec)
MPX-1	SVE-1	Pumping	Unconfined	Theis	6.24	3.94	0.1667	0.5625	30	3.62E-01	5.61E+00	1.21E-02	6.15E-03
		Recovery	Unconfined	Theis	NA	3.94	0.1667	0.5625	30	6.26E-01	9.69E+00	2.09E-02	1.06E-02
	SVE-2	Pumping	Unconfined	Theis	6.24	9.77	0.1667	0.5625	30	3.62E-01	5.61E+00	1.21E-02	6.15E-03
		Recovery	Unconfined	Theis	NA	9.77	0.1667	0.5625	30	6.39E-01	9.89E+00	2.13E-02	1.08E-02
	SVE-3	Pumping	Unconfined	Theis	6.24	5.83	0.1667	0.5625	30	2.22E-01	3.44E+00	7.39E-03	3.75E-03
		Recovery	Unconfined	Theis	NA	5.83	0.1667	0.5625	30	8.22E-01	1.27E+01	2.74E-02	1.39E-02
	SVE-4	Pumping	Unconfined	Theis	6.24	18.65	0.1667	0.5625	30	7.64E-01	1.18E+01	2.55E-02	1.30E-02
		Recovery	Unconfined	Theis	NA	18.65	0.1667	0.5625	30	6.55E-01	1.01E+01	2.18E-02	1.11E-02
									Cooper-Jacob Distance-Drawdown	4.90E-01	7.59E+00	1.63E-02	8.28E-03
									Average	5.49E-01	8.50E+00	1.83E-02	9.30E-03
									Standard Deviation	2.02E-01	3.13E+00	6.73E-03	3.42E-03

Notes:
Q = Pump test pumping rate
r = Radial distance from test well to observation well
rc = Well casing radius
rw = Well boring radius
b = Aquifer thickness

FIGURES



LEGEND

P1	INLET PRESSURE WITH IN-LINE VACUUM GAUGE
P2	PRE-BLOWER PRESSURE WITH IN-LINE VACUUM GAUGE
T_D	DISCHARGE TEMPERATURE WITH IN-LINE THERMOMETER
P_D	DISCHARGE AIR PRESSURE WITH IN-LINE FLOW METER
T_{AMB}	AMBIENT TEMPERATURE WITH IN-LINE THERMOMETER
T_1	PRE-BLOWER TEMPERATURE WITH IN-LINE THERMOMETER
PZ	PIEZOMETER
P_W	FLUID PRESSURE WITH IN-LINE PRESSURE GAUGE
F_W	FLOW METER WITH ROTOMETER
	BALL VALVE

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FIGURE 1

VACUUM BLOWER SCHEMATIC FOR MPX TEST
PERMA-FIX VALDOSTA

SCALE:	DATE:	DWG NO.
NTS	9/11/06	1004-45

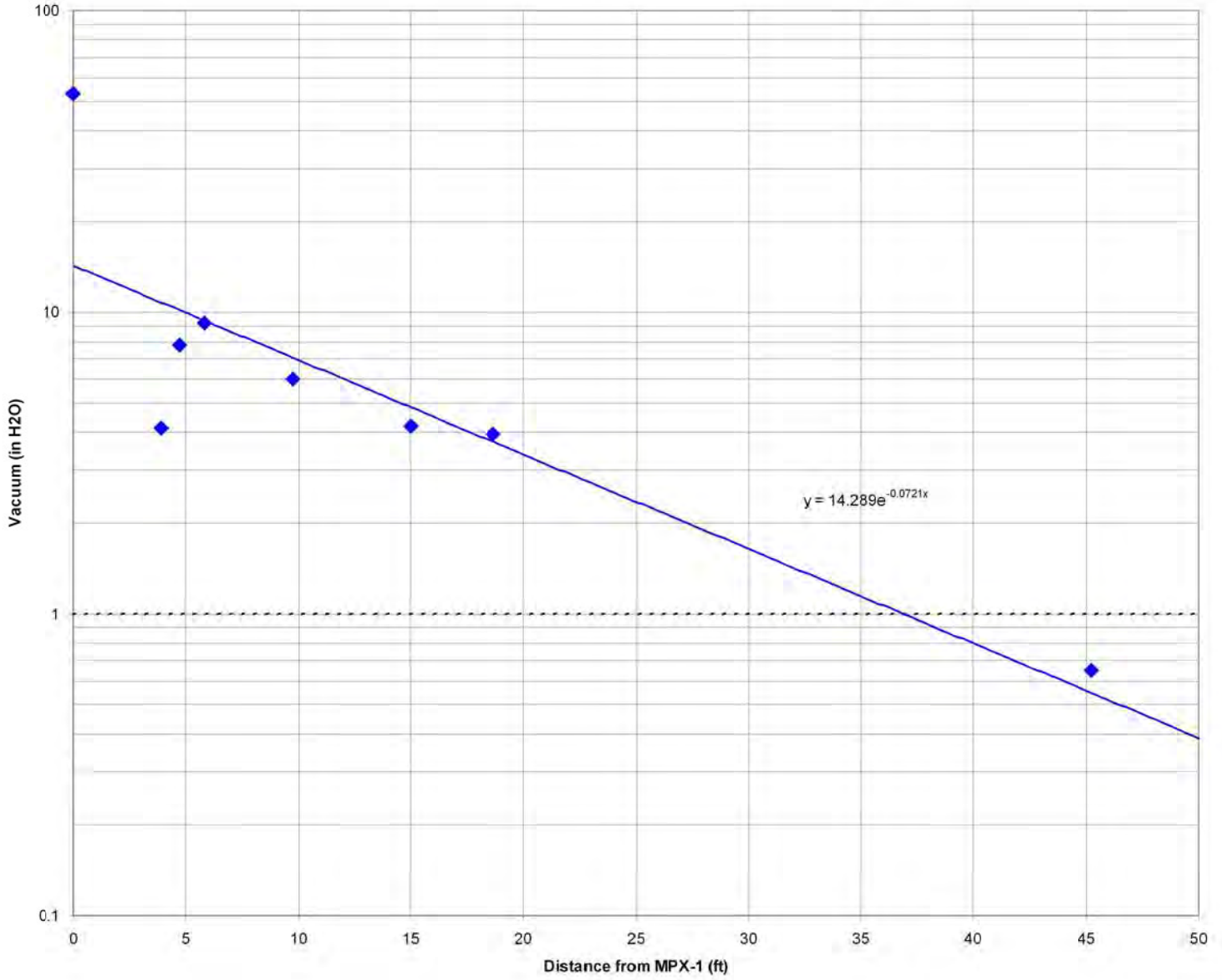

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FIGURE 2

INDUCED VACUUM vs. DISTANCE
DURING MPX PUMPING TEST
PERMA-FIX VALDOSTA

SCALE:	DATE:	DWG NO.
AS NOTED	10/09/06	1004-60

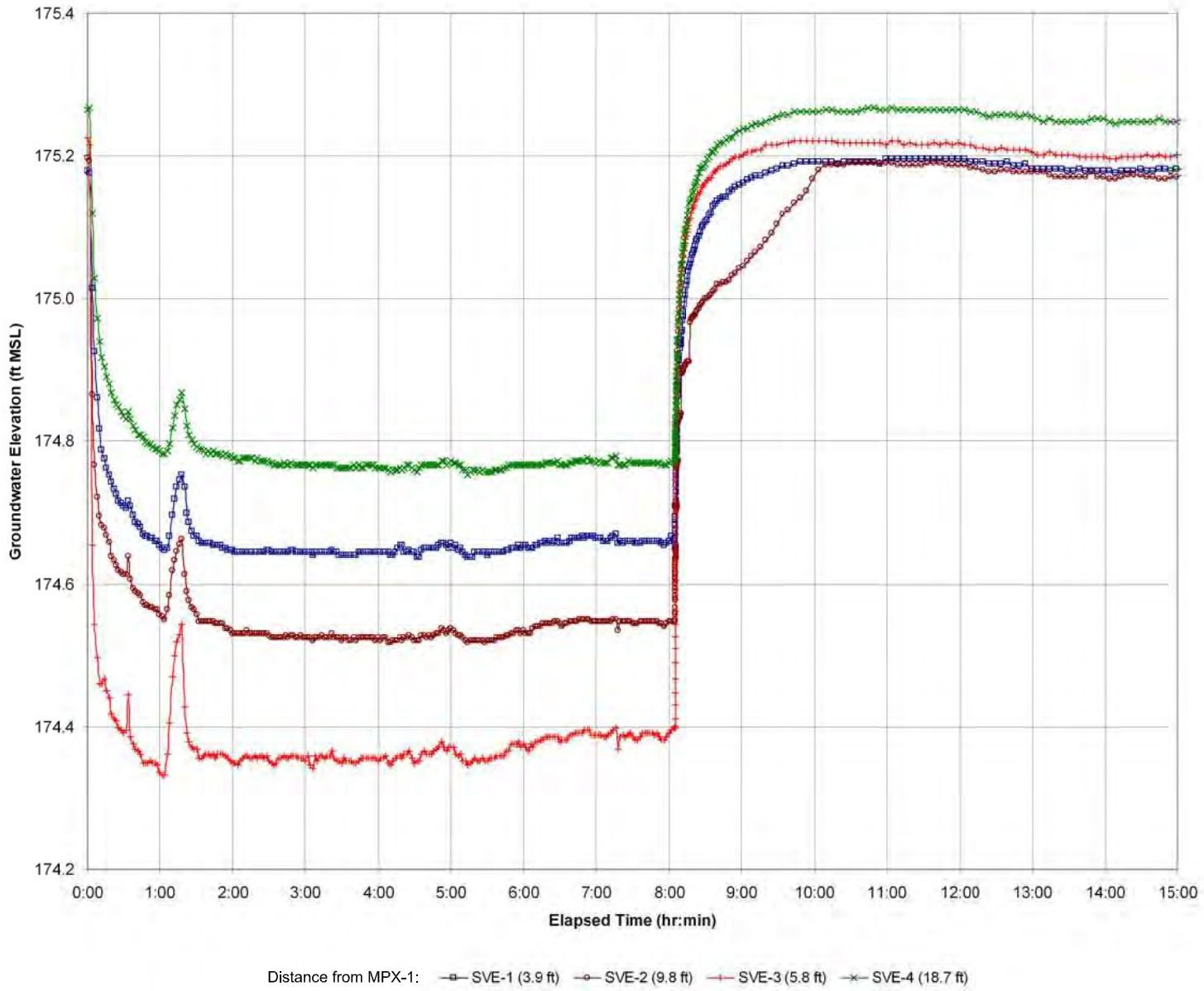

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FIGURE 3

GROUNDWATER ELEVATION
DURING MPX PUMPING TEST
PERMA-FIX VALDOSTA

SCALE:	DATE:	DWG NO.
AS NOTED	10/09/06	1004-44

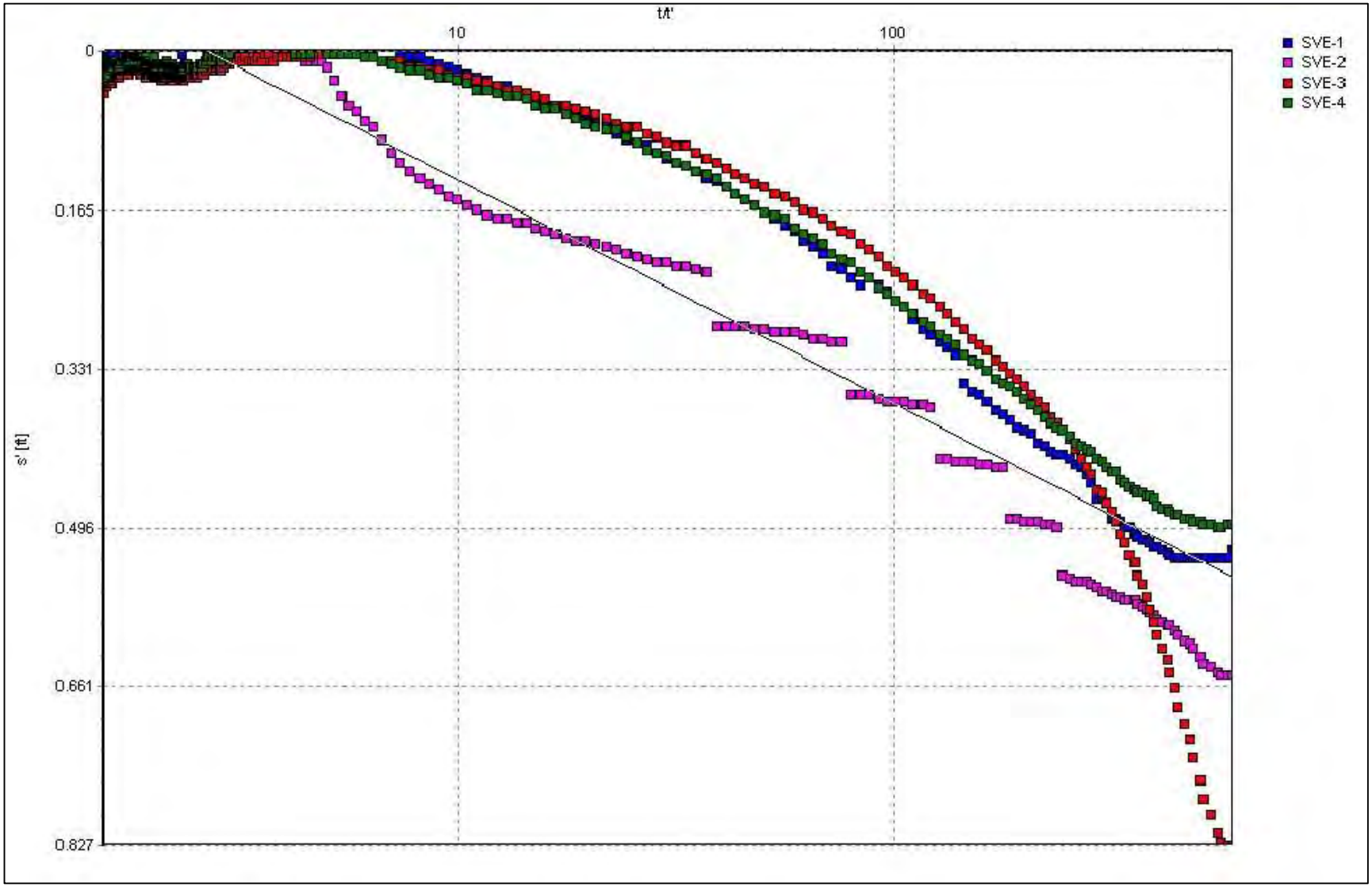

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FIGURE 4

MPX PUMP AND RECOVERY TEST
THEIS METHOD
PERMA-FIX VALDOSTA

SCALE:	DATE:	DWG NO.
AS NOTED	10/09/06	1004-62

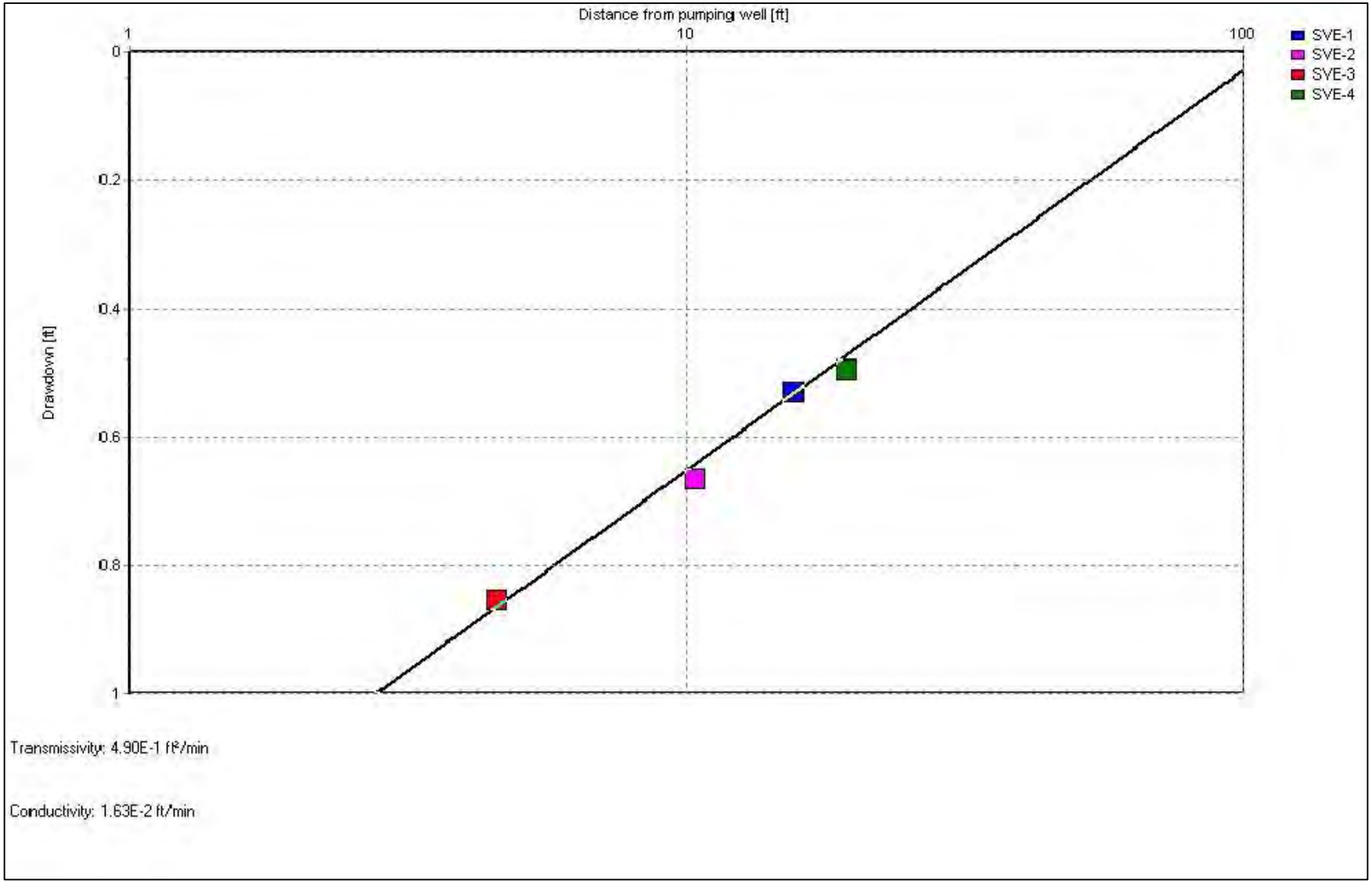

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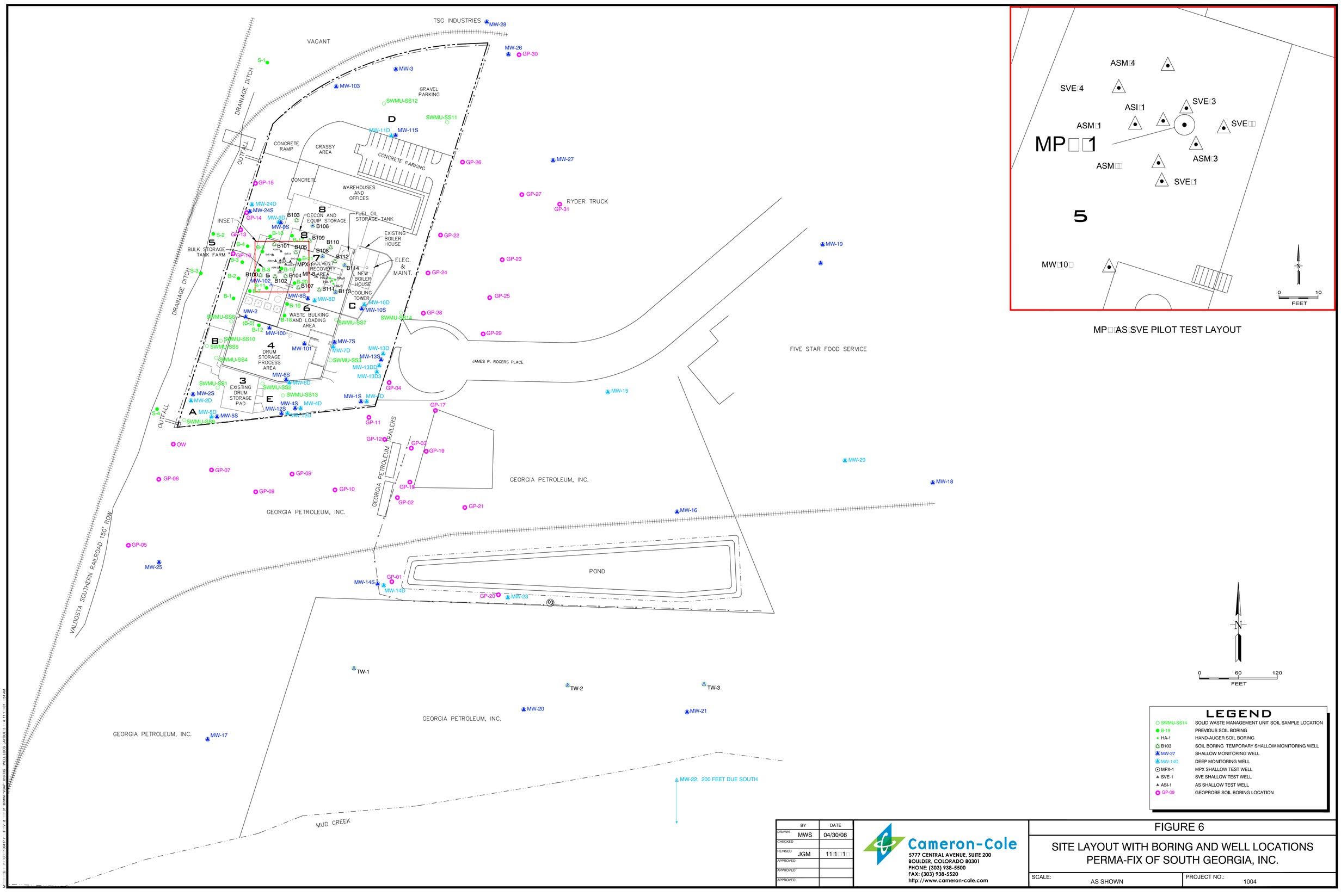
FIGURE 5

MPX PUMP AND RECOVERY TEST
COOPER-JACOB DISTANCE-DRAWDOWN
PERMA-FIX VALDOSTA

SCALE:	DATE:	DWG NO.
AS NOTED	10/09/06	1004-63



MP□□AS□SVE PILOT TEST LAYOUT

LEGEND

SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION
B-19	PREVIOUS SOIL BORING
HA-1	HAND-AUGER SOIL BORING
B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
MW-27	SHALLOW MONITORING WELL
MW-14D	DEEP MONITORING WELL
MPX-1	MPX SHALLOW TEST WELL
SVE-1	SVE SHALLOW TEST WELL
ASI-1	AS SHALLOW TEST WELL
GP-09	GEOPROBE SOIL BORING LOCATION

	BY	DATE
DRAWN	MWS	04/30/08
CHECKED		
REVISED	JGM	11□1□1□
APPROVED		
APPROVED		
APPROVED		

Cameron-Cole
5777 CENTRAL AVENUE, SUITE 200
BOULDER, COLORADO 80301
PHONE: (303) 938-5500
FAX: (303) 938-5520
http://www.cameron-cole.com

FIGURE 6

SITE LAYOUT WITH BORING AND WELL LOCATIONS PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: AS SHOWN

PROJECT NO.: 1004

M:\...\C\...\1004 P...\F...\V...\8...\01 IRAWS\ACAD\ 010 FIG - WELL LOCS LAYOUT 3 - 4 11.1 - 01 - 01 - 51 AM

APPENDIX A

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: ASI–1

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/14/06	DATE COMPLETED: 6/14/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 37.6	WATER DEPTH (FT. BTOC): 18.83
TOC ELEVATION (FT. MSL): 193.547	GROUND ELEVATION FT. MSL): 190.686
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% fine, 30% medium, 15% very fine, 5% coarse; sub-angular; graded; loose; dry; strong VOC odor	SM	562	1-2 ft.	
				451		9-14-18-23
	5	5-14', Silty medium sand: 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 35% fine, 10% very fine, 5% coarse; sub-angular; ghraded; dense; dry, strong VOC odor		359	6-7 ft.	
			SM			
	10	@10-12', Color change to reddish yellow (7.5YR 7/6)		259	11-12 ft. 11-12 ft. (PP)	5-7-12-15
	15	14-25' Clayey fine sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity, dense, moist, VOC odor		119	15.5-16 ft. (PP) 16-16.5 ft. (PP)	3-4-9-11
			SC			
	20	Clay interbeds from 20-20.5'; 21-21.5'		21.2		
		@20.5-21' Medium sand interbed; 90% sand, 10% silt, pale yellow (2.5Y 8/4); non-plastic; sand%: 50% medium; 20% coarse; 20% fine; 5% very coarse; 5% very fine; sub-rounded; well graded; loose; saturated				6-9-11-14
	25	25-36', Medium sand; 90% sand, 10% silt; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-angular; graded; loose; saturated				3-7-9-14
					27.5-28 ft. (PP) 28-28.5 ft. (PP)	
			SW			
	30	@32-34', Color change to white (10YR 8/1)				3-9-9-9
		@35-36', Color change to white (10YR 8/1)				3-4-5-3 4-4-5-11 8-9-12-23
	35	T.D. = 35 FT.				

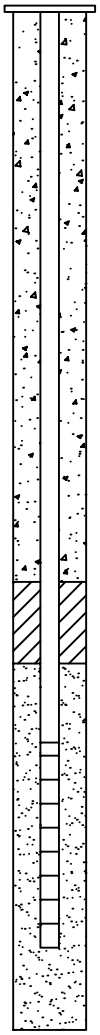
1004-ASI-1.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: ASM-1

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.65	WATER DEPTH (FT. BTOC): 18.11
TOC ELEVATION (FT. MSL): 193.452	GROUND ELEVATION FT. MSL): 190.612
LOGGED BY: NED TURNER	



DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-5', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 40% fine, 10% very fine; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor	SM	1023	-	
5	5-16', Coarse sand; 85% sand, 10% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% coarse, 20% medium, 10% fine, 5% very coarse, 5% very fine; sub-angular; graded; loose; dry; strong VOC odor		1351		1-8-16-23
10		SW	989		1-6-11-12
15	@15-16', Hydrocarbon staining with strong VOC odor		189 82.2		1-2-4-3
	16-23.5', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellow (10YR 7/6); moderate plasticity; sand%: 70% fine, 20% medium, 10% very fine; sub-rounded; poorly graded; dense; saturated; VOC odor				
20	@20.8-21.1', Coarse sand; 80% sand, 15% silt, 5% clay; pale yellow (2.5Y 8/4); non-plastic; sand%: 40% coarse, 30% medium, 10% fine, 10% very coarse, 10% very fine; sub-rounded; moderately-well graded; loose; saturated	SC	29.0 10.0		1-3-6-10
	23.5-25', Medium sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 5% very coarse, 5% very fine; sub-roundurated; moderately-well graded; loose; saturated	SW			2-2-2-7
25	T.D. = 25 FT.				
30					
35					

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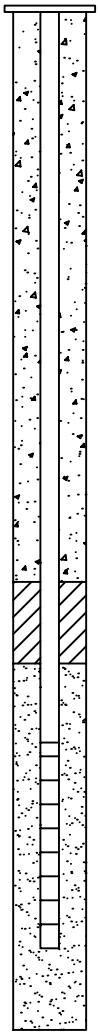
CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: ASM2

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.65	WATER DEPTH (FT. BTOC): 18.11
TOC ELEVATION (FT. MSL): 193.486	GROUND ELEVATION FT. MSL): 190.596
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 80% fine, 15% very fine, 5% medium; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor	SM	1838	-	
	5	5-14', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 20% coarse, 10% very fine, 10% fine; sub-angular; graded; dense; dry; strong VOC odor		1973		5-10-15-18
	10		SM	1702		1-5-9-10
	15	14-23', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellow (10YR 7/6); low plasticity; sand%: 5% fine, 30%medium, 20% very fine; sub-angular; moderately-poorly graded; dense; saturated; VOC odor		978		1-3-4-4
		@16.5-17', Medium sand interbed; 85% sand, 10% silt, 5% clay; yellow (10YR 8/8); non-plastic; sand%: 70% medium, 20% fine, 5% very fine, 5% coarse; sub-rounded; graded; loose; saturated; mild VOC odor		249		
	20	@21.5-22', Hydrocarbon staining	SC	41.7		2-4-6-9
		23-25', Medium sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 70% medium, 20% fine, 5% coarse, 5% very fine; sub-rounded; graded; loose; saturated	SP			3-5-7-9
	25	T.D. = 25 FT.				
	30					
	35					

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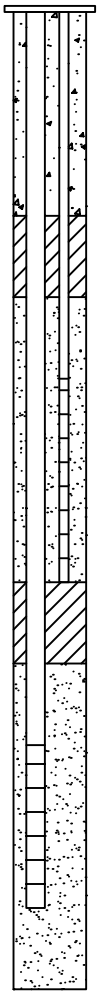
CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: ASM-3

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 26.89	WATER DEPTH (FT. BTOC): 18.22
TOC ELEVATION (FT. MSL): 193.874	GROUND ELEVATION FT. MSL): 190.586
LOGGED BY: NED TURNER	



DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-5', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% fine, 30% medium, 10% very fine, 10% coarse; sub-angular; graded; loose; dry; mild VOC odor	SM	2.4	1-1.5 ft.	
5	5-14', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 35% fine, 10% very fine, 5% coarse, ; sub-angular; graded; dense; dry; strong VOC odor	SM	380	6-7 ft.	4-10-20-24
10			1287 794	11-12 ft.	2-10-14-11
15	14-17', Silty fine sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity; dense; moist; mild VOC odor @15.5-16', Medium silty sand; 80% sand, 15% silt, 5% clay; yellow (2.5Y 8/8); non-plastic	SM	163 311 115		5-4-4-5
20	17-20', Clayey fine sand; 60% sand, 20% silt, 20% clay; yellow (10YR 8/8); medium plasticity; dense; saturated; strong VOC odors	SC	11.4 7.4 7.7		2-4-3-7
	20-21', Medium sand; 90% sand, 10% silt; pale yellow (2.5Y 8/4); non-plastic; sand%: 50% medium, 20% coarse, 20% fine, 5% very coarse, 5% very fine; sub-rounded; well graded; loose; saturated	SW	1.0		2-7-10-15
	22-24', Medium sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-angular; moderately-poorly graded; loose; saturated	SP			1-3-6-8
25	T.D. = 24 FT.				
30					
35					

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SOIL BORING LOG AND WELL COMPLETION DATA

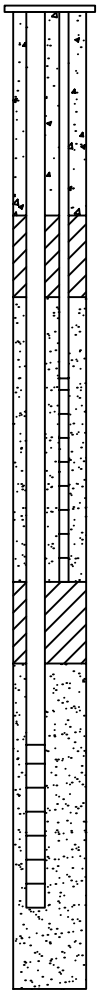
BORING NO.: ASM-4

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
DIEDRICH D-120	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/16/06	6/16/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
26.21	18.41	193.794	190.774	NED TURNER

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-13', Silty medium sand; 70% sand, 25% silt, 5% clay; reddish yellow (5YR 6/8); non-plastic; sand%: 50% medium, 40% fine, 10% very fine; sub-angular; moderately-poorly graded; loose; dry		120	-	
	5	@5-6', Hydrocarbon stained and dense	SM	1179		8-13-18-29
	10			1372		7-8-11-8
	15	13-16.5', Silty medium sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity; sand%: 50% medium, 30% fine, 15% very fine, 5% coarse, ; sub-rounded; graded; dense; moist	SM	808 366		5-8-7-9
		16.5-17', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 30% fine, 15% very fine, 5% coarse; sub-angular; graded; dense; saturated	SP			
	20	17-23', Clayey fine sand; 70% sand, 20% clay, 10% silt; yellow (10YR 8/8); moderate plasticity; sand%: 80% fine, 20% very fine; sub-angular; poorly graded; dense; saturated; hydrocarbon stained @21-21.5', Coarse sand; 90% sand, 10% silt; yellowish red (5YR 5/8); non-plastic; sand%: 60% coarse, 20% medium, 10% fine, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated	SC	24.2		3-6-11-9
		23-25', Silty medium sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity; sand%: 50% medium, 30% fine, 15% very fine, 5% coarse; sub-angular; graded; dense; saturated	SM			4-1-4-12
	25	T.D. = 25 FT.				
	30					
	35					

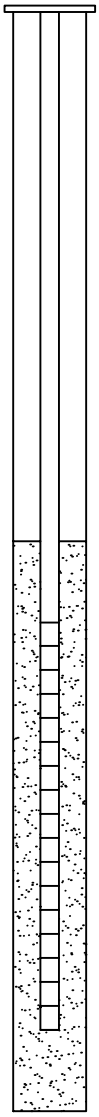
1004-ASM-4.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–100

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/13/06	DATE COMPLETED: 6/13/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 29.51	WATER DEPTH (FT. BTOC): 20.82
TOC ELEVATION (FT. MSL): 195.19	GROUND ELEVATION FT. MSL): 190.48
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5.5', Silty fine sand; 80% sand; 15% silt, 5% clay; reddish brown (5YR 4/4); non-plastic; sand%: 50% fine, 15% very fine, 5% medium; sub-angular; moderate-poorly graded; loose; dry	SM	1.5	1-1.5 ft.	
	5	5.5-10', Fine sand; 85% sand; 10% silt; 5% clay; red (2.5YR 5/8); non-plastic; sand%: 50% fine, 35% medium, 15% very fine; sub-angular; moderately-poorly graded; loose; dry; mild VOC odor	SP	290	5-6 ft.	5-8-13-19
	10	10-15.5', Clayey fine sand; 60% sand, 25% silt, 15% clay; reddish yellow (7.5YR 7/8); low plasticity; sand%: 60% fine, 30% very fine, 10% medium; sub-angular; moderately-poorly graded; loose; moist; VOC odor	SC	370	10-11 ft.	3-5-6-7
	15	15.5-17', Clayey fine sand; 60% sand, 25% clay, 15% silt; pale yellow (2.5Y 8/4); moderate plasticity; loose; saturated; hydrocarbon stained; interbedded sand bars, medium sub-rounded sand	SC	25		2-3-5-8
	20	18-26', Fine sand; 80% sand, 15% silt, 5% clay; yellow (10YR 8/8); low plasticity; sand%: 80% fine, 10% very fine, 10% medium; sub-rounded; moderately-poorly graded, loose; saturated; mild VOC odor	SP	7.2		3-5-8-13
	25	26-27', Medium sand; 90% sand, 10% silt; reddish yellow (7.5YR 7/8); non-plastic; sand%: 50% medium, 40% fine, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated	SP	120		5-6-7-13
	30	T.D. = 27 FT.				
	35					

1004-B-100.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–101

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.19	WATER DEPTH (FT. BTOC): 15.08
TOC ELEVATION (FT. MSL): 190.4	GROUND ELEVATION FT. MSL): 190.6
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-17', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 20% fine, 10% very fine, 10% coarse; sub-angular; moderately-poorly graded; loose; dry		30.1	1-2 ft.	
	5			185	6-7 FT.	3-4-10-15
		@9-17', Color change to brownish yellow (10YR 6/6)	SM			
	10			380	11-12 FT.	2-9-18-19
	15			755		1-5-4-5
		17-26.5', Clayey medium sand; 60% sand, 25% clay, 15% silt; yellow (7.5YR 6/8); moderately plastic; sand%: 60% medium, 30% fine, 5% coarse, 5% very fine; sub-rounded; graded; dense; saturated				
	20	@21.5-21.7', Coarse sand interbed; 85% sand, 10% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 50% coarse, 20% medium, 20% very coarse, 10% fine; sub-rounded; graded; loose; saturated	SC	9.1		2-3-5-7
	25					4-8-11-8
		26.5-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated	SW			
		T.D. = 27 FT.				
	30					
	35					

1004-B-101.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–102

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/13/06	DATE COMPLETED: 6/13/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 29.56	WATER DEPTH (FT. BTOC): 19.11
TOC ELEVATION (FT. MSL): 196.87	GROUND ELEVATION FT. MSL): 190.37
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5', Silty fine sand; 80% sand, 15% silt, 5% clay; reddish brown (5YR 4/4); non-plastic; sand%: 50% fine, 15% very fine; 5% medium, sub-angular; moderately-poorly graded; loose; dry	SM	5.0	1-2 ft.	
	5	5-11', Fine sand; 80% sand, 10% silt, 10% clay; red (2.5YR 5/8); non-plastic; sand%: 50% fine, 35% medium, 15% very fine; sub-angular; moderately-poorly graded; loose; dry; stron VOC odor @6'	SP	260	5-6 ft.	1-4-11-21
	10			430		1-4-5-8
		11-15.5', Clayey very fine sand; 60% sand, 25% silt, 15% clay; yellow (10YR 7/6); low plasticity; sand%: 60% very fine, 20% fine, 20% medium; sub-angular; moderately-poorly graded; loose; moist; VOC odor	SC		11-12 ft.	
	15			80		4-3-6-8
		15.5-17', Clayey fine sand; 60% sand, 25% clay, 15% silt; pale yellow (2.5Y 8/4); moderate plasticity; loose; saturated; hydrocarbon stained	SC			
		17-21.5', Medium sand; 80% sand, 15% silt, 5% clay; yellow (10YR 8/8); low plasticity; sand%: 80% medium, 10% fine, 5% very fine, 5% coarse; sub-rounded; graded; loose; saturated; mild VOC odor	SP			
	20			10		1-3-3-4
		21.5-27', Fine sand; 80% sand, 20% silt; yellowish red (5YR 5/6); non-plastic; sand%: 80% fine, 10% medium, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated	SP			1-1-6-12
	25					5-7-8-12
		27', Fine sand; 90% sand, 10% silt; yellow (2.5Y 8/6); non-plastic; sand%: 60% fine, 30% medium, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated				
		T.D. = 27 FT.				
	30					
	35					

1004-B-102.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–103

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/19/06	DATE COMPLETED: 6/19/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 25.21	WATER DEPTH (FT. BTOC): 15.31
TOC ELEVATION (FT. MSL): 190.85	GROUND ELEVATION FT. MSL): 190.89
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-17', Silty medium sand; 70% sand, 25% silt, 5% clay; red (2.5YR 5/8); non-plastic; sand%: 60% medium, 25% fine, 10% very fine, 5% coarse; sub-angular; graded; loose; dry		14.1	1-2 ft.	
	5			117	6-7 ft.	2-7-13-17
			SM			
	10	@11-12', Color change to strong brown (7.5YR 5/6); and density to dense, hydrocarbon stained		92.4 436	11-12 ft.	4-7-11-10
		@12-17', Color change to reddish yellow (7.5YR 6/6); and density to loose				
	15			451		1-1-6-7
		17-21', Clayey medium sand; 65% sand, 25% clay, 15% silt; reddish yellow (7.5YR 6/6); low plsticity; sand%: 50% medium, 30% fine, 10% coarse, 10% very fine; sub-rounded; graded; dense; saturated; hydrocarbon stained @17'				
			SC			
	20	@20-20.5', Coarse sand interbed; 80% sand, 15% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 70% coarse, 20% medium, 5% very coarse, 5% fine, 5% very fine; sub-rounded; moderately-well graded; loose; saturated		4.7 0.3		3-4-5-11
		21-27', Coarse sand; 75% sand, 20% silt, 5% clay; non-plastic; sand%: 50% coarse, 40% medium, 5% fine, 5% very fine; sub-rounded; moderately-poorly graded; loose; saturated				
			SP			
	25					1-3-7-9
		T.D. = 27 FT.				
	30					
	35					

1004-B-103.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–104

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/14/06	DATE COMPLETED: 6/14/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 26.41	WATER DEPTH (FT. BTOC): 20.5
TOC ELEVATION (FT. MSL): 195.84	GROUND ELEVATION FT. MSL): 190.67
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-6', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; moderately-poorly graded; loose; dry		5.2	1-2 ft.	
				251		
	5			319		1-9-13-19
		@6-15', Grain size increase to medium; sand%: 45% medium, 35% fine, 20% very fine; mild VOC odor	SM		5-6 ft.	
	10	@10-11', Strong VOC odor		346		2-12-15-16
				405		
					11-12 ft.	
	15	14-25', Clayey fine sand; 50% sand, 35% clay, 15% silt; brownish yellow (10YR 6/6); moderately plastic; sand%: 60% fine, 40% very fine; sub-angular; poorly graded; dense; moist; strond VOC odor		333		3-4-5-9
		@16-17', Silty medium sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); moderate plasticity; sand%: 60% medium, 30% fine, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated; strong VOC odor		314		1-2-5-7
				64		1-2-7-11
		@18-18.5', Silty medium sand as above		87		
		@18.5-19', Hydrocarbon stained and strong VOC odor		14		
	20		SC			
	25	25-27', Medium sand; 80% sand, 15% silt, 5% clay; reddish brown (7.5YR 6/8); non-plastic; sand%: 60% medium, 30% fine, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated	SP			5-11-11-14
		T.D. = 27 FT.				
	30					
	35					

1004-B-104.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–105

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/15/06	DATE COMPLETED: 6/15/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 26.37	WATER DEPTH (FT. BTOC): 20.15
TOC ELEVATION (FT. MSL): 195.51	GROUND ELEVATION FT. MSL): 190.67
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-16', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 30% fine, 5% very fine, 5% coarse; sub-angular; graded; loose; dry; strong VOC odor	SM	48.5	1-1.5 ft.	
	5			2705	6-7 ft.	4-4-11-18
	10			1330	11-12 ft.	5-10-11-15
	15	@14-16', Color change to yellow (10YR 8/6)		1440		1-3-3-4
		16-25.5', Clayey fine sand; 65% sand, 10% silt, 25% clay; brownish yellow (10YR 6/6); moderate plasticity; sand%: 50% fine, 35% medium, 15% very fine; sub-rounded; moderately-poorly graded; dense; saturated; VOC odor; hydrocarbon stained	SC	171		
	20	@21-21.3', Medium sand interbed; 90% sand, 10% silt; pale yellow (2.5Y 8/4); non-plastic; sand%: 60% medium, 15% coarse, 15% fine, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated @22-22.3', Medium sand interbed same as above		117		2-3-6-10
	25	25.5-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 40% medium, 30% coarse, 20% fine, 10% very fine; sub-angular; graded; loose; saturated	SW	1002 11.5		2-6-9-13
		T.D. = 27 FT.				
	30					
	35					

1004-B-105.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–106

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/19/06	DATE COMPLETED: 6/19/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 25.20	WATER DEPTH (FT. BTOC): 15.03
TOC ELEVATION (FT. MSL): 190.596	GROUND ELEVATION FT. MSL): 191.139
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-17', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/8); non-plastic; sand%: 50% medium, 30% fine, 15% very fine, 5% coarse; sub-angular; moderately-poorly graded; loose; dry		16.0	1-2 ft.	
	5			563		1-2-11-14
			SM		6-7 ft.	
	10			473		7-11-13-14
					11-12 ft.	
	15	@15-15.5', Clayey medium sand interbed see below		827 283		1-3-4-8
		17-21', Clayey medium sand; 65% sand, 25% clay, 15% silt; reddish yellow (7.5YR 6/6); low plasticity; sand%: 50% medium, 30% fine, 10% coarse, 10% very fine; sub-rounded; graded; dense; saturated				
	20	@20-20.5', Medium sand interbed; 75% sand, 15% silt, 10% clay; reddish yellow (7.5YR 6/6); non-plastic; sand%: 70% medium, 20% fine, 10% coarse; sub-rounded; poorly graded; loose; saturated	SC	23.8		1-5-9-11
		@20.5-21', Hydrocarbon stained; strong VOC odor		5.7		
		21-27', Silty coarse sand; 70% sand, 25% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% coarse, 40% medium, 5% fine, 5% very fine; sub-rounded; moderately-poorly graded; loose; saturated	SM			2-3-5-7
	25	T.D. = 27 FT.				
	30					
	35					

1004-B-106.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B-107

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/19/06	DATE COMPLETED: 6/19/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 24.70	WATER DEPTH (FT. BTOC): 15.96
TOC ELEVATION (FT. MSL): 191.202	GROUND ELEVATION FT. MSL): 191.488
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-16.5', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 10% very fine; sub-angular; graded; loose; moist from 1-3' dry for rest	SM	863	1-2 ft.	
	5			595	6-7 ft.	1-5-10-13
	10	@10-16.5', Color change to yellow (10YR 8/6)		479	11-12 ft.	1-9-8-10
	15			469 467		1-5-8-10
		16.5-22', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellow (10YR 8/6); low plasticity; sand%: 70% fine, 15% medium, 15% very fine; sub-rounded, poorly graded; dense; saturated	SC			
	20			152		1-2-4-5
		22-24', Very fine sand; 85% sand, 10% silt, 5% clay; pale yellow (2.5Y 8/3); non-plastic; sand%: 85% very fine, 15% fine; sub-rounded; poorly graded; loose; saturated	SP			
		24-27', Silty medium sand; 70% sand, 25% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-angular; graded; loose; saturated	SM			
	25			1.8		4-9-11-12
		T.D. = 27 FT.				
	30					
	35					

1004-B-107.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–108

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/20/06	DATE COMPLETED: 6/20/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.99	WATER DEPTH (FT. BTOC): 16.66
TOC ELEVATION (FT. MSL): 191.973	GROUND ELEVATION FT. MSL): 192.085
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-17', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 30% fine, 10% coarse, 10% very fine; sub-angular; graded; loose; dry		910	1-2 ft.	
	5			2085	6-7 ft.	3-7-13-15
			SM			
	10			1970	11-12 ft.	4-11-12-9
	15			2206		2-6-10-11
		17-25', Clayey fine sand; 60% sand, 25% clay, 15% silt; brownish yellow (10yr 6/6); moderate plasticity; sand%: 45% fine, 40% medium, 10% very fine, 5% coarse; sub-angular; moderately-poorly graded; dense; saturated				
		@20-21', Hydrocarbon stained		925		2-3-6-4
	20		SC	193		
	25	25-27', Silty coarse sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% coarse, 30% medium, 10% fine, 5% very coarse, 5% very fine; sub-angular; moderately-well graded; loose; saturated	SM	628		2-3-9-7
		T.D. = 27 FT.				
	30					
	35					

1004-B-108.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–109

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/19/06	6/19/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
25.09	14.17	189.557	190.012	NED TURNER

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-16', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/8); non-plastic; sand%: 50% medium, 30% fine, 20% very fine, 10% coarse; sub-angular; graded; loose; dry	SM	1466	1-2 ft.	
	5			422	6-7 ft.	1-3-8-6
	10			427	11-12 ft.	1-1-8-8
	15			636 640		
		16-22', Clayey medium sand; 60% sand, 25% clay, 15% silt; reddish yellow (7.5YR 6/6); moderate plasticity; sand%: 50% medium, 30% fine, 10% very fine, 10% coarse; sub-rounded; graded; dense; saturated	SC			
	20	@20.5-21', Coarse sand interbed; 90% sand, 10% silt; yellow (10YR 7/6); non-plastic; sand%: 60% coarse, 25% medium, 10% fine, 5% very fine; sub-rounded; moderately-well graded; loose; saturated		62.6 9.4		
		22-27', Silty coarse sand; 70% sand, 25% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 40% coarse, 35% medium, 25% fine, 10% very fine; sub-rounded; moderately-well graded; loose; saturated	SM			
	25			4.9		
		T.D. = 27 FT.				
	30					
	35					

1004-B-109.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–110

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/20/06	DATE COMPLETED: 6/20/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 21.87	WATER DEPTH (FT. BTOC): 16.87
TOC ELEVATION (FT. MSL): 191.778	GROUND ELEVATION FT. MSL): 191.896
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-17', Silty medium sand; 70% sand, 20% silt, 10% clay; reddish brown (5YR 4/4); low plasticity; sand%: 40% medium, 30% fine, 10% very fine, 20% coarse; sub-angular; moderately-well graded; loose; dry		229	1-2 ft.	
	5			420		3-6-14-19
					6-7 ft.	
		@9-17', Color change to reddish yellow (5YR 6/6)	SM			
	10			302		5-12-18-12
					11-12 ft.	
	15			552		4-5-6-7
		17-26', Clayey medium sand; 60% sand, 25% clay, 15% silt; yellow (10YR 6/6); moderate plasticity; sand%: 60% medium, 25% fine, 10% coarse, 5% very fine; sub-rounded; graded; dense; saturated				
	20	@20-21', Hydrocarbon stained		83.1		1-3-4-5
			SC			
	25	@25-26', Hydrocarbon stained		112		1-3-5-7
		26-27', Silty coarse sand; 80% sand, 20% silt; reddish yellow (7.5YR 7/8); non-plastic; sand%: 50% coarse, 30% medium, 10% fine, 5% very coarse, 5% very fine; sub-angular; graded; loose; saturated	SM			
		T.D. = 27 FT.				
	30					
	35					

1004-B-110.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–110a

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/20/06	6/20/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
4.0	NA	NA	191.90	NED TURNER

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete		351	1-2 ft.	
		1-4', Silty medium sand; 70% sand, 20% silt, 10% clay; reddish brown (5YR 4/4); low-plasticity; sand%: 40% medium, 30% fine, 20% coarse, 10% very fine; sub-angular; moderately-well graded; loose; dry	SM			
		@4', Hit plumbing in boring, move rig to east and start again				
	5	T.D. = 4 FT.				
	10					
	15					
	20					
	25					
	30					
	35					

1004-B-110a.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–111

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/19/06	DATE COMPLETED: 6/19/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 22.69	WATER DEPTH (FT. BTOC): 16.14
TOC ELEVATION (FT. MSL): 191.392	GROUND ELEVATION FT. MSL): 191.505
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-2', Clayey fine sand; 60% sand, 30% clay, 10% silt; reddish brown (5YR 4/3); moderate plasticity; sand%: 70% fine, 20% very fine, 10% medium; sub-angular; moderately-poorly graded; dense; moist	SC	2283	1-2 ft.	
		2-15', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/8); non-plastic; sand%: 50% medium, 30% fine, 20% very fine; sub-angular; moderately-poorly graded; loose; dry				
	5			1230		1-2-7-11
					6-7 ft.	
			SM			
	10	@11-11.5', Clayey medium sand interbed		1482		2-7-9-11
					11-12 ft.	
	15	15-21.5', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellowish brown (10YR 5/4); moderate plasticity; sand%: 70% fine, 20% very fine, 10% medium; sub-angular; moderately-poorly graded; desne; saturated; hydrocarbon stained		750 884		4-6-9-7
			SC			
	20	@20-21', Silty coarse sand interbed; 75% sand, 20% silt,5% clay; yellow (10YR 7/6); non-plastic; sand%: 40% coarse, 35% medium, 25% fine, 5% very fine, 5% very coarse; sub-rounded; graded; loose; saturated		309 79		1-1-4-6
		21.5-27', Silty coarse sand; 75% sand, 20% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 40% coarse, 30% medium, 20% fine, 10% very coarse, 10% very fine; sub-rounded; moderately-well graded; loose; saturated				
			SM			
	25			12.1		2-5-6-5
		T.D. = 27 FT.				
	30					
	35					

1004-B-111.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B-112

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/20/06	6/20/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
25.18	16.12	191.887	192.139	NED TURNER

DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-1', Concrete				
	1-16', Silty medium sand; 70% sand, 20% silt, 10% clay; reddish brown (5YR 4/4); low plasticity; sand%: 40% medium, 20% coarse, 20% fine, 10% very coarse, 10% very fine; sub-angular; moderately-well graded; loose; dry	SM	67.3	1-2 ft.	
5			303	6-7 ft.	4-6-14-11
	@9-16', Color change to yellowish red (5YR 5/6)				
10			418	11-12 ft.	5-12-10-9
15			354 712		3-10-7-10
	16-25', Clayey fine sand; 60% sand, 25% clay, 15% silt; reddish yellow (7.5YR 6/6); moderate plasticity; sand%: 60% fine, 20% medium, 20% fine; sub-angular; moderately-poorly graded; desne; saturated	SC			
20	@20-21', Hydrocarbon stained		60.4		2-7-5-7
25	25-27', Silty coarse sand; 80% sand, 20% silt; reddish yellow (7.5YR 7/8); non-plastic; sand%: 50% coarse, 30% medium, 10% fine, 5% very coarse, 5% very fine; sub-angular; graded; loose; saturated	SM	3.8		4-6-6-8
	T.D. = 27 FT.				
30					
35					

1004-B-112.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B-113

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/20/06	6/20/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
24.35	16.57	191.493	191.527	NED TURNER

DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-1', Concrete				2-7-10-9
	1-3', Silty very fine sand; 60% sand, 35% silt, 5% clay;brown (10YR 5/3); non-plastic; sand%: 80% very fine, 20% fine; sub-angular; poorly graded; loose; moist; hydrocarbon stained	SM	1067 409	1-2 ft.	
	3-14.5', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 10% very fine; sub-angular; graded; loose; dry; hydrocarbon stained @8-12 ft.		523		4-7-12-18
5			1086		4-6-11-18
				6-7 ft.	
		SM		8-8.5 ft. (PP)	4-6-10-7
10			586 416		2-3-9-14
				11-12 ft.	7-13-14-15
			384		
15	14.5-19', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellowish brown (10YR 5/4); low plasticity; sand%: 70% fine, 20% very fine, 10% medium; sub-angular; moderately-poorly graded; dense; saturated; hydrocarbon stained	SC	238 278		3-10-10-12 6-7-9-11
				17.5-18 ft. (PP)	6-8-11-13
20	19-27', Silty coarse sand; 80% sand, 15% silt, 5% clay; brownish yellow (10YR 6/6); non-plastic; sand%: 50% coarse, 30% medium, 10% very coarse, 5% fine, 5% very fine; sub-rounded; graded; loose; saturated		10.8 2.3		3-8-10-13
	@21.5', Color change to reddish yellow (7.5YR 6/8)		1.3		
		SM			
25				25-25.5 ft. (PP)	3-8-8-10
				25.5-26 ft. (PP)	
	T.D. = 27 FT.				
30					
35					

1004-B-113.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–114

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/20/06	6/20/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
25.15	16.91	192.23	192.07	NED TURNER

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-6', Clayey medium sand; 60% sand, 25% clay, 15% silt; reddish brown (5YR 4/4); low plasticity; sand%: 50% medium, 40% fine, 10% very fine; sub-angular; moderately-poorly graded; dense;	SC	60.3	1-2 ft.	
	5			440 73	6-7 ft.	2-6-12-16
		6-17', Silty medium sand; 75% sand, 20% silt, 5% clay; reddish yellow (5YR 6/6); non-plastic; sand%: 60% medium, 10% fine, 20% coarse, 10% very fine; sub-angular; graded; loose; dry	SM			
	10			380	11-12 ft.	2-3-11-13
	15			47.4		4-10-12-13
		17-26', Clayey fine sand; 60% sand, 25% clay, 15% silt; brownish yellow (10YR 6/6); low plasticity; sand%: 40% fine, 30% medium, 20% coarse, 10% very fine; sub-angular; moderately-well graded; dense; saturated				
	20			137 43.0		
		@21.5-22' Silty coarse sand interbed; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/8); sand%: 60% coarse, 30% medium, 5% fine, 5% very coarse; sub-angular; graded; loose; saturated	SC			
	25			19.7		
		26-27', Coarse sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 7/8); non-plastic; sand%: 70% coarse, 20% medium, 10% fine; sub-angular; moderately-poorly graded; loose; saturated	SP			
		T.D. = 27 FT.				
	30					
	35					

1004-B-114.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MPX-1

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
DIEDRICH D-120	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/12/06	6/12/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
31.32	18.18	193.503	190.493	NED TURNER

DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-1.5', Silty very fine sand; 75% sand, 20% silt, 5% clay; strong brown (7.5YR 4/6); low plasticity; sand%: 90% very fine, 10% fine to medium; sub-angular; poorly graded; loose; dry	SM	15.2	1-2 ft.	4-6-9
	1.5-13', Fine sand; 80% sand, 15% silt, 5% clay; red (2.5YR 4/6); non-plastic; sand%: 70% fine, 20% very fine, 5% medium to coarse; sub-angular; moderately-poorly graded; loose; dry; mild VOC odor, strong from 7-8 ft.		135		
			51		21-11-15-19
5			805		14-16-30-30
				5-6 ft.	
		SP			8-7-6-7
			456		
	@8-13', Color change to reddish yellow (5YR 6/6); change in sand%: medium to fine snad, 80% sand, 15% silt, 5% clay; sand% 60% fine, 30% medium, 10% very fine; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor		590		
					4-10-14-22
10			620		11-9-9-9
					2-2-6-7
				10-11 ft.	
			750	11.5-13 ft. (PP)	
	13-14', Silty very fine sand; 60% sand, 30% silt, 10% clay; yellow (10YR 7/6); low plasticity; sand%: 60% very fine, 20% fine, 20% medium; sub-angular; moderately graded; loose; moist	SM	350		
15	14-18', Clayey fine sand; 60% sand, 20% silt, 20% clay; yellow (10YR 8/8); medium plasticity; loose; saturated; strong VOC odor, hydrocarbon discoloration		320		1-1-2-4
		SC	150		
			190		2-3-7-9
	18-18.3', Medium sand; 90% sand, 10% silt; yellow (2.5Y 8/8); no plasticity; sand%: 80% medium, 10% fine, 5% very fine; 5% coarse, sub-rounded; moderately graded; loose; saturated	SM / SC			
20	18.3-19', Fine sand with clay interbedding; sand layer: 70% sand, 15% silt, 5% clay; clay interbeds: 50% clay, 40% silt, 10% sand; yellow (10YR 8/6); medium plasticity in clay; compact; saturated		120		2-2-2-3
					7-7-8-13
	19-25', Clayey fine sand; 60% sand, 30% silt, 10% clay; yellow (10YR 7/8); low plasticity; sand%: 90% very fine to fine, 10% medium; sub-rounded; poorly graded; loose; saturated; mild VOC odor	SC		22-23 ft. (PP)	
25			11.5		2-2-5-12
	25-30', Medium sand; 90% sand, 10% silt; yellow (10YR 7/8); non-plastic; sand%: 80% medium, 10% fine, 10% very fine; sub-rounded; poorly graded; loose; saturated	SP			16-22-18-10
30	T.D. = 30 FT.				
35					

1004-MPX-1.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MW-100

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/17/06	DATE COMPLETED: 6/17/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.35	WATER DEPTH (FT. BTOC): 14.98
TOC ELEVATION (FT. MSL): 190.218	GROUND ELEVATION FT. MSL): 190.218
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-14.5' Silty medium sand; 65% sand, 25% silt, 10% clay; yellowish red (5YR 5/6); low plasticity; sand%: 60% medium, 25% fine, 10% very fine, 5% coarse; sub-angular; graded; dense; moist to dry; VOC odor	SM	14.5	2-3 ft.	3-4-6-7 5-7-9-13
				92.5		
	5			34.2		5-9-20-22
				150	6-7 ft.	
				220		4-7-9-11
				337		
						3-7-11-14
	10			103		3-6-9-15
				283	11-12 ft.	
						5-7-9-15
	15	14.5-19', Silty fine sand; 60% sand, 25% silt, 15% clay; brown (10YR 5/3); low plasticity; sand%: 50% fine, 30% medium, 20% very fine; sub-rounded; moderately-poorly graded; dense; moist to saturated	SM	211		3-5-9-17
				155	17-17.5 ft.	
		@18.5-18.7', Medium sand interbed; 85% sand, 15% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-rounded; graded; loose; saturated		13.0	17.5-18 ft. (PP)	3-5-9-17
	20	19-24.5', Silty coarse sand; 70% sand, 25% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 50% coarse, 30% medium, 10% fine, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated; hydrocarbon stained @19-21.5 ft.	SM	3.7		3-5-7-9
				10.5		3-5-8-13
		@23-24', Color change to reddish yellow (7.5YR 6/6)				3-5-7-6
	25	T.D. = 25 FT.		0.0	25-25.5 ft. 25.5-26 ft. (PP)	2-3-5-9
	30					
	35					

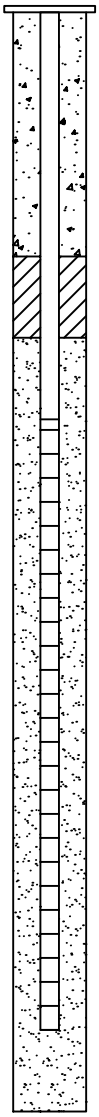
1004-MW-100.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MW-101

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/17/06	DATE COMPLETED: 6/17/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 25.17	WATER DEPTH (FT. BTOC): 15.05
TOC ELEVATION (FT. MSL): 190.167	GROUND ELEVATION FT. MSL): 190.167
LOGGED BY: NED TURNER	



DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-15', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 30% fine, 5% very fine, 5% coarse; sub-angular; moderately-poorly graded; loose; dry	SM	2.8	1-2 ft.	
5			27.2	6-7 ft.	4-4-9-7
10			19.3	11-12 ft.	1-2-9-11
15	15-26', Clayey fine sand; 65% sand, 25% clay, 10% silt; light yellowish brown (10YR 6/4); low plasticity; sand%: 80% fine, 10% medium, 10% very fine; sub-angular; poorly graded; dense; moist to saturated	SC	40.3		4-6-8-9
20			83.4		2-3-5-9
25			69.5		2-3-5-7
	26-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 5% very fine, 5% very coarse; sub-angular; moderately-well graded; loose; saturated	SW	2.6		
30	T.D. = 27 FT.				
35					

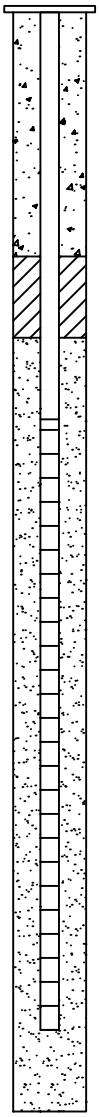
1004-MW-101.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MW-102

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/13/06	DATE COMPLETED: 6/13/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 27.15	WATER DEPTH (FT. BTOC): 17.72
TOC ELEVATION (FT. MSL): 192.962	GROUND ELEVATION FT. MSL): 190.266
LOGGED BY: NED TURNER	



DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-5', Silty fine sand; 80% sand, 15% silt, 5% clay; reddish brown (5YR 4/4); non-plastic; sand%: 5% medium, 80% fine, 15% very fine; sub-angular; moderately-poorly graded; loose; dry; mild VOC odor	SM	2.8	1-2 ft.	
5	5-14', Fine sand; 80% sand, 15% silt, 5% clay; red (2.5YR 5/8); non-plastic; sand%: 50% fine, 35% medium, 15% very fine; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor	SP	27.2	5-6 ft.	2-5-11-17
10			19.3	10-11 ft.	1-2-8-13
15	14-20', Clayey fine sand; 40% sand, 30% clay, 30% silt; pale yellow (2.5Y 7/4); medium plasticity; sand%: 90% very fine, 10% fine; sub-rounded; poorly graded; loose; moist; strong VOC odor	SC	40.3		3-2-4-5
20	20-25.5', Clayey fine sand; 60% sand, 30% silt, 10% clay; yellow (10YR 7/8); low plasticity; sand%: 60% fine, 30% very fine, 10% medium; sub-rounded; poorly graded; loose; saturated; mild VOC odor @21-22', Color change to reddish yellow (7.5YR 6/8)	SC	83.4		4-5-9-11
25	25.5-27', Medium sand; 80% sand, 10% silt, 10% clay; yellow (10YR 7/8); low plasticity; sand%: 75% medium, 20% fine, 20% coarse, 5% very fine; sub-rounded; poorly graded; loose; saturated	SP	69.5 2.6		7-4-7-7
	T.D. = 27 FT.				
30					
35					

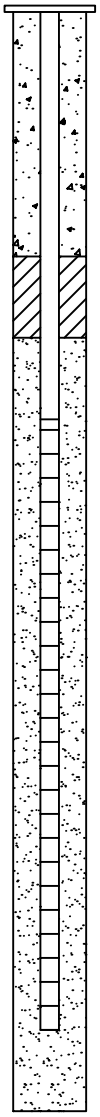
1004-MW-102.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MW-103

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 27.29	WATER DEPTH (FT. BTOC): 17.41
TOC ELEVATION (FT. MSL): 193.31	GROUND ELEVATION FT. MSL): 190.473
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-15', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 30% fine, 10% very fine; sub-angular; moderately-poorly graded; loose; dry	SM	0.0	1-2 ft.	
	5	@6.5-7', Clay interbed; gray (5YR 6/1)		0.0	6-7 ft.	4-10-17-23
	10			0.0	11-12 ft.	3-7-11-18
	15	15-21', Clayey fine sand; 60% sand, 20% clay, 20% silt; strong brown (7.5Y 5/6); low plasticity; sand%: 80% fine, 10% medium, 10% very fine; sub-angular; poorly graded; dense; saturated	SC	0.0		2-6-9-11
	20			0.0		4-6-9-13
	25	21-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated @26-26.5', Clay interbed	SW	0.0		2-4-9-13
		T.D. = 27 FT.				
	30					
	35					

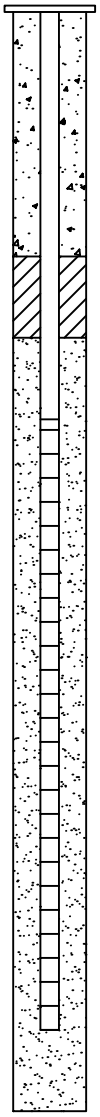
1004-MW-103.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: SVE-1

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/15/06	DATE COMPLETED: 6/15/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.20	WATER DEPTH (FT. BTOC): 18.26
TOC ELEVATION (FT. MSL): 193.524	GROUND ELEVATION FT. MSL): 190.591
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 80% fine, 15% very fine, 5% medium; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor	SM	1522	-	
	5	5-14', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 20% fine, 10% very fine, 10% coarse; sub-rounded; graded; dense; dry; strong VOC odor		1777		3-6-17-25
	10		SM	1640		3-8-10-13
	15	14-23', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellow (10YR 7/6); medium plasticity; sand%: 80% fine, 10% medium, 10% very fine; sub-rounded; moderately-poorly graded; dense; saturated		1086		2-5-7-8
		@17-17.5', Medium sand interbed; 90% sand, 10% silt; yellow (10YR 8/8); non-plastic; sand%: 70% medium, 20% fine, 10% very fine; sub-rounded; poorly graded; loose; saturated	SC/SP	940		
	20			50.9		2-3-5-7
				15.7		
	25	23-27', Medium sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 70% medium, 20% fine, 5% coarse, 5% very fine; sub-angular; moderately-poorly graded; loose; saturated	SP	842		1-5-11-18
				16.0		
		T.D. = 27 FT.				
	30					
	35					

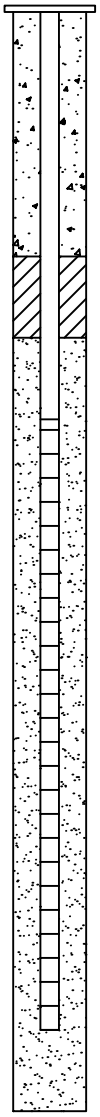
1004-SVE-1.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: SVE-2

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/15/06	DATE COMPLETED: 6/15/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 25.90	WATER DEPTH (FT. BTOC): 17.94
TOC ELEVATION (FT. MSL): 193.262	GROUND ELEVATION FT. MSL): 190.395
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5.5', Silty fine sand; 60% sand, 25% silt, 15% clay; light red (2.5YR 6/8); low plasticity; sand%: 70% fine, 20% very fine, 10% medium; sub-angular; moderately-poorly graded; dense; dry; strong VOC odor	SM	650	-	
	5			1615		3-15-21-18
		5.5-14', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 35% fine, 10% very fine, 5% coarse; sub-angular; graded; dense; dry; strong VOC odor	SM			
	10			1756		3-6-2-15
	15	14-25.5', Clayey fine sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity; dense; saturated; VOC odor @15-15.5', Sandy clay interbed; yellowish red (5YR 5/6) @16.7-17', Medium sand interbed; 80% sand, 15% silt, 5% clay; pale yellow (2.5Y 8/4); non-plastic; sand%: 50% medium, 35% fine, 15% very fine; sub-rounded; graded; loose; saturated	SC	1325		3-5-9-12
	20	@20-20.5', Sandy clay interbed; yellowish red (5YR 5/6); 40% clay, 35% sand, 35% silt @20.5-20.7', Medium sand interbed; as above		58.5 20.9		3-5-8-9
	25	25.5-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-angular; graded; loose; saturated	SW			2-3-7-11
		T.D. = 27 FT.				
	30					
	35					

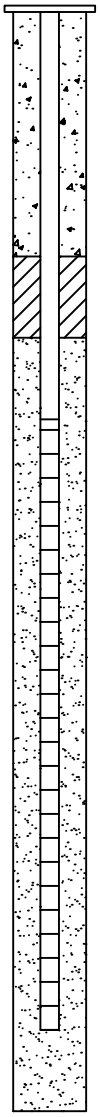
1004-SVE-2.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: SVE-3

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/15/06	DATE COMPLETED: 6/15/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 26.61	WATER DEPTH (FT. BTOC): 18.09
TOC ELEVATION (FT. MSL): 193.400	GROUND ELEVATION FT. MSL): 190.575
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-16', Silty medium sand; 70% sand, 25% silt, 5% clay; light red (2.5YR 6/8); non-plastic; sand%: 50% medium, 40% fine, 10% very fine; sub-angular; graded; loose; dry; mild VOC odor	SM	407	-	
	5			570		2-5-13-17
	10	@10-14', Color change to reddish yellow (5YR 6/8)		610		2-10-6-6
	15	@15-16', Color change to yellow (10YR 7/6)		992 278		1-3-6-9
		16-25', Clayey fine sand; 60% sand, 15% silt, 25% clay; yellow (10YR 7/6); moderate plasticity; sand%: 50% fine, 35% medium, 15% very fine; sub-rounded; moderately-poorly graded; dense; saturated; VOC odor	SC			
	20	@20.5', Hydrocarbon stained		26.0		1-5-7-12
		@21-21.3', Medium sand interbed; 90% sand, 10% silt; pale yellow (2.5Y 8/4); non-plastic; sand%: 60% medium, 15% coarse, 15% fine, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated		2.4		
		@21.7-22', Medium sand interbed; yellowish red (5YR 5/8); as above				
	25	25-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-rounded; graded; loose; saturated	SW	1.7		2-4-6-12
		T.D. = 27 FT.				
	30					
	35					

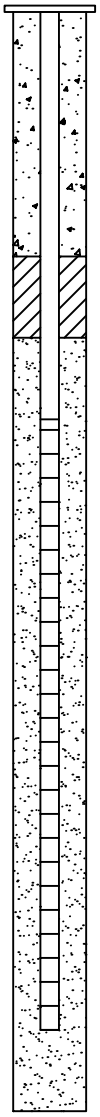
1004-SVE-3.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: SVE-4

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 24.86	WATER DEPTH (FT. BTOC): 18.00
TOC ELEVATION (FT. MSL): 193.330	GROUND ELEVATION FT. MSL): 190.487
LOGGED BY: NED TURNER	



DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-15.5', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 20% fine, 10% very fine, 10% coarse; sub-rounded; moderately-poorly graded; loose; dry; VOC odor	SM	29.7	1-2 ft.	
5			704	6-7 ft.	1-2-9-13
10			545	11-12 ft.	1-2-7-7
15	15.5-21', Clayey fine sand; 60% sand, 15% silt, 25% clay; yellow (10YR 7/6); moderate plasticity; sand%: 70% fine, 20% medium, 10% very fine; sub-angular; moderately-poorly graded; dense; saturated	SC	111		2-4-4-5
	@16', Hydrocarbon stained		40.2		
	@16.7-17', Medium sand; 80% sand, 15% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 70% medium, 10% coarse, 15% fine, 5% very fine; sub-rounded; graded; loose; saturated		83.1		
20	@20-20.5', Coarse sand; 80% sand, 15% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 50% coarse, 20% medium, 20% very coarse, 10% fine; sub-rounded; graded; loose; saturated		8.3		2-5-7-8
	21-27', Medium sand; 85% sand, 10% silt, 5% clay; yellow (10YR 8/6); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 10% very fine; sub-rounded; graded; loose; saturated	SW			
25			2.8		3-7-9-11
	T.D. = 27 FT.				
30					
35					

1004-SVE-4.dwg

AIR SPARGE AND SOIL VAPOR EXTRACTION PILOT TEST
PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GA 31601

PREPARED FOR:

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GA 31601

PREPARED BY:

CAMERON-COLE

5777 CENTRAL AVE. #200
BOULDER, COLORADO 80301

APRIL 30, 2008

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Appendix A Boring Logs

1. INTRODUCTION

This report presents the results of the pilot test designed to evaluate air sparging (AS) and soil vapor extraction (SVE) for use in source area remediation at the Perma-Fix of South Georgia (PFSG) facility. The objective of the pilot test was to test these technologies for use in soil and groundwater remediation to reduce VOC source area concentrations and preclude further off-site migration of VOCs. Source control is considered the first priority in the overall remediation approach because the aqueous-phase VOC plume is fed directly by residual dense non-aqueous phase liquid (DNAPL) and impacted soils within three Solid Waste Management Units (SWMUs). These SWMUs include the Bulk Storage Tank Farm (SWMU 4), Solvent Recovery Area (SWMU 6), and Equipment Storage and Decontamination Area (SWMU 7).

The pilot test was conducted over a 3-day period from July 10 to July 12, 2006. The pilot test was designed to assess the effectiveness of each technology operating independently and in concert. For use in source treatment, these technologies will be defined as effective if VOC contamination in the groundwater is transferred to the vadose zone and then subsequently extracted in the vapor phase. It is not desirable to simply transfer VOCs from the saturated zone to the vadose zone. The AS and the SVE pilot tests conducted on July 10 and July 11, respectively, were conducted for the purpose of determining the design parameters to be combined in the AS/SVE pilot test conducted on July 12.

The AS portion of the pilot test provided an estimate of the AS radius of influence (ROI), the operational injection pressure, the injection airflow rate, and the AS cycle time. The SVE portion of the pilot testing provided data on the soil permeability to airflow and SVE ROI, the optimum operational vacuum, the corresponding airflow rates, and the preliminary mass removal rates of VOCs. The combined AS/SVE pilot test provided results for these technologies acting in tandem, as well as provided design information with regard to AS cycle time, air sparge and SVE ROIs, airflow rates, and application pressures.

This AS/SVE pilot test appendix details the procedures and results of the AS/SVE pilot test, and presents conclusions and recommendations regarding the feasibility of these technologies as remedial alternatives. The AS/SVE pilot test procedures are described in Section 2 of this appendix. The pilot test results and conclusions and recommendations are presented in Sections 3 and 4.

2. PILOT TEST PROCEDURE

The data collection procedures followed during the AS/SVE pilot test are described below, including a description of the test well location rationale, equipment selection, field measurements, and soil vapor sampling for VOCs.

2.1. TEST AREA LOCATION AND WELL INSTALLATION

Available geologic, hydrogeologic, and site history information were reviewed to select a test area that appeared to be representative of the source area. The location of the test area selected is shown on Figure 8. The pilot test was performed using an array of 10 test-well locations (MPX-1, ASI-1, ASM-1, ASM-2, ASM-3, ASM-4, SVE-1, SVE-2, SVE-3, SVE-4) and one new monitoring well (MW-102). These 11 test and monitoring wells were installed the week of June 12, 2006. Boring logs for the test array wells and the one new monitoring well are provided in Appendix C.

Test wells consisted of one AS injection well (ASI-1), one SVE extraction well (MPX-1), four SVE monitoring points (SVE-1, SVE-2, SVE-3, SVE-4), two ASM monitoring points (ASM-1, ASM-2), and two paired AS and SVE monitoring points, consisting of one AS and one SVE monitoring point at each location (ASM-3, ASM-4). The four AS monitoring points are screened in the groundwater and the six SVE monitoring points are screened in the vadose zone. The eight monitoring points are installed at varying distances of between 5 and 20 feet from the centrally located AS injection and SVE extraction wells. The existing monitoring well MW-102 provided an additional SVE monitoring point at a greater distance from the SVE extraction well.

The AS injection well (ASI-1) was installed with a 5-foot well screen interval at as depth of 30 to 35 feet (ft) below the ground surface (bgs). AS monitoring points ASM-1, ASM-2, ASM-3a, and ASM-4a were screened over a 5-foot interval in sand at a depth of approximately 5 to 10 feet below the static water table. The monitoring points were equipped with packers to form an airtight air column above the water table. The packers were topped with PVC reducers to a manually-operated valve. A flexible hose was attached to the valve and connected to a handheld pressure manometer. This AS monitoring point configuration allows for a direct measure of any changes in pressure and/or elevation of the groundwater surface.

The SVE extraction well (MPX-1) was constructed with 20 feet of screen, with 15 feet of screen below the water table and 5 feet above the water table, at a depth of 10 to 30 ft bgs. The four primary SVE monitoring points (SVE-1, SVE-2, SVE-3, SVE-4) were all screened across the water table over a 15-foot interval from 10 ft below the water table to 5 feet above the water table, or at depths of 10 to 25 ft bgs. The static water level at the time of the test was about 15 feet below ground surface. The monitoring points were capped with packers to form an airtight air column above the water table. The packers were topped with PVC reducers to a manually operated valve. A flexible hose was attached to the valve and connected to a handheld pressure manometer.

2.2. AIR SPARGE TEST

An AS-only test was conducted on July 11, 2006. The goal of this test was three-fold: (1) to determine the radius of influence (ROI) for air sparging; (2) to determine the time period required to fully develop the sparge regime; and (3) to determine the degree to which the groundwater could be oxygenated. Literature suggests that the sparge regime develops similar to an expanding air bubble. The air bubble expands, locally increasing the water level, until the bubble "pops" and the water level returns to the pre-sparge level. The bubble time period is important since an operating AS system can be cycled on and off at the rate of the bubble expansion time to maximize the sparging effect while reducing capital and operating costs.

2.2.1. Equipment

Equipment for AS testing included the injection well, monitoring points, air compressor, and instrumentation. The injection well and monitoring points are described in Section 2.1. A schematic for the air compressor setup at the air sparge well is shown on Figure 1. The injection well was connected to the air compressor by flexible reinforced hose. The pressure was reduced through two-stage regulation to the desired operating pressure and airflow rate. Excess air was vented to the atmosphere between the two pressure regulators. The vented air was routed through a metal fitting to reduce the discharge flow rate and noise level.

The air compressor was capable of generating flow of 29 standard cubic feet per minute (scfm) at 20 pounds per square inch (psi), or 18 scfm at 40 psi. Pressure was reduced by a 0-to-100 psi regulator and then a 0-to-30 psi regulator. The air compressor was powered with an integral 35 kilowatt generator.

2.2.2. Test Procedure

Air sparging is defined by the injected airflow rate, which is controlled by the pressure at the well head. Airflow in the range of 5 to 20 scfm is typical. Wellhead pressures to achieve this flow rate are in turn limited by formation characteristics. Breakthrough pressure is the minimum air pressure required to overcome both the height of the water column in the injection well down to the screened interval and the formation entry pressure. The maximum air injection pressure is that above which disruption of the surface formation and creation of preferential pathways may occur.

Depth-to-water levels and dissolved oxygen (DO) concentrations were collected from the AS monitoring wells prior to the start of the pilot test. Air pressure in air sparge well ASI-1 was increased until breakthrough occurred at a pressure of 5.5 psi. The resulting air low rate at breakthrough was 2 scfm. The air injection pressure and flow rate were varied during the test to generate the pressure/flow relationship for the formation. Pressure was incrementally increased until a maximum of 10 scfm was achieved. As air was injected at ASI-1, the pressure in each AS monitoring point was measured. Typical pressure rise times are 30 to 90 minutes. Frequent measurements were obtained (every 5 minutes) until the pressure reached a maximum and began to decrease. A sealed air column was maintained in the AS monitoring points during

the entire course of the test. Pressures were also monitored in the unsaturated zone by recording the change in pressure in wells screened within the vadose zone (SVE-1 through SVE-4, ASM-3b, ASM-4b).

2.3. SOIL VAPOR EXTRACTION TEST

SVE-only testing was performed on July 11, 2006. The goals of the SVE-only test were three-fold: (1) to determine how effectively air could be moved through the vadose zone soils; (2) to determine the SVE radius of influence (ROI) by measuring vacuum pressure at several SVE monitoring points; and (3) to determine a preliminary rate of VOC mass removal by collecting soil vapor for VOC analyses.

2.3.1. Equipment

Equipment for the SVE portion of the pilot testing included the extraction wells, monitoring points, vacuum extraction blower, a moisture separator, a peristaltic pump, Summa canisters for off-gas sampling, and instrumentation. The extraction well and monitoring points are described in Section 2.1 with their locations shown on Figure 8. A schematic of the vacuum blower setup at the SVE extraction well is shown on Figure 1. The SVE extraction well (MPX-1) was connected to the vacuum extraction blower by flexible reinforced hose. Soil vapor entered the blower after the moisture separator and filter to remove entrained liquids and particles. An air dilution valve was placed between the extraction well and the blower. Since there is less resistance to pull air through the dilution valve than to pull soil vapor, opening the dilution valve effectively reduced the applied vacuum at the wellhead. Instrumentation was placed at the blower to measure dilution air velocity, vacuum between the dilution valve and the blower, discharge pressure, and discharge temperature.

The vacuum blower used for this test was a rotary claw with a 7.5-horsepower motor. The blower has a maximum vacuum of 23 inches of mercury and 75 scfm airflow. The pump curve published for this model provided the airflow rate versus vacuum relationship. The blower was powered with an integral 35 kilowatt generator.

2.3.2. Test Procedure

The procedure for the SVE test involved applying a vacuum at the SVE extraction well and measuring the vacuum induced at the monitoring points. This test was performed at a series of vacuum levels to define the pneumatic radius of influence and the relationship between applied vacuum and induced soil-vapor flow rate. The soil vapor flow regime is established relatively rapidly and induced vacuums typically stabilize within 30 to 90 minutes. Induced vacuum readings were measured in the SVE monitoring points sufficiently often to determine when the pressure in the formation had stabilized. The monitoring points were sealed with well packers between readings to prevent airflow through the wells to the subsurface. Once formation pressures had stabilized and vacuum readings were recorded at the monitoring points, the applied vacuum was re-adjusted and readings were taken again.

The ambient vacuum/pressure was measured at each SVE monitoring point each day prior to starting SVE tests to identify baseline conditions. The ambient vacuum/pressure will be zero unless the atmospheric barometric pressure is rapidly changing or if the subsurface is well isolated from the atmosphere.

As described above, SVE tests were conducted on July 11, 2006, which consisted of four runs at increasing vacuums, all of which were performed before any air sparge testing began.

(1) 23 inches water vacuum (in H_2O) for 75 minutes

(2) 56 in H_2O for 90 minutes

(3) 83 in H_2O for 45 minutes

(4) 100 in H_2O for 30 minutes

2.4. COMBINED AS/SVE TEST

AS/SVE combined testing was performed on July 12, 2006. The goals of the AS/SVE combined test were three-fold: (1) to determine how effectively the sparged air could be recovered; (2) to determine the soil permeability to airflow and VOC vapor removal ROI by measuring vacuum pressure at the SVE monitoring points; and (3) to determine a preliminary rate of mass removal by collecting soil vapor for VOC-concentrations analyses.

2.4.1. Equipment Selection

Equipment for the SVE portion of the pilot testing included the extraction wells, monitoring points, vacuum extraction blower, a knockout drum, a peristaltic pump, Summa canisters for off-gas sampling, and instrumentation. The locations of the extraction well and its monitoring points are shown on Figure 8. The SVE extraction well was connected to the vacuum extraction blower by flexible reinforced hose. Soil vapor entered the blower after the moisture separator and filter to remove entrained liquids and particles. An air dilution valve was placed between the extraction well and the blower. Since there was less resistance to pull air through the dilution valve than to pull soil vapor, opening the dilution valve effectively reduced the applied vacuum at the wellhead. Instrumentation was placed at the blower to measure dilution air velocity, vacuum between the dilution valve and the blower, discharge pressure, discharge velocity, and discharge temperature.

Equipment for AS portion of the pilot testing included the injection well, monitoring points, air compressor, and instrumentation. The locations of the injection well and its monitoring points are shown on Figure 8. The injection well was connected to the air compressor by flexible reinforced hose. The pressure was reduced through two-stage regulation to the desired operating pressure and airflow rate. The vented air was routed through a fritted metal fitting to reduce the discharge flow rate and noise level.

2.4.2. AS/SVE Test Procedure

The AS/SVE portion of the pilot test incorporated simultaneous air injection and vapor extraction. The optimum AS airflow rate of 7 scfm and SVE extraction vacuum of 70 in H_2O were determined based upon the data collected during the individual AS and SVE tests. Pressure and vacuum readings were measured by a handheld manometer at the nine monitoring wells fitted with well packer seals. The off-gas from the vapor extraction well was also field screened with an organic vapor meter (OVM) at 10-minute intervals.

The AS and SVE combined test was performed for a total of three hours. During this test the AS injection was applied for a total of 100 minutes prior to its disengagement. Once the AS system was disengaged, the SVE extraction was allowed to run until a negative pressure regime was established in the vadose zone.

2.5. ANCILLARY MONITORING

During the SVE and AS/SVE testing, monitoring was performed to measure VOC concentrations in the extracted soil vapor and the dissolved oxygen (DO) concentration in groundwater due to air sparging. These data were collected to provide an additional means of evaluating the effectiveness of these technologies in conjunction with the pressure / vacuum measurements.

2.5.1. Soil Vapor VOC-Concentration Monitoring

VOC compounds in the vadose zone volatilize over time at a rate based on the soil media and the specific compound. After a period of time, each compound is in equilibrium between liquid and vapor phases. When SVE is initiated, VOC concentrations in the extracted off gas reflect these equilibrium concentrations. With continued SVE, soil vapor VOC concentrations diminish from equilibrium levels to mass transfer-limited concentrations as cleaner air passes through the vadose zone soils. Soil vapor samples obtained at SVE initiation reflect VOC compounds present in the vadose zone, but do not provide information regarding the quantity or distribution of VOC present. Dynamic steady-state VOC concentrations can only be obtained during extended testing. This pilot test was not designed to operate sufficiently long to obtain steady-state VOC-concentration information.

Soil vapor VOC concentrations were measured in two ways. Real-time values were obtained with a organic vapor meter (OVM). Additionally, samples were sent to Environmental Conservation Laboratories (ENCO), a Georgia certified analytical laboratory located in Jacksonville, Florida. All samples were collected in the Summa canisters using a peristaltic pump (Geopump II) connected to a sample port (Figure 2) at the extraction wellhead, and were analyzed for VOCs by U.S EPA Method 8260.

2.5.2. Dissolved Oxygen

The dissolved oxygen (DO) concentration in groundwater is a function of, among other factors, microbial activity. Microbial activity is proportional to the amount of available nutrients. VOCs dissolved in

groundwater provide nutrients that increase microbial activity and decrease DO. AS temporarily increases DO concentration within the AS ROI. DO concentrations before and immediately after conclusion of the AS test provide an indication of the AS ROI. DO is also a function of the groundwater temperature. Lower temperatures increase the maximum saturation concentration. Temperature was measured at the same time DO readings were obtained.

DO was measured, downhole, at each AS monitoring point. DO readings were taken before the start of the AS pilot test, within five minutes of the conclusion of the AS test, and 24 hours after the conclusion of the AS test at each AS monitoring point. The DO meter used during the pilot test was a YSI meter with a 50-foot long sample line, which also measured the groundwater temperature.

3. PILOT TEST RESULTS AND DISCUSSION

3.1. AIR SPARGE

The results for the AS tests performed on July 11, 2006 are tabulated in Table 2, and are summarized in Figures 3 and 4. The data was analyzed to determine the AS ROI and the air bubble cycle time.

The pressure vs. time relationship for each AS well was plotted (Figure 3) and examined to estimate the life of the sparge bubble. Breakthrough occurred at 5 psi and this pressure was maintained for the first 30 minutes of the test. Pressure was then increased to 6 psi for 15 minutes, and then to 7 psi for the remainder of the test. All monitoring points exhibited a positive response to the increase in sparge pressure.

The AS ROI was determined by graphing the peak pressure at each AS monitoring point vs. the distance of the monitoring point from the injection well (Figure 4). The log-normal plot of this data shows a large variability in peak pressure readings. This points to horizontal variability in hydraulic conductivity within the saturated zone indicating heterogeneity in the formation. The linear trend line on the graph indicates that the maximum distance for an induced pressure is approximately 100 feet. However, due to the apparent heterogeneity in the formation, it is inappropriate to use the extrapolated AS ROI of 100 feet for design purposes.

The AS ROI was also estimated from the dissolved oxygen data collected before and after the sparge test. DO concentrations were obtained before and after AS testing on July 11, 2006 (Table 2) to monitor any changes in groundwater that could be attributed to air sparging activities. Dissolved oxygen concentrations exhibited substantial increases in all monitoring points at the conclusion of the AS test. DO measurements, however, can be imprecise; consequently it is more appropriate to evaluate the change in DO concentrations rather than the absolute values. All four monitoring points exhibited a DO-concentration increase of 100% or greater (SVE-1, SVE-2, SVE-3, and SVE-4). These points are all less than 20 feet from the injection well. However, monitoring point SVE-1 is at a distance of approximately 20 feet away from the air sparge injection well, and exhibited a DO increase of 2,800%. This indicates that this monitoring point is well within the air sparge zone of influence. This result indicates that the AS ROI is at least 20 ft.

DO levels at all monitoring locations decreased substantially within 24 hours. The dissolved oxygen monitoring results averaged 42% of the maximum DO concentrations within 24 hours of ceasing air sparging. The rapid reduction in dissolved oxygen concentrations indicates the presence of aerobic metablic activity in the saturated zone. As the contaminants and groundwater travel downgradient outside the influence of the AS system, DO concentrations will rapidly drop and anaerobic conditions will become the predominant degradation process.

Based on the AS test data, the AS ROI is estimated to be greater than 20 feet, and certainly no larger than 100 feet. The radius of 20 feet is a more appropriate value for design of a full-scale AS system. The air

bubble cycle time is estimated to be less than 60 minutes, but the full sparge bubble cycle time was not observed. The sparge cycle time was determined in the AS/SVE combined test presented in Section 3.3.

3.2. SOIL VAPOR EXTRACTION

Results for the SVE tests performed on July 11, 2006 are tabulated in Table 3, and summarized in Figures 5 and 6. SVE tests were conducted at four vacuums ranging from 23 in H_2O vac to 100 in H_2O vac, resulting in vapor flow rates ranging from 41 to 68 scfm, respectively. The vacuum vs. flow relationship combined with the induced vacuum measurements taken at the monitoring points screened within the vadose zone (SVE-1, SVE-2, SVE-3, SVE-4, ASM-3b, ASM-4b, MW-102) are used to determine the soil permeability to airflow, optimum operating vacuum, and effective ROI for the final SVE system design.

Figure 5 shows the applied vacuum versus the induced vacuum at all of the SVE monitoring points. As the applied vacuum increases, the induced vacuum generally increases. However, at an applied vacuum of approximately 60 in H_2O, the applied versus induced vacuum relationship asymptotically reaches a maximum induced vacuum at each of the wells. As the applied vacuum is increased above 60 in H_2O, there is little or no additional induced vacuum observed. At this vacuum, preferential pathways for soil vapor movement are established, and at any higher vacuum only moves vapor through these preferential pathways. Therefore, the optimum applied vacuum is approximately 60 in H_2O.

The SVE ROI was determined by graphing the peak induced vacuum for each applied vacuum at each SVE monitoring point vs. the distance of the monitoring point from the SVE extraction well MPX-1 (Figure 6). Four trend lines were fit to the four sets of data corresponding to each applied vacuum. By plotting the maximum vacuum versus distance, by the method outlined in Leeson and Hinchee (1997), the SVE ROI could be quantified at approximately 34 ft. The effect of the MPX vapor extraction extended beyond the 34 ft ROI, with induced vacuum observed at MW-102 at a distance of approximately 45 ft from the extraction well. A minimum induced vacuum of 1.0 in H_2O was determined to be the edge of the effective radius of influence. Although vapor outside of the 37 ft ROI will flow toward the extraction well, the flow rates are potentially too low to adequately volatilize COCs strongly adsorbed onto the clayey and silty materials in the zone of contamination. Theoretically, at a distance of 34 feet or less, there should be sufficient airflow to reduce COC concentrations below the PRGs for each extraction well, given sufficient time.

Based on the maximum vapor screening measurements obtained with the OVM, the optimum operating vacuum was determined for the SVE extraction. The optimum vacuum for extraction of VOCs was at 56 in H_2O, which yielded a vapor flow rate of 55 scfm from the vadose zone. This flow rate for the respective vacuum suggests that the permeability within the vadose zone is relatively high, which is consistent with sand with some mixed fines.

3.2.1. Soil Permeability to Airflow of Vadose Zone Soils

The parameters collected during the SVE pilot tests may be used to determine the soil permeability to airflow in the silty fine sand vadose zone unit. Using the pressure measured at the well head, the airflow rate, the screened interval, and the radius of influence, as determined in Figure 6, the soil permeability to airflow may be computed by a modified version of the equation presented by Johnson et al. (1990).

$$k = \frac{(1.15)\ Q\ \mu\ \ln\left(R_w / R_{ROI}\right)}{H\ \pi\ P_w \left[1 - \left(P_{atm} / P_w\right)^2\right]}$$

where:
k = soil permeability to airflow [cm^2]
Q = airflow rate (scfm)
H = screened interval in vadose zone (cm)
μ = dynamic viscosity of air = 1.8×10^{-4} g/cm-s
P_w = absolute pressure at extraction well [$g/cm\text{-}s^2$]
P_{atm} = absolute ambient pressure = 1.01×10^6 $g/cm\text{-}s^2$
R_w = radius of vapor extraction well (ft)
R_{ROI} = radius of influence (ft)

The soil permeability to airflow, based on the results obtained during the pilot test (Table 3) ranged from 1.29×10^{-7} cm^2 to 4.10×10^{-7} cm^2, with an average soil permeability of 2.43×10^{-7} cm^2. These values are consistent with fine to coarse sand (Freeze and Cherry, Table 2.2, p. 29, 1979). These values are also consistent with the physical properties testing performed in June 2006 and by taking into account the scale of testing. The physical properties testing determined the vadose zone horizontal intrinsic permeability as 4.29×10^{-10} cm^2, which is approximately three orders of magnitude lower than the pilot testing results.

The difference in measured permeabilities is primarily due to the scale of testing. Laboratory-derived soil permeabilities are typically one to three orders of magnitude lower than field-derived values obtained from long-term pilot tests (Fetter, 1993; Bedient et al., 1994). This is due to the scale-dependency of soil permeability measurements, which increase in proportion to the volume of soil sampled or evaluated (i.e., pilot tests yield larger values than laboratory tests). In addition, an SVE test averages the vertical heterogeneity within the screened interval, allowing the test to draw air from any higher conductivity zones within the test interval.

The average soil permeability to airflow of 2.43×10^{-7} cm^2 is also similar to the permeability determined during the MPX pilot test (3.76×10^{-8} cm^2). These two permeability values differ by approximately an order of magnitude. This difference in permeabilities is due to the locations of extraction between the SVE extraction and the MPX extraction. The SVE pilot test extracted vapor from the entire screened interval, whereas the MPX pilot test extracted vapor at a point sink located at the water table. Because the MPX pilot

test extracted vapor from the clayey sand unit, it is expected that its permeability would be lower than the SVE test, which extracted vapor only from the silty fine sand unit of the vadose zone.

3.2.2. Soil Vapor VOC Concentrations

Real-time monitoring of the VOC concentrations in the SVE off-gas were obtained during SVE testing on July 11, 2006 and are summarized in Table 3. These readings were taken at the wellhead sample port (Figure 2) using a peristaltic pump to collect the samples into Tedlar® bags. An OVM was utilized to measure the concentrations in each Tedlar® bag sample. The OVM detected total organic compounds, but did not provide individual readings for specific compounds. OVM results ranged from 390 to 1,325 parts per million by volume (ppm_v). The average OVM measurement for the four different applied vacuums are 700 ppm_v at 23 in H_2O, 1,230 ppm_v at 56 in H_2O, 1,190 ppm_v at 83 in H_2O, and 1,030 ppm_v at100 in H_2O. These readings indicated a dependence on applied vacuum, with an optimum applied vacuum determined as 56 in H_2O with an average OVM measurement at 1,230 ppm_v, which is consistent with the optimum applied vacuum as determined by the pressure readings in Figure 5.

Two SVE off-gas samples were submitted to ENCO for laboratory analyses to characterize VOC concentrations during the different SVE tests. Sample analytical results for these samples are summarized in Table 3. A complete laboratory report is provided in Appendix K. Typical straight-chain and aromatic VOCs were detected consistent with the occurrence of aged hydrocarbon compounds. A number of chlorinated compounds were also detected, consistent with the COCs determined for the facility. The analytical measurements, in combination with the airflow rates, were used to determine the mass removal rate of the SVE extraction well. The average mass removal rate was measured at 975 pounds (lbs) of VOCs per day.

3.3. COMBINED AS/SVE TEST

The results for the AS/SVE combined test performed on July 12, 2006 are tabulated in Table 4, and are summarized in Figures 4 and 7. The induced pressure measurements were taken at the wells screened within the vadose zone (SVE-1, SVE-2, SVE-3, SVE-4, ASM-3b, ASM-4b, MW-102) and the saturated zone (ASM-1, ASM-2, ASM-3a, ASM-4a). The measurements were used to test the system performance using the optimum air sparge injection pressure of 7.5 psi, with an airflow rate of 7 scfm, and the soil vapor extraction vacuum of 56 in H_2O vac, with a corresponding airflow rate of 54 scfm. This test further defined the AS ROI and the sparge cycle time.

The pressure vs. time relationship for each well was graphed (Figure 7) and examined to estimate the AS optimum cycle time. The pressure response is divided into saturated zone response and the vadose zone response to the AS/SVE test. The pressure versus time plots also reveal the pressure response of the wells to the termination of the AS system 100 minutes into the test. Each of the monitoring wells screened within the saturated zone exhibited a response to the air sparge bubble within 30 minutes of the test start. The

radius of influence, as determined by these wells is greater than 15 feet, which is consistent with the previous findings in Section 3.1. Similarly, the wells screened within the vadose zone respond to the air sparge bubble within 30 minutes of the test start. This indicates that the clay layer separating the saturated zone from the vadose zone does not impede the airflow between the two layers.

The cycle time for the air sparge bubble formation and collapse are captured within 100 minutes of the AS injection. Each well screened within the saturated zone is subject to a maximum pressure, with a slight decrease afterward. All of the wells have reached a maximum pressure and are decreasing by 60 minutes, reinforcing the 60 minute cycle time as determined in Section 3.1.

The AS/SVE ROI was determined by graphing the peak pressure at each AS monitoring point vs. the distance of the monitoring point from the injection well (Figure 4b). The log-normal plot of this data shows less variability in peak pressure readings than were observed in the AS test (Figure 4a). A linear trend line on the graph indicates that the maximum distance for an induced pressure is approximately 160 feet. This reinforces the assumption that formation heterogeneity is adversely affecting the pressures recorded at the air sparge monitoring points. Therefore, the 160 ft AS/SVE ROI will not be used in determining the air sparge well placement.

It is desirable for the soil vapor extraction to generate a negative pressure within the vadose zone during the AS/SVE treatment. This way, any contaminants mobilized by air sparging will be captured by the SVE extraction well for subsequent treatment and disposal. However, during this AS/SVE test, all of the wells screened within the vadose zone were subject to positive pressure during the AS injection. Once the AS injection was disengaged, a negative pressure response was produced in the vadoze zone within 60 minutes. It is most likely that this weak vacuum response is due to the lack of sufficient screening in the vadose zone of the soil vapor extraction well MPX-1. The 5 ft of screen within the vadose zone in MPX-1 was almost eclipsed by the rising water table produced by the air sparge bubble and the vacuum cone surrounding the extraction well. Another 5 feet of screen would have allowed a greater influence of the vapor extraction during the AS/SVE test. Any SVE extraction wells installed for treatment of the soils must be screened at least 10 ft above the water table.

3.3.1. Soil Permeability to Airflow of Vadose Zone Soils

The parameters collected during the SVE pilot tests may be used to determine the soil permeability to airflow in the silty fine sand vadose zone unit. Using the pressure measured at the well head, the airflow rate, the screened interval, and the radius of influence, as determined in Figure 6, the soil permeability to airflow were computed by a modified version of the equation presented by Johnson et al. (1990).

The soil permeability to airflow, based on the results obtained during the pilot test (Table 4) ranges from 1.49×10^{-7} cm^2 to 1.92×10^{-7} cm^2, with an average soil permeability of 1.64×10^{-7} cm^2. These values are consistent with the silty fine to medium sand observed in the vadose zone (Freeze and Cherry, Table 2.2, p. 29, 1979). These values are also consistent with the values obtained in the SVE pilot test (Section 3.2.1),

and the physical properties testing performed in June 2006. The average horizontal permeability to airflow determined during the SVE test was 2.43×10^{-7} cm^2, which is within the standard deviation of the SVE testing results ($\pm 1.15 \times 10^{-7}$ cm^2). The vadose zone horizontal intrinsic permeability based on the laboratory physical properties testing was 4.29×10^{-10} cm^2, which is approximately three orders of magnitude lower than the pilot testing results.

3.3.2. Soil Vapor VOC Concentrations

Real-time monitoring of the VOC concentrations in the SVE off-gas were obtained during AS/SVE testing on July 12, 2006 and are summarized in Table 4. These readings were taken at the wellhead sample port (Figure 2) using a peristaltic pump to collect the samples into Tedlar® bags. An OVM was utilized to measure the concentrations in each Tedlar® bag sample. The OVM detected total organic compounds, but did not provide individual readings for specific compounds. OVM results ranged from 90 to 1,025 ppm_v. The average OVM measurement while the AS injection was engaged was 300 ppm_v, and the average OVM measurement after the AS injection was disengaged was 925 ppm_v. This result indicates that the air sparge injection is stripping volatiles from the aqueous phase, but the majority of VOC extraction is occurring within the vadose zone.

4. SUMMARY AND CONCLUSIONS

The purpose of the AS/SVE pilot test was to determine if these technologies, when used in combination, could provide effective source removal of VOCs in the vadose zone and saturated zone. AS/SVE is attractive, relative to groundwater extraction and treatment, since the AS/SVE process is *in situ*. This typically results in lower operation and maintenance costs. The upper water-bearing unit was expected to be amenable to air sparging technology since the injected air would readily diffuse within the sand. However, the efficiency of SVE in the vadose zone was unknown.

A summary of the pilot test and its implications are presented below.

- An AS test was conducted with air injection ranging from 2 to 10.8 scfm, injected pressures ranged from 5 to 7 psi, which indicated that the upper water-bearing unit is favorable to AS injection.
- The AS ROI is estimated to be greater than 20 feet. Pressures recorded at the air sparge test monitoring points during the test vary too greatly to be used in calculating an ROI. All that could be derived was a qualitative estimate of effectiveness. Appreciable increases in DO concentrations were observed during the AS test at distances of up to 20 feet from the injection well. A conservative design for AS injection well spacing would be based on a 20 foot AS ROI. This ROI permits a conservative coverage of the groundwater source area with a minimal number of air sparge wells.
- The SVE tests were conducted at applied vacuums ranging from 23 in H_2O to 100 in H_2O Induced vacuums were measured at each SVE monitoring point. The optimum vacuum for extraction of VOCs was at 56 in H_2O, with 55 scfm airflow rate, which indicates a favorable soil formation for vapor extraction. This operational vacuum and airflow rate can be considered acceptable for design purposes.
- Within the optimum applied-vacuum range, the SVE ROI was quantified at approximately 34 ft. This ROI will allow the complete SVE coverage of the impacted soils at the site with a minimum number of SVE wells.
- The SVE pilot test yielded an average soil permeability to airflow of 2.43×10^{-7} cm^2, and the AS/SVE pilot test yielded an average soil permeability to airflow of 1.64×10^{-7} cm^2, which are both consistent with a silty fine to medium sand.
- Up to 975 lb VOCs may be removed each day through SVE extraction based on a single extraction well. This value provides a preliminary estimate of the initial VOC mass removal that can be expected from an SVE well.

Based on these test results, it was shown that a combined AS/SVE system would be appropriate for the source remediation of VOC-impacted soil and the groundwater plume. A full-scale AS system would be able to strip VOCs from the groundwater, and a full-scale SVE system would be able to strip the VOCs from the vadose zone. Based on the results of the AS/SVE and MPX pilot tests, SVE technology is expected to be more efficient at VOC mass removal than MPX technology at the site. The SVE pilot test (975 lb/day) extracted 6.5 times more VOCs per unit of time than did the MPX pilot test (150 lb/day).

Based on these test results, AS/SVE would appear to be a preferable alternative to MPX in terms of mass removal and overall effectiveness in decreasing vadose zone and saturated zone source concentrations in a reasonable time frame.

5. REFERENCES

Bedient, P.B., Rifai, H.S., and Newell, C.J., 1994. Ground Water Contamination: Transport and Remediation. PTR Prentice Hall, 1994.

Fetter, C.W., 1993. Contaminant Hydrology, Macmillian Publishing Company. 458p.

Johnson, P.C., Stanley, C.C., Kemblowski, M.W., Byers, D.L, and Colthart, J.D., 1990. A Practical Approach to the Design, Operation and Monitoring of In Situ Soil-Venting Systems, GWMR, Spring 1990. pp 159-178.

McConnell, J.B. and Hacke, C.M., 1993. Hydrogeology, Water Quality and Water-Resources Development Potential of the Upper Floridan Aquifer in the Valdosta Area, South-Central Georgia: U.S. Geological Survey, WRI Report 93-4044, 1993.

Grubb, Dennis G. and Nicholas Sitar, August 1994. Evaluation of Technologies for In-Situ Cleanup of DNAPL Contaminated Sites. EPA/600/R-94/120.

Nyer, Evan K., 1992, Practical Techniques for Groundwater and Soil Remediation, CRC Press. 306p.

Pankow, James F. and John A. Cherry 1996. Dense Chlorinated Solvents and other DNAPLs in Groundwater. Waterloo Press. 522 pages.

U.S. Army Corps of Engineers, 1997. In-Situ Air Sparging: Engineering and Design, EM 1110-1-4005, September 15, 1997.

U.S. Army Corps of Engineers, 2002. Soil Vapor Extraction and Bioventing: Engineering and Design, EM 1110-1-4001, June 3, 2002.

United States Environmental Protection Agency, February 1992. Dense Nonaqueous Phase Liquids – A Workshop Summary, Dallas, Texas, April 16 - 18, 1991, EPA/600/-92/030

U.S. EPA, May 1995. How to Evaluate Alternative Cleanup Technologies for Underground Storage Tank Sites: A Guide for Corrective Action Plan Reviewers. EPA 510-B-95-007.

U.S. EPA, 2002. List of Drinking Water Contaminants and MCLs: National Primary Drinking Water Standards. EPA 816-F-02-013. Online: http://www.epa.gov/safewater/mcl.html#mcls, June 30, 2005

U.S. EPA, October 2004. US EPA Region 9 Preliminary Remediation Goals. Online: http://www.epa.gov/region09/waste/sfund/prg/files/04prgtable.pdf, June 30, 2005

Wisconsin Department of Natural Resources, 2003. Guidance for Design, Installation and Operation of In Situ Air Sparging Systems, PUB-RR-186

TABLES

TABLE 1
Monitoring Well Construction Details and July 2006 Water Levels, Perma-Fix of South Georgia, Inc., Valdosta, GA

		Monitor Well Designation	Date of Installation	Casing Diameter (Inches)	Total Depth (Ft BTOC)	Screened Interval (ft bgs)	Elevation of Top of Casing (ft MSL)	Ground Elevation (ft MSL)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft MSL)
On-Site Monitoring Wells	Shallow Monitoring Wells	MP-8	8/1/04	1.25	22.13	17 - 19	191.889	191.889	16.53	175.36
		MW-1S*	NA	2	27.79	NA	190.55	187.485	15.66	174.89
		MW-2*	NA	2	27.7	NA	193.053	190.701	17.86	175.19
		MW-2S*	NA	2	22.82	NA	187.99	186.21	13.83	174.16
		MW-3*	NA	2	25.35	NA	194.457	191.996	18.58	175.88
		MW-4S*	NA	2	28.02	NA	189.391	189.391	14.58	174.81
		MW-5S	3/22/96	2	27.36	10 - 25	188.809	185.951	14.17	174.64
		MW-6S	3/21/96	2	26.9	10 - 25	191.332	187.878	16.17	175.16
		MW-7S	3/27/96	2	24.68	10 - 25	187.45	188.311	12.86	174.59
		MW-8S	3/22/96	2	27.6	10 - 25	194.61	191.339	19.06	175.55
		MW-9S	3/22/96	2	22.25	10 - 25	190.17	190.66	14.73	175.44
		MW-10S	3/23/96	2	24.9	10 - 25	190.17	190.416	15.05	175.12
		MW-11S	3/21/96	2	24.67	10 - 25	195.115	192.224	19.51	175.6
		MW-12S	3/23/96	2	27.49	10 - 25	189.04	186.35	14.21	174.83
		MW-13S	6/6/97	2	24.51	10 - 25	187.71	187.852	12.72	174.99
		MW-24S*	NA	2	22.82	NA	189.5	NA	14.01	175.49
		MW-100	6/17/06	2	23.35	10 - 25	190.218	190.218	14.98	175.24
		MW-101	6/17/06	2	25.17	10 - 25	190.167	190.167	15.05	175.12
		MW-102	6/13/06	2	27.15	10 - 25	192.962	190.266	17.72	175.24
		MW-103	6/16/06	2	27.29	10 - 25	193.315	190.473	17.41	175.91
	Deep Monitoring Wells	MW-1D*	NA	2	46.28	37 - 47	190.59	187.53	15.61	174.98
		MW-2D*	NA	2	44.37	NA	189.18	186.3	15.03	174.15
		MW-4D*	NA	2	44.7	NA	189.47	186.53	14.49	174.98
		MW-5D	3/28/96	2	43.5	31 - 41	188.9	185.96	14.27	174.63
		MW-6D	3/21/96	2	42.82	31 - 41	191	188.01	15.62	175.38
		MW-7D	3/27/96	2	40.69	31 - 41	188.06	188.35	13.1	174.96
		MW-8D	3/27/96	2	39.6	31 - 41	194.57	191.36	19.04	175.53
		MW-9D	3/27/96	2	40.75	31 - 41	190.39	190.6	14.96	175.43
		MW-10D	3/24/96	2	40.83	31 - 41	190.17	190.45	15.13	175.04
		MW-11D	3/20/96	2	43.4	31 - 41	195.14	192.29	19.49	175.65
		MW-12D	3/24/96	2	42.4	31 - 41	189.04	186.38	14.99	174.05
		MW-13D	6/3/97	2	41.42	31 - 41	187.61	187.86	12.71	174.9
		MW-13DD	12/23/00	2	67.6	60 - 65	187.65	187.86	19.83	167.82
		MW-13D3*	NA	2	135.55	122 - 138	187.5	187.86	95.3	92.2
		MW-24D	9/8/04	2	39.51	35 - 40	189.42	189.67	13.93	175.49
	Pilot Test Wells	ASI-1	6/14/06	2	37.6	30 - 35	193.547	190.686	18.83	174.72
		MPX-1	6/12/06	4	31.32	15 - 30	193.503	190.493	18.18	175.32
		ASM-1	6/16/06	2	23.65	18 - 23	193.452	190.612	18.11	175.34
		ASM-2	6/16/06	2	23.65	18 - 23	193.486	190.596	18.11	175.38
		ASM-3	6/16/06	2	26.89	18 - 23	193.874	190.586	18.22	175.65
		ASM-4	6/16/06	2	26.21	18 - 23	193.794	190.774	18.41	175.38
		SVE-1	6/15/06	2	23.2	10 - 25	193.524	190.591	18.26	175.26
		SVE-2	6/15/06	2	25.7	10 - 25	193.262	190.395	17.94	175.32
		SVE-3	6/15/06	2	26.61	10 - 25	193.4	190.575	18.09	175.31
		SVE-4	6/16/06	2	24.86	10 - 25	193.33	190.487	18	175.33
	Temporary Wells	B-100	6/13/06	2	29.51	15 - 25	195.19	190.481	20.82	174.37
		B-101	6/16/06	2	23.19	15 - 25	190.4	190.6	15.08	175.32
		B-102	6/13/06	2	29.56	15 - 25	196.87	190.366	19.11	177.76
		B-103	6/19/06	2	25.21	15 - 25	190.85	190.895	15.31	175.54
		B-104	6/14/06	2	26.41	15 - 25	195.84	190.669	20.5	175.34
		B-105	6/15/06	2	26.37	15 - 25	195.51	190.673	20.15	175.36
		B-106	6/19/06	2	25.2	15 - 25	190.596	191.139	15.03	175.57
		B-107	6/19/06	2	24.7	15 - 25	191.202	191.488	15.96	175.24
		B-108	6/20/06	2	23.99	15 - 25	191.973	192.085	16.66	175.31
		B-109	6/19/06	2	25.09	15 - 25	189.557	190.012	14.17	175.39
		B-110	6/20/06	2	21.87	15 - 25	191.738	191.896	16.87	174.87
		B-111	6/19/06	2	22.69	15 - 25	191.392	191.505	16.14	175.25
		B-112	6/20/06	2	25.18	15 - 25	191.887	192.139	16.12	175.77
		B-113	6/20/06	2	24.35	15 - 25	191.493	191.527	16.57	174.92
		B-114	6/20/06	2	25.15	15 - 25	192.23	192.066	16.91	175.32

* = No well logs available for these wells
NA = Not Available
NS = Not Sampled

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Monitoring Well Construction Details and July 2006 Water Levels, Perma-Fix of South Georgia, Inc., Valdosta, GA

		Monitor Well Designation	Date of Installation	Casing Diameter (Inches)	Total Depth (Ft BTOC)	Screened Interval (ft bgs)	Elevation of Top of Casing (ft MSL)	Ground Elevation (ft MSL)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft MSL)
Off-Site Monitoring Wells	Shallow	MW-14S*	NA	2	24.45	NA	175.86	NA	5.18	170.68
		MW-16	12/22/00	2	36.81	20 - 35	181.45	178.77	9.89	171.56
		MW-17*	NA	2	42.6	NA	171.7	NA	4.3	167.4
		MW-18*	NA	2	41.76	NA	181.47	NA	12.1	169.37
		MW-19*	NA	2	39.9	NA	188.84	NA	14.13	174.71
		MW-20*	NA	2	42.21	28 - 38	170.13	170	2.41	167.72
		MW-21*	NA	2	42.14	NA	169.43	NA	1.34	168.09
		MW-22	4/16/03	2	39.5	29.5 - 39.5	171.02	167.79	NS	NS
		MW-25*	NA	2	NA	NA	NA	NA	NS	NS
		MW-26	9/9/04	2	22.3	12.75 - 22.75	192.55	192.95	16.2	176.35
		MW-27	9/9/04	2	22.32	12.7 - 22.7	191.44	191.96	15.98	175.46
		MW-28	9/9/04	2	24	14 - 24	194.97	195.21	NS	NS
	Deep	MW-14D*	NA	2	38.8	NA	175.79	NA	7.78	168.01
		MW-15	12/19/00	2	43.4	24 - 39	186.98	184.18	13.58	173.4
		MW-23	9/2/04	2	79.5	68 - 78	175.21	176	28.28	146.93
		MW-29	9/10/04	2	40.09	35.5 - 40.5	175.68	176.32	6.96	168.72

* = No well logs available for these wells
NA = Not Available
NS = Not Sampled

TABLE 2
Air Sparge Test Data, Perma-Fix of South Georgia, Inc.

Gauge Readings															
		AS Air Compressor			Pressure Readings at Wells										
Time	Elapsed Time (hr:min)	P1 (psi)	T1 (°F)	Q1 (SCFM)	SVE-1 (in H2O)	SVE-2 (in H2O)	SVE-3 (in H2O)	SVE-4 (in H2O)	ASM-1 (in H2O)	ASM-2 (in H2O)	ASM-3a (in H2O)	ASM-3b (in H2O)	ASM-4a (in H2O)	ASM-4b (in H2O)	Comments
15:15	0:00	5.5	98	1.8											Breakthrough @ 5.5 psi
15:20	0:05	5.5	98	2	0.13	0.18	0.21	0.09	4.15	4.08	3.99	0.06	2.77	0.04	Q Increasing
15:25	0:10	5	98	2	0.09	0.1	0.11	0.05	5.08	4.86	4.68	0.03	2.53	0.02	
15:28	0:13				0.06	0.02	0.04	0.13	5.81	5.61	5.07	0.2	2.42	0.09	
15:30	0:15	5	98	2.2											
15:31	0:16				0.14	0.11	0.1	0.13	6.55	6.07	5.48	0.4	2.23	0.1	
15:35	0:20	5	98	2.2	0.15	0.12	0.1	0.13	55.5	6.99	5.89	1.2	1.69	0.13	
15:40	0:25	5	98	2.2	0.35	0.14	0.7	0.26	51.4	12.75	5.39	2	1.26	0.19	
15:44	0:29				0.77	0.2	0.8	0.33	51.6	33.5	5.14	2.71	1.02	0.23	Increase Pressure @ 15:44
15:45	0:30	5	98	2.2											
15:47	0:32				2	0.35	0.7	0.47			12.6	3.3	4.71	0.29	
15:50	0:35	6	98	6.8											
15:51	0:36				10.58	0.56	1.37	0.65	64.8	72.5	14.11	4.99	5.31	0.41	
15:54	0:39				15.2	0.52	2.75	0.93	66.6	74.7	14.23	5.9	5.01	0.52	
15:55	0:40	6	98	6.8											
15:57	0:42				16.45	0.61	3.15	1.22	67.3	76.8	13.8	7.33	4.59	0.66	
16:00	0:45	6	98	7.2											
16:01	0:46				17.41	0.76	4.6	1.72	70	86.5	10.4	9.32	2.43	0.9	Increase Pressure @ 16:01
16:05	0:50	7	98	10.4											
16:06	0:51				26.2	1.34	5.46	2.55	73.8	88.7	13.16	11.69	31.5	1.36	
16:10	0:55	7	98	10.5	34.8	2.02	8.43	3.39	75.6	90.1	13.85	13.55	65.6	1.64	
16:13	0:58				36.3	2.23	9.13	4.39	77	90.1	13.66	15.02	72	1.88	
16:15	1:00	7	98	10.8											
16:17	1:02				38.4	2.55	10.44	5.46	77.5	89.8	20.5	15.7	69	2.11	
16:20	1:05	7	100	10.8											
Maximum Pressure (in H2O)					38.4	2.55	10.44	5.46	77.5	90.1	20.5	15.7	72	2.11	
Distance from ASI-1 (ft)					16.78	14.6	7.45	13.62	4.63	9.85	9.46	9.46	13.06	13.06	

Dissolved Oxygen (mg/L):					
Date	Time	SVE-1	SVE-2	SVE-3	SVE-4
7/11	9:00	0.32	1.72	1.09	0.35
7/11	16:45	9.05	5.9	7.75	10.4
7/12	7:15	5.69	3.3	3.07	1.11

Radius of Influence > 20 ft

Notes:
P1 = Air Pressure at well head (PSI)
T1 = Temperature of air at well head
Q1 = Air flow rate into air sparge well

TABLE 3
Soil Vapor Extraction Test Data
Perma-Fix of South Georgia, Inc., Valdosta, GA

Gauge Readings																					
		SVE Vaccuum Blower								Pressure Readings at Wells											
Time	Elapsed Time (hr:min)	P1 (in H2O)	T1 (^{o}F)	ΔP (in H2O)	Q (SCFM)	Vb (ft/min)	Tamb (^{o}F)	OVM (ppm)	k (cm^2)	SVE-1 (in H2O)	SVE-2 (in H2O)	SVE-3 (in H2O)	SVE-4 (in H2O)	ASM-1 (in H2O)	ASM-2 (in H2O)	ASM-3a (in H2O)	ASM-3b (in H2O)	ASM-4a (in H2O)	ASM-4b (in H2O)	MW-102 (in H2O)	Comments
9:35	0:00	23	81	0.55	42	4.8	85	578	4.10E-07												Start SVE
9:50	0:15	23	80	0.55	42	4.8	86	662	4.10E-07	-1.86	-2.47	-3.63	-1.78	0	0.03	0.05	-3.18	0.04	-1.9	-0.07	
10:05	0:30	23	80	0.55	42	48	86	620	4.10E-07	-2.01	-2.61	-3.91	-1.93	0.03	0.05	0.07	-3.25	0	-1.97	-0.13	
10:20	0:45	23	80	0.5	41	4.8	88	940	4.00E-07	-2.05	-2.64	-3.94	-1.97	0.04	0.07	0.07	-3.26	0.02	-2	-0.16	
10:35	1:00	23	80	0.55	42	4.8	88	1010	4.10E-07	-2.05	-2.63	-3.93	-1.97	0.05	0.11	0.07	-3.26	0.01	-2.01	-0.2	
10:50	1:15	23	80	0.53	42	4.8	88	390	4.10E-07	-2.03	-2.61	-3.89	-1.94	0.07	0.12	0.08	-3.22	0.01	-1.95	-0.18	
10:52	1:17	56	80	1.2	55	3.8	88		2.03E-07												Increase Vacuum
11:05	1:30	56	80	1.2	55	3.8	90	1050	2.03E-07	-3.32	-5.22	-7.97	-3.18	0	0.05	0.03	-6.39	0	-3.46	-0.27	
11:20	1:45	56	80	1.2	55	3.8	90	1230	2.03E-07	-3.44	-5.32	-8.08	-3.28	0.06	0.12	0.09	-6.46	0.01	-3.5	-0.3	
11:35	2:00	56	80	1.2	55	3.8	90	1245	2.03E-07	-3.45	-5.38	-8.29	-3.28	0.13	0.18	0.13	-6.56	0.02	-3.54	-0.28	
11:50	2:15	56	80	1.2	55	3.8	90	1240	2.03E-07	-3.48	-5.44	-8.36	-3.31	0.21	0.25	0.24	-6.58	0.05	-3.56	-0.31	
12:05	2:30	56	80	1.2	55	3.8	90	1280	2.03E-07	-3.5	-5.48	-8.41	-3.32	0.24	0.29	0.2	-6.64	0	-3.59	-0.35	
12:20	2:45	56	80	1.2	55	3.8	92	1325	2.03E-07	-3.5	-5.48	-8.42	-3.32	0.27	0.34	0.26	-6.61	0	-3.59	-0.39	
12:23	2:48	80	80	1.7	63	3.4	92		1.56E-07												Increase Vacuum
12:35	3:00	84	80	1.7	63	3.4	92	1240	1.47E-07	-3.61	-5.76	-8.8	-3.41	0.25	0.39	0.28	-6.88	0.03	-3.69	-0.5	
12:50	3:15	83	80	1.7	63	3.4	92	1155	1.49E-07	-3.54	-5.61	-8.64	-3.34	0.34	0.41	0.2	-6.8	0	-3.65	-0.55	
13:05	3:30	82	80	1.7	63	3.4	94	1184	1.51E-07	-3.5	-5.59	-8.59	-3.3	0.35	0.42	0.22	-6.76	0	-3.59	-0.45	
13:08	3:33	100	80	2	68	3.1	98		1.29E-07												Increase Vacuum
13:20	3:45	100	80	2	68	3.1	100	1115	1.29E-07	-3.52	-5.63	-8.64	-3.31	0.37	0.47	0.22	-6.82	0	-3.61	-0.47	
13:35	4:00	100	80	2	68	3.1	100	945	1.29E-07	-3.52	-5.63	-8.65	-3.31	0.42	0.52	0.25	-6.8	0.03	-3.61	-0.48	
Maximum Vacuum (in H2O)										-3.61	-5.76	-8.8	-3.41				-6.88		-3.69	-0.55	
Distance from MPX-1										3.94	9.77	5.83	18.65	9	10.38	4.71	4.71	15.02	15.02	45.87	

Radius of Influence = 34 ft

Offgass VOC Concentrations (mg/L)																		
	Chloroform	Methylene Chloride	1,1,1-Trichloroethane	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	1,1-Dichloroethane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylenes	Total Xylenes	Total Light Petroleum	Freon 113	Total VOCs
SVE Start	1.97	12.2	18.4	3.03	0.677	14.2	0.183	0.459	0.362	0.81	13.3	0.538	1.87	0.363	2.233	150	0.567	220
SVE End	0.432	12.4	16.9	2.02	0.507	13.8	0.14	0.447	0.358	0.616	12	0.412	1.43	0.268	1.698	112	0.392	175

Notes:

P1 = Air Pressure at well head

T1 = Temperature of extracted air

ΔP = Piezometer pressure differential

Q1 = Air flow rate from soil vapor extraction well

Vb = Air flow velocity from extraction well

Tamb = Ambient temperature

OVM = Total VOCs concentration as measured by an organic vapor meter

k = Soil Horizontal Permeability to air flow.

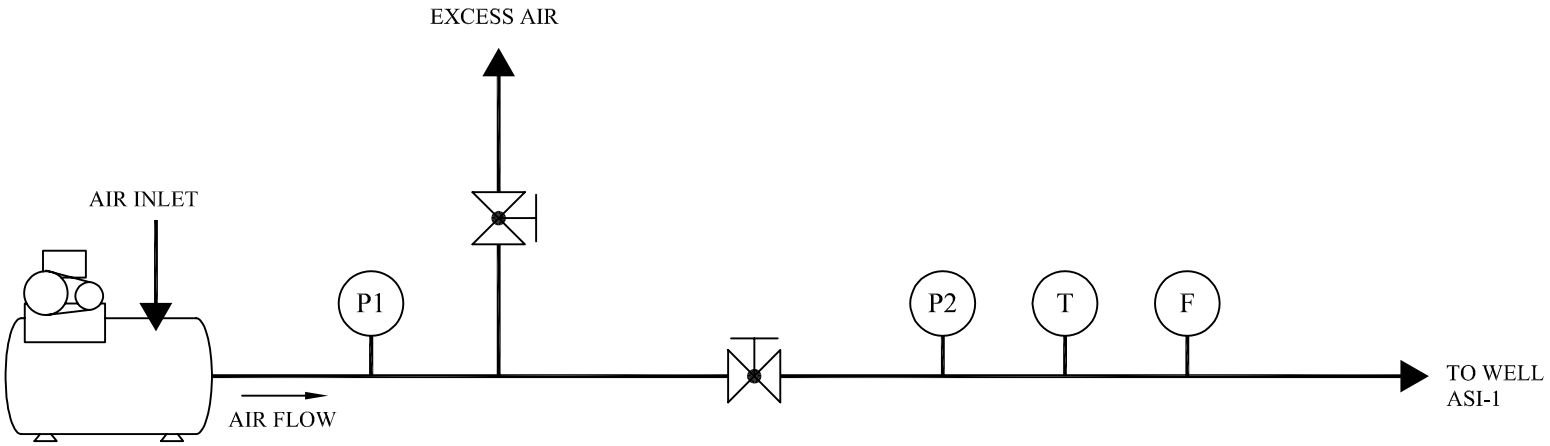
TABLE 4
Air Sparge and Soil Vapor Extraction Test Data, Perma-Fix of South Georgia, Inc.

		AS Air Compressor			SVE Vaccuum Blower								Pressure Readings at Wells										
Time	Elapsed Time (hr:min)	P1 (psi)	T1 (°F)	Q1 (SCFM)	P2 (in H2O)	T2 (°F)	ΔP (in H2O)	Q2 (SCFM)	Vb (ft/min)	Tamb (°F)	OVM (ppm)	k (cm^2)	SVE-1 (in H2O)	SVE-2 (in H2O)	SVE-3 (in H2O)	SVE-4 (in H2O)	ASM-1 (in H2O)	ASM-2 (in H2O)	ASM-3a (in H2O)	ASM-3b (in H2O)	ASM-4a (in H2O)	ASM-4b (in H2O)	MW-102 (in H2O)	Comments
7:55	0:00	8.5	80	7	55	72	1	51	4.1	90	840	1.92E-07												
8:00	0:05	8	80	7	55	72	1	51	4.2	90	825	1.92E-07												
8:04	0:09												-0.55	-2.04	-3.2	-1.06	13.25	11.7	10.6	-0.99	8.07	-1.09		
8:07	0:12												0.37	-1.06	-1.05	-0.67	50	16.5	11.56	1.13	7.55	-0.58	-0.04	
8:10	0:15	7.5	82	7	55	72	1	51	4.2	90	230	1.92E-07												
8:12	0:17												10.4	-0.18	2.62	-0.03	60.2	48.8	12.75	4.55	11.8	0		
8:16	0:21												14.4	0.16	4.4	0.32	61.8	68.9	14.33	6.35	23.7	0.27		
8:20	0:25	7.5	85	7	55	72	1	51	4.1	90	190	1.92E-07	16.9	0.5	5.88	0.75	62.6	78.8	20	7.57	32.4	0.47		
8:23	0:28												18.75	0.89	6.88	1.17	63.4	79.5	34.3	8.63	43.9	0.67	0.06	
8:27	0:32												21.2	1.2	8	1.75	63.5	79.4	61.1	9.6	60.5	0.91		Increase Vacuum
8:30	0:35	7.5	88	7	75	72	1.3	56	3.6	90		1.49E-07												Water Production in MPX-1; Decrease Vacuum
8:31	0:36												23.3	1.4	9.22	2.08	64	79.7	69.5	12.6	60.3	1.13		
8:35	0:40												26.2	1.7	8.35	2.52	64.4	79.6	69	14.05	59.4	1.32		
8:39	0:44												29.2	1.88	10.03	3.15	64.5	79.3	70	15.15	59	1.48		
8:40	0:45	7.5	88	7	70	72	1.2	54	3.8	90	90	1.55E-07												Increase Vacuum
8:42	0:47												31.8	2.1	10.6	3.6	64	78.6	69.2	16.83	59.7	1.65	0.84	
8:47	0:52												32.7	2.38	11.13	4.1	63.8	77.6	70	17.35	58.3	1.8		
8:50	0:55	7.5	88	7	70	72	1.2	54	3.8	90	105	1.55E-07												
8:51	0:56												33.1	2.87	11.28	4.4	63.7	76.8	68.9	18.38	58.1	1.92		
8:54	0:59												34.3	2.98	11.5	4.69	63.3	76.3	67.6	19.53	57.3	1.99		
8:57	1:02												34.6	3.03	11.75	5	63	75.8	66.7	19.5	56.8	2.04	1.21	
9:00	1:05	7.5	88	7	70	72	1.2	54	3.8	90	120	1.55E-07												
9:01	1:06												35	3.13	12.14	5.3	63	75.3	66.6	19.7	56.3	2.14		
9:04	1:09												35.6	3.21	12.16	5.49	63	75.1	66.5	20.2	56.1	2.19		
9:07	1:12												33.3	3.23	12.31	5.63	65.4	77.9	66.6	17.4	59.8	2.21	1.69	
9:10	1:15	7.5	90	7	70	72	1.2	54	3.8	90	185	1.55E-07												
9:14	1:19												38.9	3.44	12.9	6.04	67.1	78	68.1	20.7	55.6	2.41		
9:17	1:22												38.5	3.56	13.1	6.27	65.4	76.8	66.9	21.4	54.8	2.51		
9:20	1:25	7.5	90	7	70	72	1.2	54	3.8	90	200	1.55E-07	38.3	3.78	12.98	6.45	64.3	76.2	66.6	21.8	55	2.57	2.07	
9:24	1:29												38.2	3.78	12.55	6.65	63.5	75.6	66.3	22.1	54.7	2.59		
9:28	1:33												38.4	3.75	12.25	6.6	63	75.2	66.1	22.3	55	2.59		
9:30	1:35	7.5	92	7	70	72	1.2	54	3.8	90	220	1.55E-07												
9:32	1:37												38.4	3.46	11.63	6.82	62.8	74.7	65.1	22.4	53.3	2.63	2.07	Air Sparge Compressor Off
9:38	1:43												27.5	1.6	4.4	5.45	48.8	61.8	53.3	15.88	41.1	1.21		
9:40	1:45				70	74	1.25	55	3.8	90	770	1.58E-07												
9:43	1:48												24.9	0.14	1.65	4.38	45.8	58.3	50.6	14.31	38.4	0.68		
9:47	1:52												24.3	-0.54	-0.13	4	43	56.6	48	12.65	19.8	0.13		
9:50	1:55				70	76	1.25	55	3.8	90	860	1.58E-07	23.1	-1.65	-1.88	3.33	39.1	54.6	42.5	9.65	17.69	-0.35	2.12	
9:55	2:00												21.9	-2.19	-4.16	2.7	35.1	53.4	36.9	6.02	15.7	-0.68		
9:58	2:03												20.5	-2.57	-4.49	2.2	32.7	52.1	35.5	4.28	15.9	-0.96		
10:00	2:05				70	76	1.25	55	3.8	90	950	1.58E-07												
10:01	2:06												18.1	-2.93	-5.2	1.6	30.9	51.4	35.2	1.81	15.5	-1.32	1.26	
10:06	2:11												15.11	-3.44	-5.87	0.5	30	50.3	34.6	-0.26	14.58	-1.59		
10:09	2:14												13.79	-3.65	-6.16	-0.15	29	49.5	34.3	-1.48	13.53	-1.79		
10:10	2:15				70	76	1.25	55	3.8	90	900	1.58E-07												
10:20	2:25												7.3	-4.3	-6.96	-1.36	29.8	40.8	34.1	-4.53	13.26	-2.34	0.33	
10:25	2:30				70	78	1.25	55	3.8	90	950	1.58E-07												
10:30	2:35												2.45	-4.64	-7.36	-2.01	31.8	35	33.8	-5.3	11.76	-2.69	0.18	
10:43	2:48												-0.37	-4.88	-7.56	-2.42	34.5	40.2	32.4	-5.75	8.18	-2.9	-0.03	
10:45	2:50				70	78	1.25	55	3.8	90	1015	1.58E-07												
11:00	3:05				70	78	1.25	55	3.8	90	1025	1.58E-07	-1.88	-4.94	-7.63	-2.61	36.3	40.9	30	-5.96	5.52	-2.98	-0.31	
												Maximum Pressure (in H2O)	38.9	3.78	13.1	6.82	67.1	79.7	70	22.4	60.5	2.63	2.12	
												Maximum Vacuum (in H2O)	-1.88	-4.94	-7.63	-2.61				-5.96		-2.98	-0.31	
												Distance from ASI-1	16.78	14.6	7.45	13.62	4.63	9.85	9.46	9.46	13.06	13.06	45.87	
												Distance from MPX-1	3.94	9.77	5.83	18.65	9	10.38	4.71	4.71	15.02	15.02	45.22	

AS Radius of Influence > 20 ft

Notes:
P1 = Air Pressure at air sparge injection well
T1 = Temperature of injected air
Q1 = Air flow rate into air sparge well
P2 = Air Pressure at extraction well
T2 = Temperature of extracted air
ΔP = Piezometer pressure differential
Q2 = Air flow rate from soil vapor extraction well
Vb = Air flow velocity from extraction well
Tamb = Ambient temperature
OVM = Total VOCs concentration as measured by an organic vapor meter
k = Soil Horizontal Permeability to air flow.

FIGURES



LEGEND

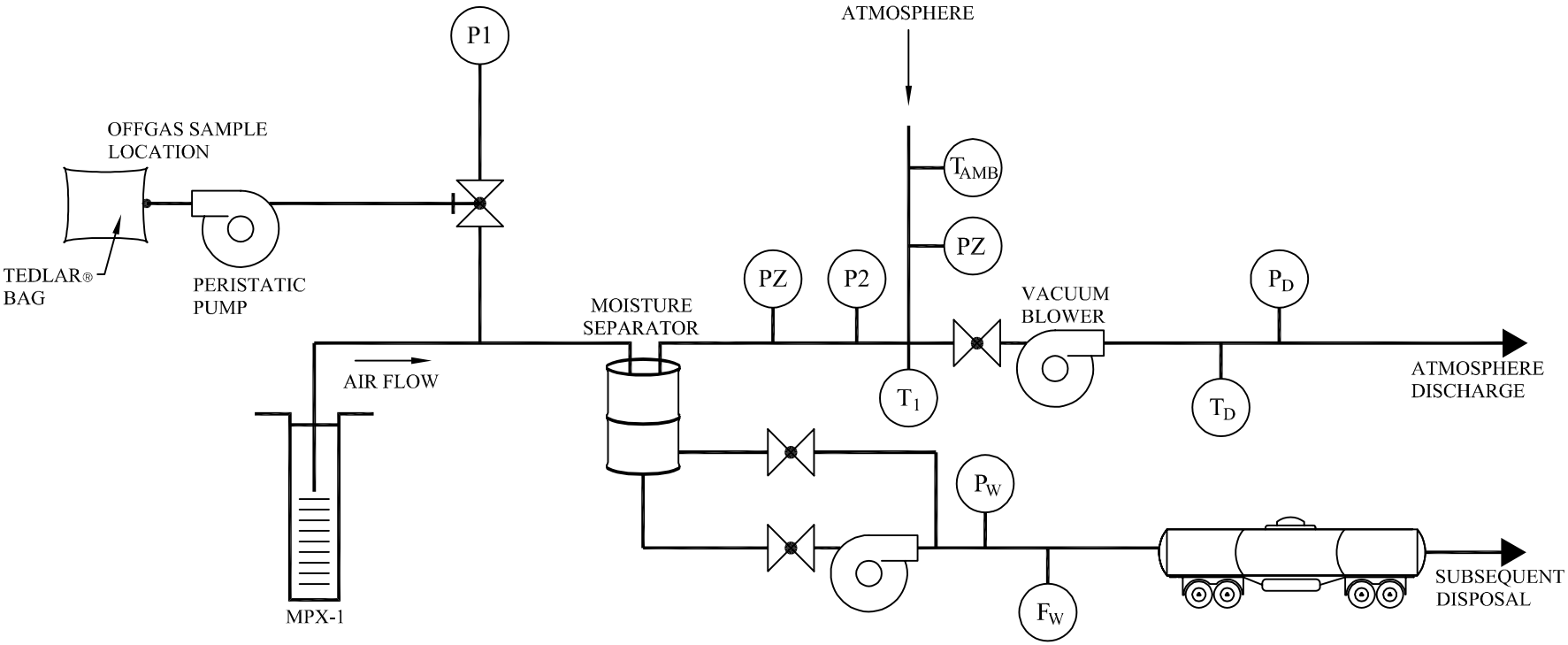
P1	AIR COMPRESSOR PRESSURE WITH IN-LINE PRESSURE GAUGE
P2	PRE-INJECTION PRESSURE WITH IN-LINE PRESSURE GAUGE
T	TEMPERATURE WITH INLINE THERMOMETER
F	FLOW METER WITH ROTOMETER
	MANUAL NEEDLE VALVE

CAMERON-COLE

FIGURE 1

AIR COMPRESSOR SCHEMATIC FOR AS TEST
PERMA-FIX VALDOSTA

SCALE:	DATE:	DWG NO.
NTS	9/11/06	1004-47



LEGEND

P1	INLET PRESSURE WITH IN-LINE VACUUM GAUGE
P2	PRE-BLOWER PRESSURE WITH IN-LINE VACUUM GAUGE
T_D	DISCHARGE TEMPERATURE WITH IN-LINE THERMOMETER
P_D	DISCHARGE AIR PRESSURE WITH IN-LINE FLOW METER
T_{AMB}	AMBIENT TEMPERATURE WITH IN-LINE THERMOMETER
T_1	PRE-BLOWER TEMPERATURE WITH IN-LINE THERMOMETER
PZ	PIEZOMETER
P_W	FLUID PRESSURE WITH IN-LINE PRESSURE GAUGE
F_W	FLOW METER WITH ROTOMETER
	BALL VALVE

CAMERON-COLE

FIGURE 2

VACUUM BLOWER SCHEMATIC FOR SVE TEST
PERMA-FIX VALDOSTA

SCALE:	DATE:	DWG NO.
NTS	9/11/06	1004-46

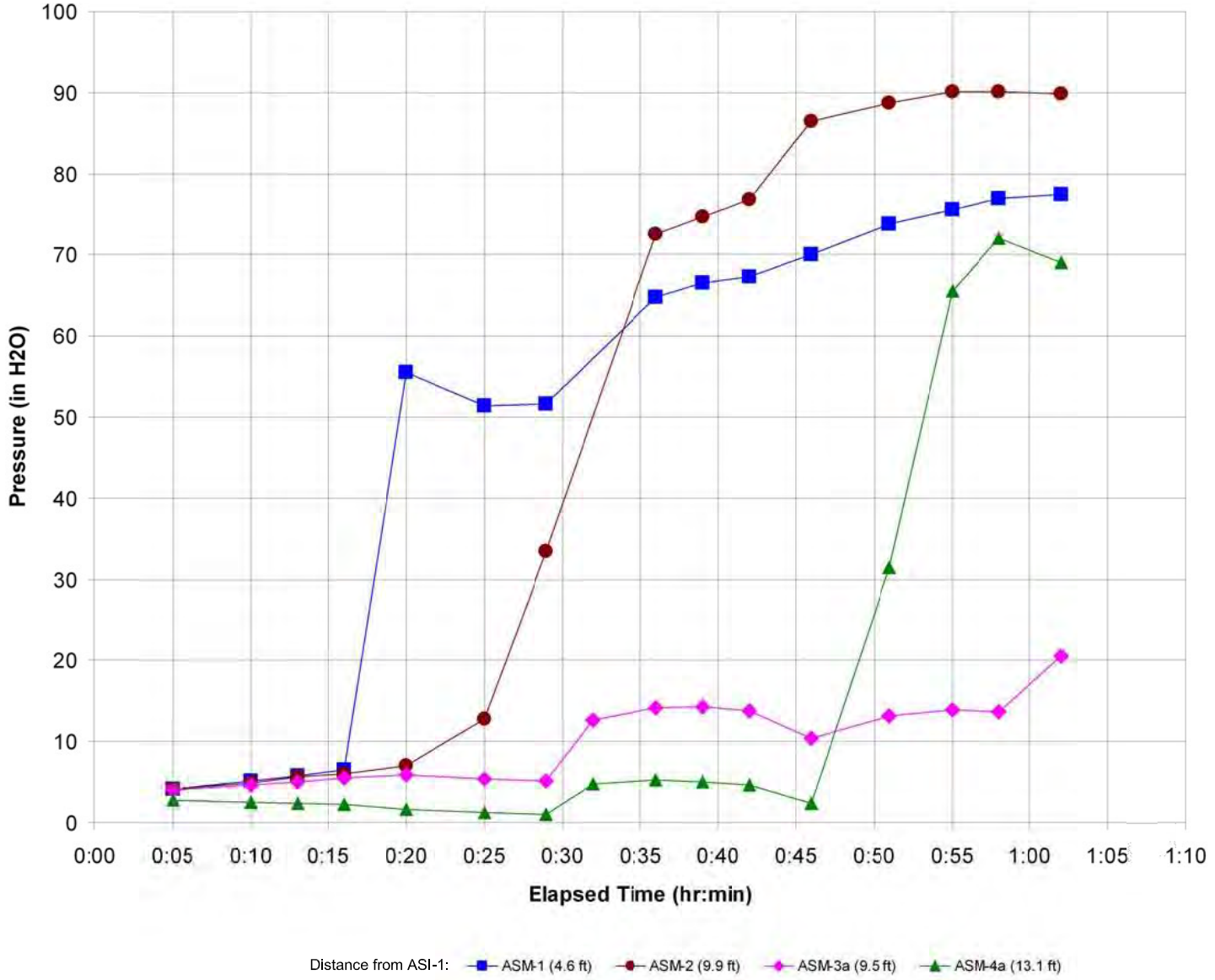


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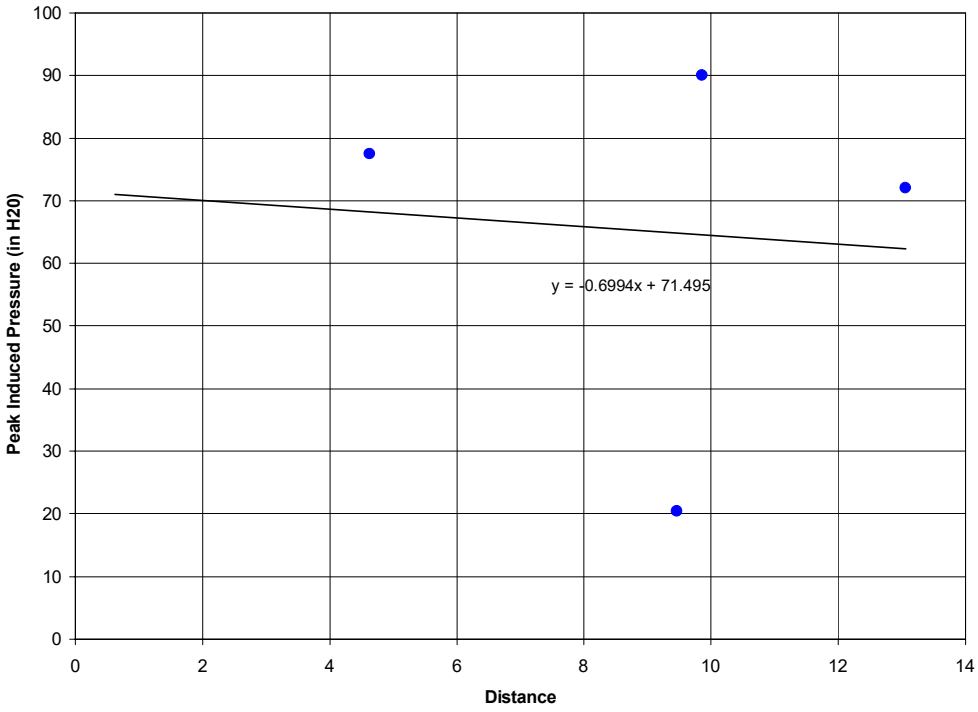
FIGURE 3

SATURATED PRESSURE RESPONSE
DURING AS TEST
PERMA-FIX VALDOSTA

SCALE:	DATE:	DWG NO.
1" = 1'	10/09/06	1004-33

Peak Pressure vs. Distance for Air Sparge Wells During AS Test



Peak Pressure vs. Distance for Air Sparge Wells During AS/SVE Test

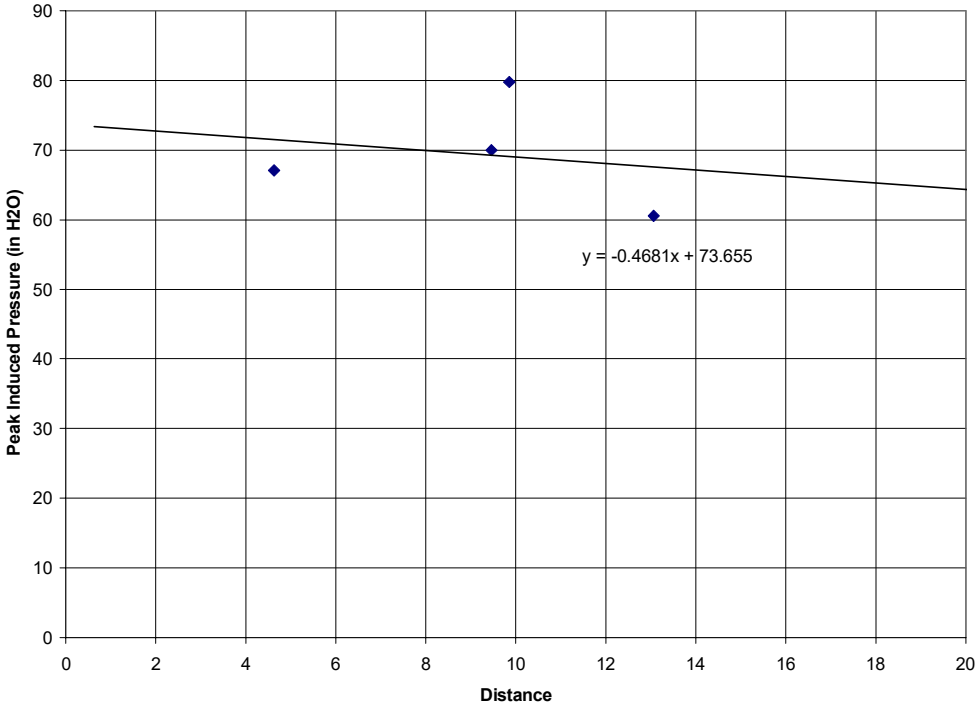


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FIGURE 4

PEAK PRESSURE vs. DISTANCE FOR AIR SPARGE WELLS DURING AS/SVE TESTS
PERMA-FIX VALDOSTA

SCALE:	DATE:	DWG NO.
AS NOTED	8/15/06	1004-34

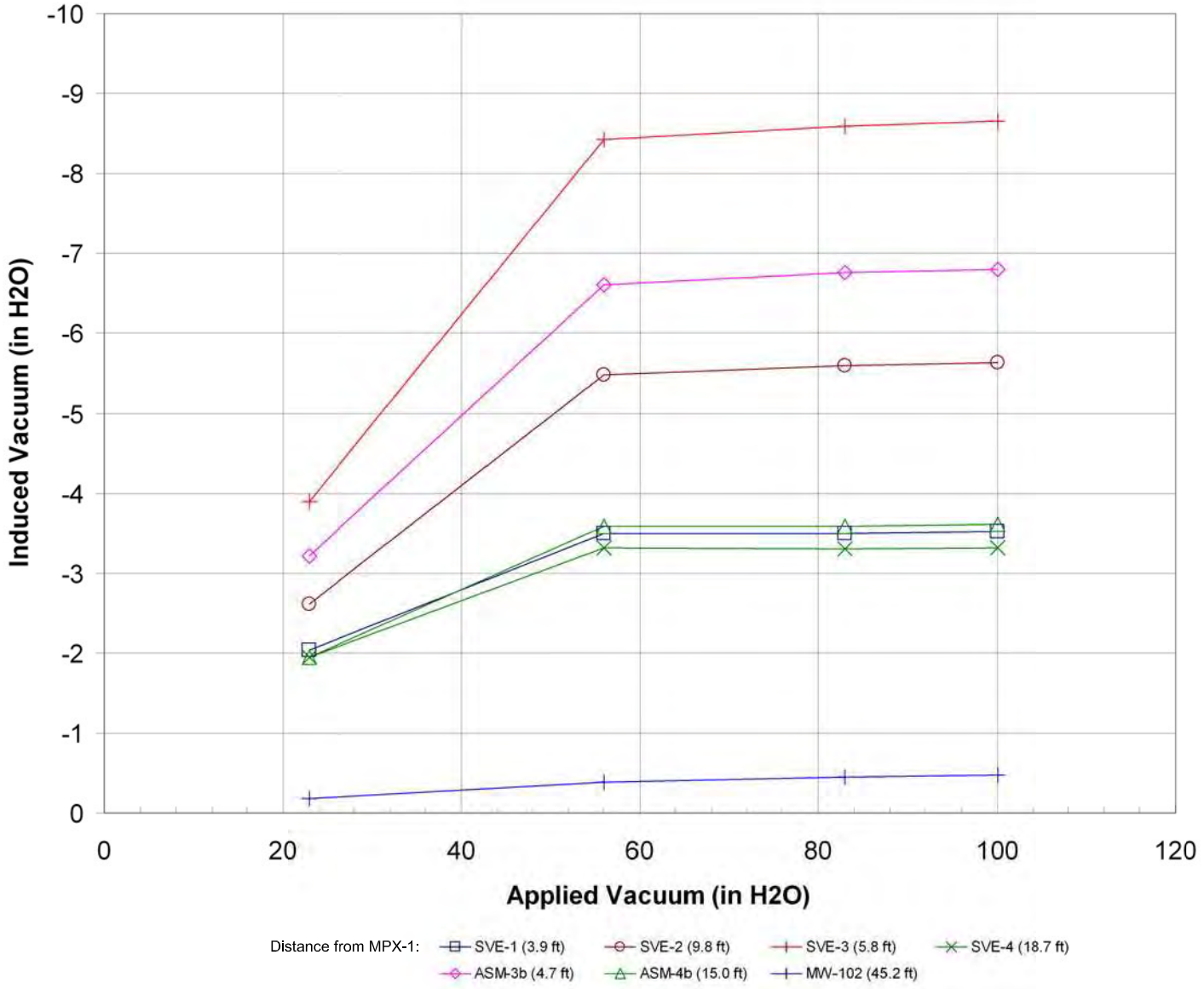

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FIGURE 5

APPLIED VACUUM vs. INDUCED VACUUM
DURING SVE TEST
PERMA-FIX VALDOSTA

SCALE:	DATE:	DWG NO.
AS NOTED	10/09/06	1004-36

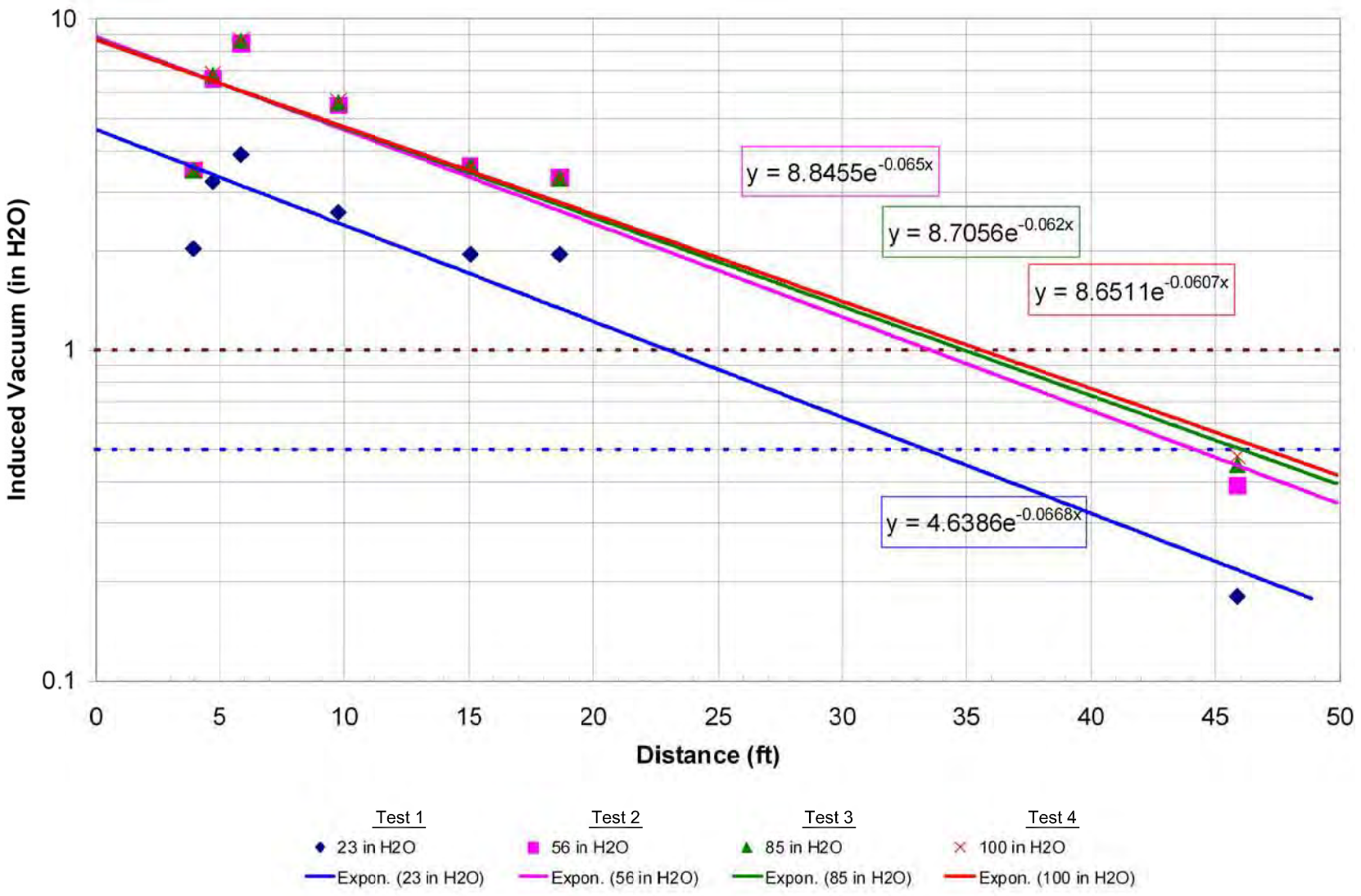

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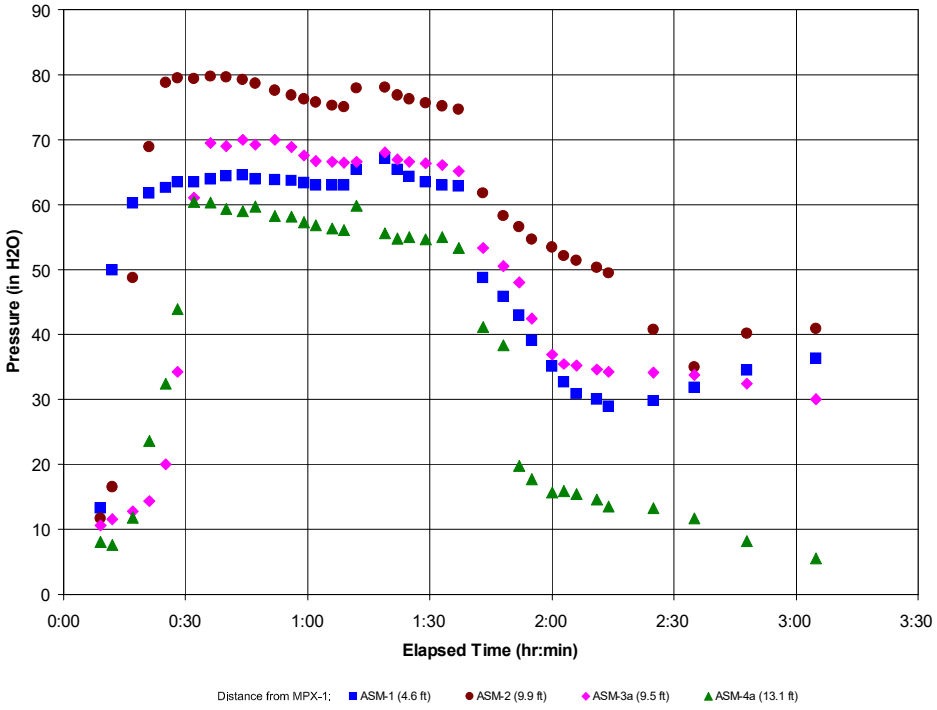
FIGURE 6

INDUCED VACUUM vs. DISTANCE
DURING SVE TEST
PERMA-FIX VALDOSTA

SCALE:	DATE:	DWG NO.
AS NOTED	10/09/06	1004-35

Saturated Pressure Response During AS/SVE Test



Vadose Pressure Response During AS/SVE Test

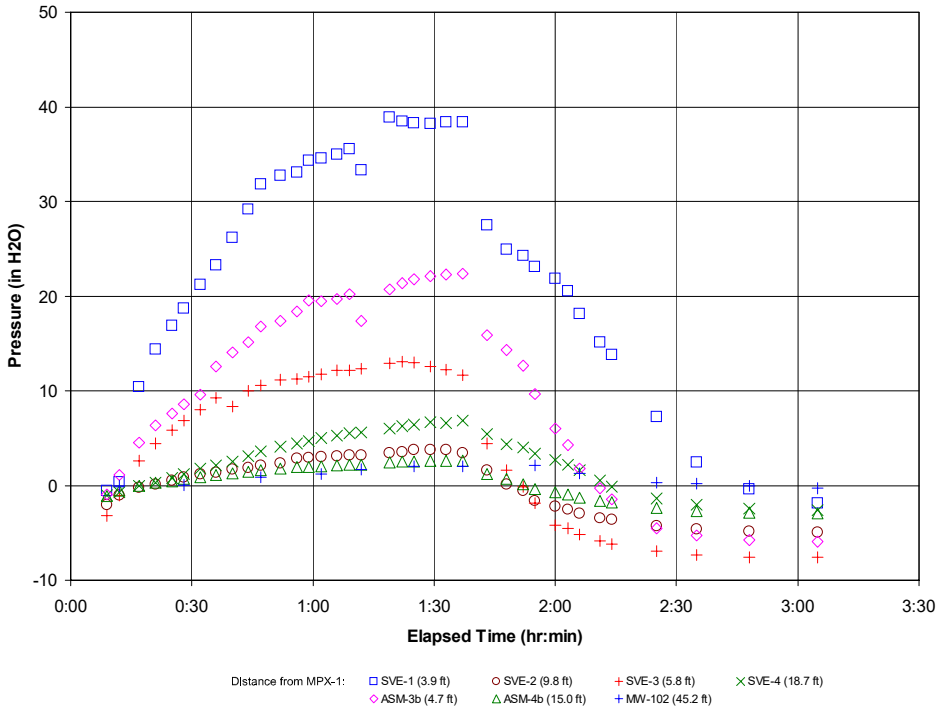


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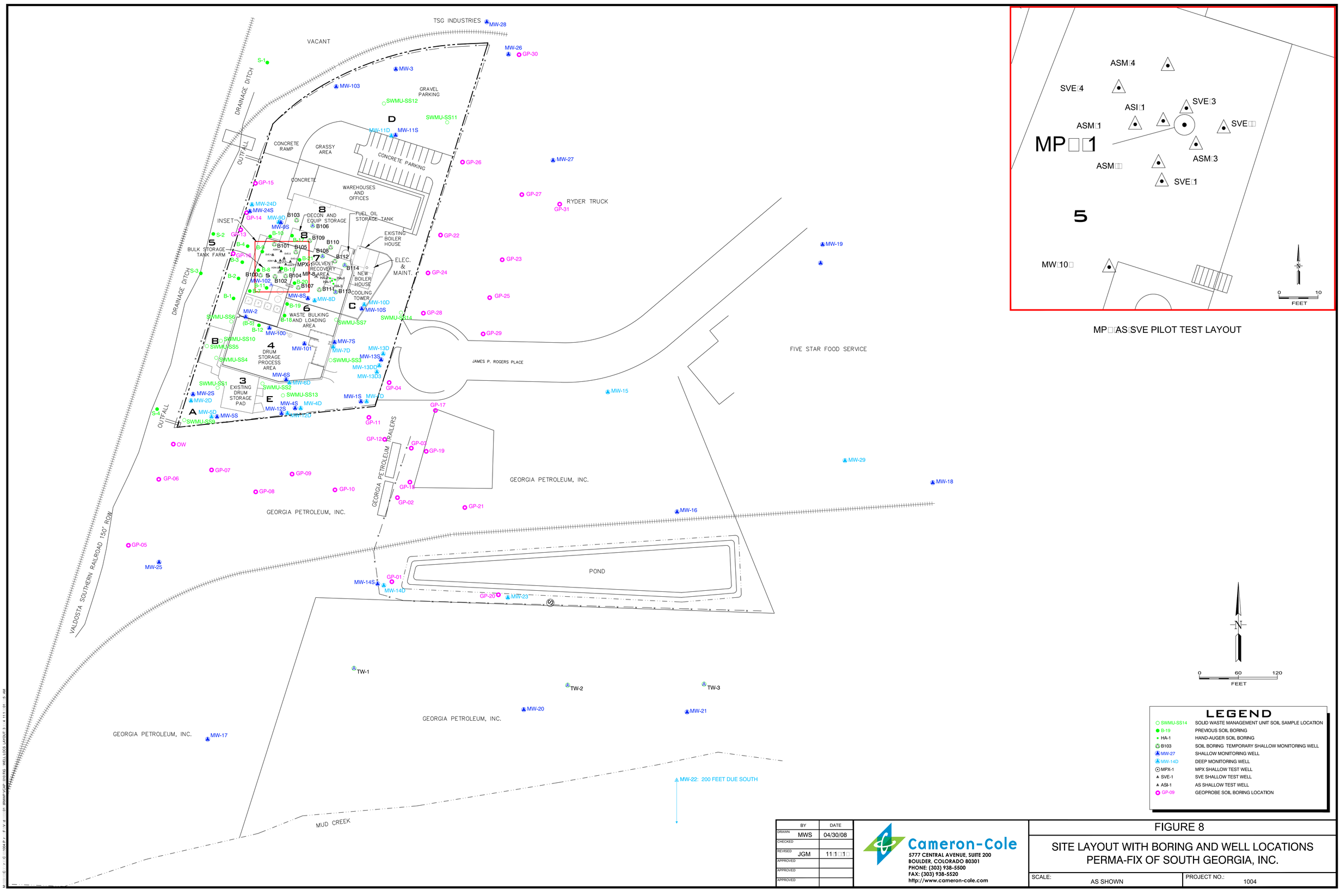
FIGURE 7

PRESSURE RESPONSE
DURING AS/SVE TEST
PERMA-FIX VALDOSTA

SCALE:	DATE:	DWG NO.
AS NOTED	10/09/06	1004-37



MP-1 AS/SVE PILOT TEST LAYOUT

LEGEND

SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION
B-19	PREVIOUS SOIL BORING
HA-1	HAND-AUGER SOIL BORING
B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
MW-27	SHALLOW MONITORING WELL
MW-14D	DEEP MONITORING WELL
MPX-1	MPX SHALLOW TEST WELL
SVE-1	SVE SHALLOW TEST WELL
ASI-1	AS SHALLOW TEST WELL
GP-09	GEOPROBE SOIL BORING LOCATION

	BY	DATE
DRAWN	MWS	04/30/08
CHECKED		
REVISED	JGM	11/1/1
APPROVED		
APPROVED		
APPROVED		

Cameron-Cole
5777 CENTRAL AVENUE, SUITE 200
BOULDER, COLORADO 80301
PHONE: (303) 938-5500
FAX: (303) 938-5520
http://www.cameron-cole.com

FIGURE 8

SITE LAYOUT WITH BORING AND WELL LOCATIONS PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: AS SHOWN

PROJECT NO.: 1004

M:\...\C...r...\C...\1004 P...r...F...V...\...\01 IRAWV\CAD\...010 FIG ...WELL LOCS LAYOUT 3 ...4 11/1/...01 ...5 AM

APPENDIX A

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: ASI–1

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/14/06	DATE COMPLETED: 6/14/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 37.6	WATER DEPTH (FT. BTOC): 18.83
TOC ELEVATION (FT. MSL): 193.547	GROUND ELEVATION FT. MSL): 190.686
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% fine, 30% medium, 15% very fine, 5% coarse; sub-angular; graded; loose; dry; strong VOC odor	SM	562	1-2 ft.	
				451		9-14-18-23
	5	5-14', Silty medium sand: 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 35% fine, 10% very fine, 5% coarse; sub-angular; ghraded; dense; dry, strong VOC odor		359	6-7 ft.	
			SM			
	10	@10-12', Color change to reddish yellow (7.5YR 7/6)		259	11-12 ft. 11-12 ft. (PP)	5-7-12-15
	15	14-25' Clayey fine sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity, dense, moist, VOC odor		119	15.5-16 ft. (PP) 16-16.5 ft. (PP)	3-4-9-11
			SC			
	20	Clay interbeds from 20-20.5'; 21-21.5'		21.2		
		@20.5-21' Medium sand interbed; 90% sand, 10% silt, pale yellow (2.5Y 8/4); non-plastic; sand%: 50% medium; 20% coarse; 20% fine; 5% very coarse; 5% very fine; sub-rounded; well graded; loose; saturated				6-9-11-14
	25	25-36', Medium sand; 90% sand, 10% silt; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-angular; graded; loose; saturated				3-7-9-14
					27.5-28 ft. (PP) 28-28.5 ft. (PP)	
			SW			
	30	@32-34', Color change to white (10YR 8/1)				3-9-9-9
		@35-36', Color change to white (10YR 8/1)				3-4-5-3 4-4-5-11 8-9-12-23
	35	T.D. = 35 FT.				

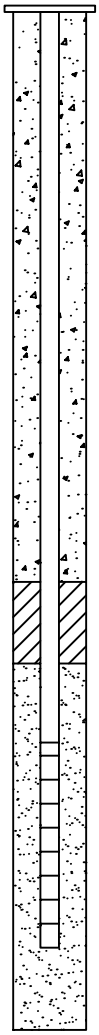
1004-ASI-1.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: ASM-1

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.65	WATER DEPTH (FT. BTOC): 18.11
TOC ELEVATION (FT. MSL): 193.452	GROUND ELEVATION FT. MSL): 190.612
LOGGED BY: NED TURNER	



DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-5', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 40% fine, 10% very fine; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor	SM	1023	-	
5	5-16', Coarse sand; 85% sand, 10% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% coarse, 20% medium, 10% fine, 5% very coarse, 5% very fine; sub-angular; graded; loose; dry; strong VOC odor		1351		1-8-16-23
10		SW	989		1-6-11-12
15	@15-16', Hydrocarbon staining with strong VOC odor		189 82.2		1-2-4-3
	16-23.5', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellow (10YR 7/6); moderate plasticity; sand%: 70% fine, 20% medium, 10% very fine; sub-rounded; poorly graded; dense; saturated; VOC odor				
20	@20.8-21.1', Coarse sand; 80% sand, 15% silt, 5% clay; pale yellow (2.5Y 8/4); non-plastic; sand%: 40% coarse, 30% medium, 10% fine, 10% very coarse, 10% very fine; sub-rounded; moderately-well graded; loose; saturated	SC	29.0 10.0		1-3-6-10
	23.5-25', Medium sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 5% very coarse, 5% very fine; sub-roundurated; moderately-well graded; loose; saturated	SW			2-2-2-7
25	T.D. = 25 FT.				
30					
35					

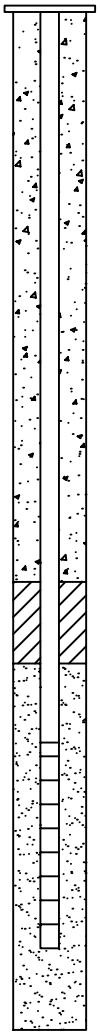
1004-ASM-1.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: ASM2

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.65	WATER DEPTH (FT. BTOC): 18.11
TOC ELEVATION (FT. MSL): 193.486	GROUND ELEVATION FT. MSL): 190.596
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 80% fine, 15% very fine, 5% medium; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor	SM	1838	-	
	5	5-14', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 20% coarse, 10% very fine, 10% fine; sub-angular; graded; dense; dry; strong VOC odor		1973		5-10-15-18
	10		SM	1702		1-5-9-10
	15	14-23', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellow (10YR 7/6); low plasticity; sand%: 5% fine, 30%medium, 20% very fine; sub-angular; moderately-poorly graded; dense; saturated; VOC odor		978		1-3-4-4
		@16.5-17', Medium sand interbed; 85% sand, 10% silt, 5% clay; yellow (10YR 8/8); non-plastic; sand%: 70% medium, 20% fine, 5% very fine, 5% coarse; sub-rounded; graded; loose; saturated; mild VOC odor		249		
	20	@21.5-22', Hydrocarbon staining	SC	41.7		2-4-6-9
		23-25', Medium sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 70% medium, 20% fine, 5% coarse, 5% very fine; sub-rounded; graded; loose; saturated	SP			3-5-7-9
	25	T.D. = 25 FT.				
	30					
	35					

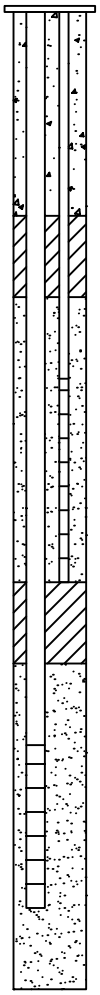
1004-ASM-2.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: ASM-3

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 26.89	WATER DEPTH (FT. BTOC): 18.22
TOC ELEVATION (FT. MSL): 193.874	GROUND ELEVATION FT. MSL): 190.586
LOGGED BY: NED TURNER	



DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-5', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% fine, 30% medium, 10% very fine, 10% coarse; sub-angular; graded; loose; dry; mild VOC odor	SM	2.4	1-1.5 ft.	
5	5-14', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 35% fine, 10% very fine, 5% coarse, ; sub-angular; graded; dense; dry; strong VOC odor	SM	380	6-7 ft.	4-10-20-24
10			1287 794	11-12 ft.	2-10-14-11
15	14-17', Silty fine sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity; dense; moist; mild VOC odor @15.5-16', Medium silty sand; 80% sand, 15% silt, 5% clay; yellow (2.5Y 8/8); non-plastic	SM	163 311 115		5-4-4-5
20	17-20', Clayey fine sand; 60% sand, 20% silt, 20% clay; yellow (10YR 8/8); medium plasticity; dense; saturated; strong VOC odors	SC	11.4 7.4 7.7		2-4-3-7
	20-21', Medium sand; 90% sand, 10% silt; pale yellow (2.5Y 8/4); non-plastic; sand%: 50% medium, 20% coarse, 20% fine, 5% very coarse, 5% very fine; sub-rounded; well graded; loose; saturated	SW	1.0		2-7-10-15
	22-24', Medium sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-angular; moderately-poorly graded; loose; saturated	SP			1-3-6-8
25	T.D. = 24 FT.				
30					
35					

1004-ASM-3.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

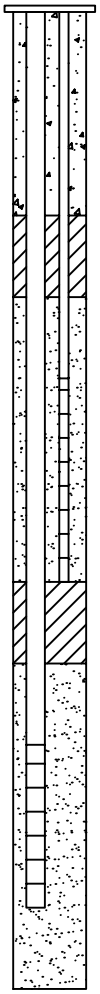
BORING NO.: ASM-4

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
DIEDRICH D-120	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/16/06	6/16/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
26.21	18.41	193.794	190.774	NED TURNER

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-13', Silty medium sand; 70% sand, 25% silt, 5% clay; reddish yellow (5YR 6/8); non-plastic; sand%: 50% medium, 40% fine, 10% very fine; sub-angular; moderately-poorly graded; loose; dry		120	-	
	5	@5-6', Hydrocarbon stained and dense	SM	1179		8-13-18-29
	10			1372		7-8-11-8
	15	13-16.5', Silty medium sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity; sand%: 50% medium, 30% fine, 15% very fine, 5% coarse, ; sub-rounded; graded; dense; moist	SM	808 366		5-8-7-9
		16.5-17', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 30% fine, 15% very fine, 5% coarse; sub-angular; graded; dense; saturated	SP			
	20	17-23', Clayey fine sand; 70% sand, 20% clay, 10% silt; yellow (10YR 8/8); moderate plasticity; sand%: 80% fine, 20% very fine; sub-angular; poorly graded; dense; saturated; hydrocarbon stained @21-21.5', Coarse sand; 90% sand, 10% silt; yellowish red (5YR 5/8); non-plastic; sand%: 60% coarse, 20% medium, 10% fine, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated	SC	24.2		3-6-11-9
		23-25', Silty medium sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity; sand%: 50% medium, 30% fine, 15% very fine, 5% coarse; sub-angular; graded; dense; saturated	SM			4-1-4-12
	25	T.D. = 25 FT.				
	30					
	35					

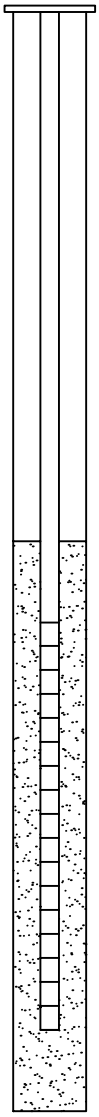
1004-ASM-4.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–100

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/13/06	DATE COMPLETED: 6/13/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 29.51	WATER DEPTH (FT. BTOC): 20.82
TOC ELEVATION (FT. MSL): 195.19	GROUND ELEVATION FT. MSL): 190.48
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5.5', Silty fine sand; 80% sand; 15% silt, 5% clay; reddish brown (5YR 4/4); non-plastic; sand%: 50% fine, 15% very fine, 5% medium; sub-angular; moderate-poorly graded; loose; dry	SM	1.5	1-1.5 ft.	
	5	5.5-10', Fine sand; 85% sand; 10% silt; 5% clay; red (2.5YR 5/8); non-plastic; sand%: 50% fine, 35% medium, 15% very fine; sub-angular; moderately-poorly graded; loose; dry; mild VOC odor	SP	290	5-6 ft.	5-8-13-19
	10	10-15.5', Clayey fine sand; 60% sand, 25% silt, 15% clay; reddish yellow (7.5YR 7/8); low plasticity; sand%: 60% fine, 30% very fine, 10% medium; sub-angular; moderately-poorly graded; loose; moist; VOC odor	SC	370	10-11 ft.	3-5-6-7
	15	15.5-17', Clayey fine sand; 60% sand, 25% clay, 15% silt; pale yellow (2.5Y 8/4); moderate plasticity; loose; saturated; hydrocarbon stained; interbedded sand bars, medium sub-rounded sand	SC	25		2-3-5-8
	20	18-26', Fine sand; 80% sand, 15% silt, 5% clay; yellow (10YR 8/8); low plasticity; sand%: 80% fine, 10% very fine, 10% medium; sub-rounded; moderately-poorly graded, loose; saturated; mild VOC odor	SP	7.2		3-5-8-13
	25	26-27', Medium sand; 90% sand, 10% silt; reddish yellow (7.5YR 7/8); non-plastic; sand%: 50% medium, 40% fine, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated	SP	120		5-6-7-13
	30	T.D. = 27 FT.				
	35					

1004-B-100.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–101

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.19	WATER DEPTH (FT. BTOC): 15.08
TOC ELEVATION (FT. MSL): 190.4	GROUND ELEVATION FT. MSL): 190.6
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-17', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 20% fine, 10% very fine, 10% coarse; sub-angular; moderately-poorly graded; loose; dry		30.1	1-2 ft.	
	5			185	6-7 FT.	3-4-10-15
		@9-17', Color change to brownish yellow (10YR 6/6)	SM			
	10			380	11-12 FT.	2-9-18-19
	15			755		1-5-4-5
		17-26.5', Clayey medium sand; 60% sand, 25% clay, 15% silt; yellow (7.5YR 6/8); moderately plastic; sand%: 60% medium, 30% fine, 5% coarse, 5% very fine; sub-rounded; graded; dense; saturated				
	20	@21.5-21.7', Coarse sand interbed; 85% sand, 10% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 50% coarse, 20% medium, 20% very coarse, 10% fine; sub-rounded; graded; loose; saturated	SC	9.1		2-3-5-7
	25					4-8-11-8
		26.5-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated	SW			
		T.D. = 27 FT.				
	30					
	35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–102

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/13/06	DATE COMPLETED: 6/13/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 29.56	WATER DEPTH (FT. BTOC): 19.11
TOC ELEVATION (FT. MSL): 196.87	GROUND ELEVATION FT. MSL): 190.37
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5', Silty fine sand; 80% sand, 15% silt, 5% clay; reddish brown (5YR 4/4); non-plastic; sand%: 50% fine, 15% very fine; 5% medium, sub-angular; moderately-poorly graded; loose; dry	SM	5.0	1-2 ft.	
	5	5-11', Fine sand; 80% sand, 10% silt, 10% clay; red (2.5YR 5/8); non-plastic; sand%: 50% fine, 35% medium, 15% very fine; sub-angular; moderately-poorly graded; loose; dry; stron VOC odor @6'	SP	260	5-6 ft.	1-4-11-21
	10			430		1-4-5-8
		11-15.5', Clayey very fine sand; 60% sand, 25% silt, 15% clay; yellow (10YR 7/6); low plasticity; sand%: 60% very fine, 20% fine, 20% medium; sub-angular; moderately-poorly graded; loose; moist; VOC odor	SC		11-12 ft.	
	15			80		4-3-6-8
		15.5-17', Clayey fine sand; 60% sand, 25% clay, 15% silt; pale yellow (2.5Y 8/4); moderate plasticity; loose; saturated; hydrocarbon stained	SC			
		17-21.5', Medium sand; 80% sand, 15% silt, 5% clay; yellow (10YR 8/8); low plasticity; sand%: 80% medium, 10% fine, 5% very fine, 5% coarse; sub-rounded; graded; loose; saturated; mild VOC odor	SP			
	20			10		1-3-3-4
		21.5-27', Fine sand; 80% sand, 20% silt; yellowish red (5YR 5/6); non-plastic; sand%: 80% fine, 10% medium, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated	SP			1-1-6-12
	25					5-7-8-12
		27', Fine sand; 90% sand, 10% silt; yellow (2.5Y 8/6); non-plastic; sand%: 60% fine, 30% medium, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated				
		T.D. = 27 FT.				
	30					
	35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–103

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/19/06	DATE COMPLETED: 6/19/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 25.21	WATER DEPTH (FT. BTOC): 15.31
TOC ELEVATION (FT. MSL): 190.85	GROUND ELEVATION FT. MSL): 190.89
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-17', Silty medium sand; 70% sand, 25% silt, 5% clay; red (2.5YR 5/8); non-plastic; sand%: 60% medium, 25% fine, 10% very fine, 5% coarse; sub-angular; graded; loose; dry		14.1	1-2 ft.	
	5			117	6-7 ft.	2-7-13-17
			SM			
	10	@11-12', Color change to strong brown (7.5YR 5/6); and density to dense, hydrocarbon stained		92.4 436	11-12 ft.	4-7-11-10
		@12-17', Color change to reddish yellow (7.5YR 6/6); and density to loose				
	15			451		1-1-6-7
		17-21', Clayey medium sand; 65% sand, 25% clay, 15% silt; reddish yellow (7.5YR 6/6); low plsticity; sand%: 50% medium, 30% fine, 10% coarse, 10% very fine; sub-rounded; graded; dense; saturated; hydrocarbon stained @17'				
			SC			
	20	@20-20.5', Coarse sand interbed; 80% sand, 15% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 70% coarse, 20% medium, 5% very coarse, 5% fine, 5% very fine; sub-rounded; moderately-well graded; loose; saturated		4.7 0.3		3-4-5-11
		21-27', Coarse sand; 75% sand, 20% silt, 5% clay; non-plastic; sand%: 50% coarse, 40% medium, 5% fine, 5% very fine; sub-rounded; moderately-poorly graded; loose; saturated				
			SP			
	25					1-3-7-9
		T.D. = 27 FT.				
	30					
	35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–104

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/14/06	DATE COMPLETED: 6/14/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 26.41	WATER DEPTH (FT. BTOC): 20.5
TOC ELEVATION (FT. MSL): 195.84	GROUND ELEVATION FT. MSL): 190.67
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-6', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; moderately-poorly graded; loose; dry		5.2	1-2 ft.	
				251		
	5			319		1-9-13-19
		@6-15', Grain size increase to medium; sand%: 45% medium, 35% fine, 20% very fine; mild VOC odor	SM		5-6 ft.	
	10	@10-11', Strong VOC odor		346		2-12-15-16
				405		
					11-12 ft.	
	15	14-25', Clayey fine sand; 50% sand, 35% clay, 15% silt; brownish yellow (10YR 6/6); moderately plastic; sand%: 60% fine, 40% very fine; sub-angular; poorly graded; dense; moist; strond VOC odor		333		3-4-5-9
		@16-17', Silty medium sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); moderate plasticity; sand%: 60% medium, 30% fine, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated; strong VOC odor		314		1-2-5-7
				64		1-2-7-11
		@18-18.5', Silty medium sand as above		87		
		@18.5-19', Hydrocarbon stained and strong VOC odor		14		
	20		SC			
	25	25-27', Medium sand; 80% sand, 15% silt, 5% clay; reddish brown (7.5YR 6/8); non-plastic; sand%: 60% medium, 30% fine, 10% very fine; sub-rounded; moderately-poorly graded; loose; saturated	SP			5-11-11-14
		T.D. = 27 FT.				
	30					
	35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–105

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/15/06	DATE COMPLETED: 6/15/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 26.37	WATER DEPTH (FT. BTOC): 20.15
TOC ELEVATION (FT. MSL): 195.51	GROUND ELEVATION FT. MSL): 190.67
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-16', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 30% fine, 5% very fine, 5% coarse; sub-angular; graded; loose; dry; strong VOC odor	SM	48.5	1-1.5 ft.	
	5			2705	6-7 ft.	4-4-11-18
	10			1330	11-12 ft.	5-10-11-15
	15	@14-16', Color change to yellow (10YR 8/6)		1440		1-3-3-4
		16-25.5', Clayey fine sand; 65% sand, 10% silt, 25% clay; brownish yellow (10YR 6/6); moderate plasticity; sand%: 50% fine, 35% medium, 15% very fine; sub-rounded; moderately-poorly graded; dense; saturated; VOC odor; hydrocarbon stained	SC	171		
	20	@21-21.3', Medium sand interbed; 90% sand, 10% silt; pale yellow (2.5Y 8/4); non-plastic; sand%: 60% medium, 15% coarse, 15% fine, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated @22-22.3', Medium sand interbed same as above		117		2-3-6-10
	25	25.5-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 40% medium, 30% coarse, 20% fine, 10% very fine; sub-angular; graded; loose; saturated	SW	1002 11.5		2-6-9-13
		T.D. = 27 FT.				
	30					
	35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–106

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/19/06	DATE COMPLETED: 6/19/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 25.20	WATER DEPTH (FT. BTOC): 15.03
TOC ELEVATION (FT. MSL): 190.596	GROUND ELEVATION FT. MSL): 191.139
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-17', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/8); non-plastic; sand%: 50% medium, 30% fine, 15% very fine, 5% coarse; sub-angular; moderately-poorly graded; loose; dry		16.0	1-2 ft.	
	5			563		1-2-11-14
			SM		6-7 ft.	
	10			473		7-11-13-14
					11-12 ft.	
	15	@15-15.5', Clayey medium sand interbed see below		827 283		1-3-4-8
		17-21', Clayey medium sand; 65% sand, 25% clay, 15% silt; reddish yellow (7.5YR 6/6); low plasticity; sand%: 50% medium, 30% fine, 10% coarse, 10% very fine; sub-rounded; graded; dense; saturated				
	20	@20-20.5', Medium sand interbed; 75% sand, 15% silt, 10% clay; reddish yellow (7.5YR 6/6); non-plastic; sand%: 70% medium, 20% fine, 10% coarse; sub-rounded; poorly graded; loose; saturated	SC	23.8		1-5-9-11
		@20.5-21', Hydrocarbon stained; strong VOC odor		5.7		
		21-27', Silty coarse sand; 70% sand, 25% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% coarse, 40% medium, 5% fine, 5% very fine; sub-rounded; moderately-poorly graded; loose; saturated	SM			2-3-5-7
	25	T.D. = 27 FT.				
	30					
	35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B-107

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/19/06	DATE COMPLETED: 6/19/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 24.70	WATER DEPTH (FT. BTOC): 15.96
TOC ELEVATION (FT. MSL): 191.202	GROUND ELEVATION FT. MSL): 191.488
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-16.5', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 10% very fine; sub-angular; graded; loose; moist from 1-3' dry for rest	SM	863	1-2 ft.	
	5			595	6-7 ft.	1-5-10-13
	10	@10-16.5', Color change to yellow (10YR 8/6)		479	11-12 ft.	1-9-8-10
	15			469 467		1-5-8-10
		16.5-22', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellow (10YR 8/6); low plasticity; sand%: 70% fine, 15% medium, 15% very fine; sub-rounded, poorly graded; dense; saturated	SC			
	20			152		1-2-4-5
		22-24', Very fine sand; 85% sand, 10% silt, 5% clay; pale yellow (2.5Y 8/3); non-plastic; sand%: 85% very fine, 15% fine; sub-rounded; poorly graded; loose; saturated	SP			
		24-27', Silty medium sand; 70% sand, 25% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-angular; graded; loose; saturated	SM			
	25			1.8		4-9-11-12
		T.D. = 27 FT.				
	30					
	35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–108

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/20/06	DATE COMPLETED: 6/20/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.99	WATER DEPTH (FT. BTOC): 16.66
TOC ELEVATION (FT. MSL): 191.973	GROUND ELEVATION FT. MSL): 192.085
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-17', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 30% fine, 10% coarse, 10% very fine; sub-angular; graded; loose; dry		910	1-2 ft.	
	5			2085	6-7 ft.	3-7-13-15
			SM			
	10			1970	11-12 ft.	4-11-12-9
	15			2206		2-6-10-11
		17-25', Clayey fine sand; 60% sand, 25% clay, 15% silt; brownish yellow (10yr 6/6); moderate plasticity; sand%: 45% fine, 40% medium, 10% very fine, 5% coarse; sub-angular; moderately-poorly graded; dense; saturated				
		@20-21', Hydrocarbon stained		925		2-3-6-4
	20		SC	193		
	25	25-27', Silty coarse sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% coarse, 30% medium, 10% fine, 5% very coarse, 5% very fine; sub-angular; moderately-well graded; loose; saturated	SM	628		2-3-9-7
		T.D. = 27 FT.				
	30					
	35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–109

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/19/06	6/19/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
25.09	14.17	189.557	190.012	NED TURNER

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-16', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/8); non-plastic; sand%: 50% medium, 30% fine, 20% very fine, 10% coarse; sub-angular; graded; loose; dry	SM	1466	1-2 ft.	
	5			422	6-7 ft.	1-3-8-6
	10			427	11-12 ft.	1-1-8-8
	15			636 640		
		16-22', Clayey medium sand; 60% sand, 25% clay, 15% silt; reddish yellow (7.5YR 6/6); moderate plasticity; sand%: 50% medium, 30% fine, 10% very fine, 10% coarse; sub-rounded; graded; dense; saturated	SC			
	20	@20.5-21', Coarse sand interbed; 90% sand, 10% silt; yellow (10YR 7/6); non-plastic; sand%: 60% coarse, 25% medium, 10% fine, 5% very fine; sub-rounded; moderately-well graded; loose; saturated		62.6 9.4		
		22-27', Silty coarse sand; 70% sand, 25% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 40% coarse, 35% medium, 25% fine, 10% very fine; sub-rounded; moderately-well graded; loose; saturated	SM			
	25			4.9		
		T.D. = 27 FT.				
	30					
	35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–110

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/20/06	DATE COMPLETED: 6/20/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 21.87	WATER DEPTH (FT. BTOC): 16.87
TOC ELEVATION (FT. MSL): 191.778	GROUND ELEVATION FT. MSL): 191.896
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-17', Silty medium sand; 70% sand, 20% silt, 10% clay; reddish brown (5YR 4/4); low plasticity; sand%: 40% medium, 30% fine, 10% very fine, 20% coarse; sub-angular; moderately-well graded; loose; dry		229	1-2 ft.	
	5			420		3-6-14-19
					6-7 ft.	
		@9-17', Color change to reddish yellow (5YR 6/6)	SM			
	10			302		5-12-18-12
					11-12 ft.	
	15			552		4-5-6-7
		17-26', Clayey medium sand; 60% sand, 25% clay, 15% silt; yellow (10YR 6/6); moderate plasticity; sand%: 60% medium, 25% fine, 10% coarse, 5% very fine; sub-rounded; graded; dense; saturated				
	20	@20-21', Hydrocarbon stained		83.1		1-3-4-5
			SC			
	25	@25-26', Hydrocarbon stained		112		1-3-5-7
		26-27', Silty coarse sand; 80% sand, 20% silt; reddish yellow (7.5YR 7/8); non-plastic; sand%: 50% coarse, 30% medium, 10% fine, 5% very coarse, 5% very fine; sub-angular; graded; loose; saturated	SM			
		T.D. = 27 FT.				
	30					
	35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–110a

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/20/06	6/20/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
4.0	NA	NA	191.90	NED TURNER

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete		351	1-2 ft.	
		1-4', Silty medium sand; 70% sand, 20% silt, 10% clay; reddish brown (5YR 4/4); low-plasticity; sand%: 40% medium, 30% fine, 20% coarse, 10% very fine; sub-angular; moderately-well graded; loose; dry	SM			
		@4', Hit plumbing in boring, move rig to east and start again				
	5	T.D. = 4 FT.				
	10					
	15					
	20					
	25					
	30					
	35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–111

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/19/06	DATE COMPLETED: 6/19/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 22.69	WATER DEPTH (FT. BTOC): 16.14
TOC ELEVATION (FT. MSL): 191.392	GROUND ELEVATION FT. MSL): 191.505
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-2', Clayey fine sand; 60% sand, 30% clay, 10% silt; reddish brown (5YR 4/3); moderate plasticity; sand%: 70% fine, 20% very fine, 10% medium; sub-angular; moderately-poorly graded; dense; moist	SC	2283	1-2 ft.	
		2-15', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/8); non-plastic; sand%: 50% medium, 30% fine, 20% very fine; sub-angular; moderately-poorly graded; loose; dry				
	5			1230		1-2-7-11
					6-7 ft.	
			SM			
	10	@11-11.5', Clayey medium sand interbed		1482		2-7-9-11
					11-12 ft.	
	15	15-21.5', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellowish brown (10YR 5/4); moderate plasticity; sand%: 70% fine, 20% very fine, 10% medium; sub-angular; moderately-poorly graded; desne; saturated; hydrocarbon stained		750 884		4-6-9-7
			SC			
	20	@20-21', Silty coarse sand interbed; 75% sand, 20% silt,5% clay; yellow (10YR 7/6); non-plastic; sand%: 40% coarse, 35% medium, 25% fine, 5% very fine, 5% very coarse; sub-rounded; graded; loose; saturated		309 79		1-1-4-6
		21.5-27', Silty coarse sand; 75% sand, 20% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 40% coarse, 30% medium, 20% fine, 10% very coarse, 10% very fine; sub-rounded; moderately-well graded; loose; saturated				
			SM			
	25			12.1		2-5-6-5
		T.D. = 27 FT.				
	30					
	35					

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CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B-112

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/20/06	6/20/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
25.18	16.12	191.887	192.139	NED TURNER

DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-1', Concrete				
	1-16', Silty medium sand; 70% sand, 20% silt, 10% clay; reddish brown (5YR 4/4); low plasticity; sand%: 40% medium, 20% coarse, 20% fine, 10% very coarse, 10% very fine; sub-angular; moderately-well graded; loose; dry	SM	67.3	1-2 ft.	
5			303	6-7 ft.	4-6-14-11
	@9-16', Color change to yellowish red (5YR 5/6)				
10			418	11-12 ft.	5-12-10-9
15			354 712		3-10-7-10
	16-25', Clayey fine sand; 60% sand, 25% clay, 15% silt; reddish yellow (7.5YR 6/6); moderate plasticity; sand%: 60% fine, 20% medium, 20% fine; sub-angular; moderately-poorly graded; desne; saturated	SC			
20	@20-21', Hydrocarbon stained		60.4		2-7-5-7
25	25-27', Silty coarse sand; 80% sand, 20% silt; reddish yellow (7.5YR 7/8); non-plastic; sand%: 50% coarse, 30% medium, 10% fine, 5% very coarse, 5% very fine; sub-angular; graded; loose; saturated	SM	3.8		4-6-6-8
	T.D. = 27 FT.				
30					
35					

1004-B-112.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B-113

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/20/06	6/20/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
24.35	16.57	191.493	191.527	NED TURNER

DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-1', Concrete				2-7-10-9
	1-3', Silty very fine sand; 60% sand, 35% silt, 5% clay;brown (10YR 5/3); non-plastic; sand%: 80% very fine, 20% fine; sub-angular; poorly graded; loose; moist; hydrocarbon stained	SM	1067 409	1-2 ft.	
	3-14.5', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 10% very fine; sub-angular; graded; loose; dry; hydrocarbon stained @8-12 ft.		523		4-7-12-18
5			1086		4-6-11-18
				6-7 ft.	
		SM		8-8.5 ft. (PP)	4-6-10-7
10			586 416		2-3-9-14
				11-12 ft.	7-13-14-15
			384		
15	14.5-19', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellowish brown (10YR 5/4); low plasticity; sand%: 70% fine, 20% very fine, 10% medium; sub-angular; moderately-poorly graded; dense; saturated; hydrocarbon stained	SC	238 278		3-10-10-12 6-7-9-11
				17.5-18 ft. (PP)	6-8-11-13
20	19-27', Silty coarse sand; 80% sand, 15% silt, 5% clay; brownish yellow (10YR 6/6); non-plastic; sand%: 50% coarse, 30% medium, 10% very coarse, 5% fine, 5% very fine; sub-rounded; graded; loose; saturated		10.8 2.3		3-8-10-13
	@21.5', Color change to reddish yellow (7.5YR 6/8)		1.3		
		SM			
25				25-25.5 ft. (PP)	3-8-8-10
				25.5-26 ft. (PP)	
	T.D. = 27 FT.				
30					
35					

1004-B-113.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: B–114

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
CME-55	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/20/06	6/20/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
25.15	16.91	192.23	192.07	NED TURNER

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-6', Clayey medium sand; 60% sand, 25% clay, 15% silt; reddish brown (5YR 4/4); low plasticity; sand%: 50% medium, 40% fine, 10% very fine; sub-angular; moderately-poorly graded; dense;	SC	60.3	1-2 ft.	
	5			440 73	6-7 ft.	2-6-12-16
		6-17', Silty medium sand; 75% sand, 20% silt, 5% clay; reddish yellow (5YR 6/6); non-plastic; sand%: 60% medium, 10% fine, 20% coarse, 10% very fine; sub-angular; graded; loose; dry	SM			
	10			380	11-12 ft.	2-3-11-13
	15			47.4		4-10-12-13
		17-26', Clayey fine sand; 60% sand, 25% clay, 15% silt; brownish yellow (10YR 6/6); low plasticity; sand%: 40% fine, 30% medium, 20% coarse, 10% very fine; sub-angular; moderately-well graded; dense; saturated				
	20			137 43.0		
		@21.5-22' Silty coarse sand interbed; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/8); sand%: 60% coarse, 30% medium, 5% fine, 5% very coarse; sub-angular; graded; loose; saturated	SC			
	25			19.7		
		26-27', Coarse sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 7/8); non-plastic; sand%: 70% coarse, 20% medium, 10% fine; sub-angular; moderately-poorly graded; loose; saturated	SP			
		T.D. = 27 FT.				
	30					
	35					

1004-B-114.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MPX-1

CLIENT/PROJECT:	DRILLER:
PERMA-FIX VALDOSTA	BETTS ENVIRONMENTAL

DRILL RIG TYPE:	DRILL METHOD:
DIEDRICH D-120	HOLLOW STEM AUGER

DATE STARTED:	DATE COMPLETED:	PROJECT NUMBER:
6/12/06	6/12/06	1004

TOTAL DEPTH (FT. BTOC):	WATER DEPTH (FT. BTOC):	TOC ELEVATION (FT. MSL):	GROUND ELEVATION FT. MSL):	LOGGED BY:
31.32	18.18	193.503	190.493	NED TURNER

DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-1.5', Silty very fine sand; 75% sand, 20% silt, 5% clay; strong brown (7.5YR 4/6); low plasticity; sand%: 90% very fine, 10% fine to medium; sub-angular; poorly graded; loose; dry	SM	15.2	1-2 ft.	4-6-9
	1.5-13', Fine sand; 80% sand, 15% silt, 5% clay; red (2.5YR 4/6); non-plastic; sand%: 70% fine, 20% very fine, 5% medium to coarse; sub-angular; moderately-poorly graded; loose; dry; mild VOC odor, strong from 7-8 ft.		135		
			51		21-11-15-19
5			805		14-16-30-30
				5-6 ft.	
		SP			8-7-6-7
			456		
	@8-13', Color change to reddish yellow (5YR 6/6); change in sand%: medium to fine snad, 80% sand, 15% silt, 5% clay; sand% 60% fine, 30% medium, 10% very fine; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor		590		
					4-10-14-22
10			620		11-9-9-9
					2-2-6-7
				10-11 ft.	
			750	11.5-13 ft. (PP)	
	13-14', Silty very fine sand; 60% sand, 30% silt, 10% clay; yellow (10YR 7/6); low plasticity; sand%: 60% very fine, 20% fine, 20% medium; sub-angular; moderately graded; loose; moist	SM	350		
15	14-18', Clayey fine sand; 60% sand, 20% silt, 20% clay; yellow (10YR 8/8); medium plasticity; loose; saturated; strong VOC odor, hydrocarbon discoloration		320		1-1-2-4
		SC	150		
			190		2-3-7-9
	18-18.3', Medium sand; 90% sand, 10% silt; yellow (2.5Y 8/8); no plasticity; sand%: 80% medium, 10% fine, 5% very fine; 5% coarse, sub-rounded; moderately graded; loose; saturated	SM / SC			
20	18.3-19', Fine sand with clay interbedding; sand layer: 70% sand, 15% silt, 5% clay; clay interbeds: 50% clay, 40% silt, 10% sand; yellow (10YR 8/6); medium plasticity in clay; compact; saturated		120		2-2-2-3
					7-7-8-13
	19-25', Clayey fine sand; 60% sand, 30% silt, 10% clay; yellow (10YR 7/8); low plasticity; sand%: 90% very fine to fine, 10% medium; sub-rounded; poorly graded; loose; saturated; mild VOC odor	SC		22-23 ft. (PP)	
25			11.5		2-2-5-12
	25-30', Medium sand; 90% sand, 10% silt; yellow (10YR 7/8); non-plastic; sand%: 80% medium, 10% fine, 10% very fine; sub-rounded; poorly graded; loose; saturated	SP			16-22-18-10
30	T.D. = 30 FT.				
35					

1004-MPX-1.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MW-100

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/17/06	DATE COMPLETED: 6/17/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.35	WATER DEPTH (FT. BTOC): 14.98
TOC ELEVATION (FT. MSL): 190.218	GROUND ELEVATION FT. MSL): 190.218
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-1', Concrete				
		1-14.5' Silty medium sand; 65% sand, 25% silt, 10% clay; yellowish red (5YR 5/6); low plasticity; sand%: 60% medium, 25% fine, 10% very fine, 5% coarse; sub-angular; graded; dense; moist to dry; VOC odor	SM	14.5	2-3 ft.	3-4-6-7 5-7-9-13
				92.5		
	5			34.2		5-9-20-22
				150	6-7 ft.	
				220		4-7-9-11
				337		
						3-7-11-14
	10			103		3-6-9-15
				283	11-12 ft.	
						5-7-9-15
	15	14.5-19', Silty fine sand; 60% sand, 25% silt, 15% clay; brown (10YR 5/3); low plasticity; sand%: 50% fine, 30% medium, 20% very fine; sub-rounded; moderately-poorly graded; dense; moist to saturated	SM	211		3-5-9-17
				155	17-17.5 ft.	
		@18.5-18.7', Medium sand interbed; 85% sand, 15% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-rounded; graded; loose; saturated		13.0	17.5-18 ft. (PP)	3-5-9-17
	20	19-24.5', Silty coarse sand; 70% sand, 25% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 50% coarse, 30% medium, 10% fine, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated; hydrocarbon stained @19-21.5 ft.	SM	3.7		3-5-7-9
				10.5		3-5-8-13
		@23-24', Color change to reddish yellow (7.5YR 6/6)				3-5-7-6
	25	T.D. = 25 FT.		0.0	25-25.5 ft. 25.5-26 ft. (PP)	2-3-5-9
	30					
	35					

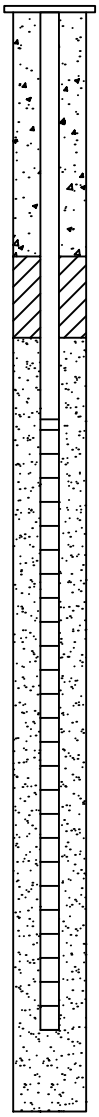
1004-MW-100.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MW-101

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: CME-55	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/17/06	DATE COMPLETED: 6/17/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 25.17	WATER DEPTH (FT. BTOC): 15.05
TOC ELEVATION (FT. MSL): 190.167	GROUND ELEVATION FT. MSL): 190.167
LOGGED BY: NED TURNER	



DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-15', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 30% fine, 5% very fine, 5% coarse; sub-angular; moderately-poorly graded; loose; dry	SM	2.8	1-2 ft.	
5			27.2	6-7 ft.	4-4-9-7
10			19.3	11-12 ft.	1-2-9-11
15	15-26', Clayey fine sand; 65% sand, 25% clay, 10% silt; light yellowish brown (10YR 6/4); low plasticity; sand%: 80% fine, 10% medium, 10% very fine; sub-angular; poorly graded; dense; moist to saturated	SC	40.3		4-6-8-9
20			83.4		2-3-5-9
25			69.5		2-3-5-7
	26-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 5% very fine, 5% very coarse; sub-angular; moderately-well graded; loose; saturated	SW	2.6		
30	T.D. = 27 FT.				
35					

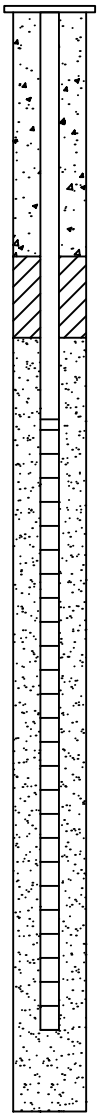
1004-MW-101.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MW-102

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/13/06	DATE COMPLETED: 6/13/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 27.15	WATER DEPTH (FT. BTOC): 17.72
TOC ELEVATION (FT. MSL): 192.962	GROUND ELEVATION FT. MSL): 190.266
LOGGED BY: NED TURNER	



DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-5', Silty fine sand; 80% sand, 15% silt, 5% clay; reddish brown (5YR 4/4); non-plastic; sand%: 5% medium, 80% fine, 15% very fine; sub-angular; moderately-poorly graded; loose; dry; mild VOC odor	SM	2.8	1-2 ft.	
5	5-14', Fine sand; 80% sand, 15% silt, 5% clay; red (2.5YR 5/8); non-plastic; sand%: 50% fine, 35% medium, 15% very fine; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor	SP	27.2	5-6 ft.	2-5-11-17
10			19.3	10-11 ft.	1-2-8-13
15	14-20', Clayey fine sand; 40% sand, 30% clay, 30% silt; pale yellow (2.5Y 7/4); medium plasticity; sand%: 90% very fine, 10% fine; sub-rounded; poorly graded; loose; moist; strong VOC odor	SC	40.3		3-2-4-5
20	20-25.5', Clayey fine sand; 60% sand, 30% silt, 10% clay; yellow (10YR 7/8); low plasticity; sand%: 60% fine, 30% very fine, 10% medium; sub-rounded; poorly graded; loose; saturated; mild VOC odor @21-22', Color change to reddish yellow (7.5YR 6/8)	SC	83.4		4-5-9-11
25	25.5-27', Medium sand; 80% sand, 10% silt, 10% clay; yellow (10YR 7/8); low plasticity; sand%: 75% medium, 20% fine, 20% coarse, 5% very fine; sub-rounded; poorly graded; loose; saturated	SP	69.5 2.6		7-4-7-7
	T.D. = 27 FT.				
30					
35					

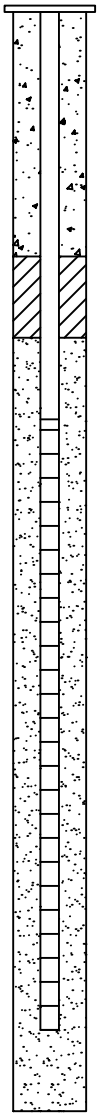
1004-MW-102.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: MW-103

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 27.29	WATER DEPTH (FT. BTOC): 17.41
TOC ELEVATION (FT. MSL): 193.31	GROUND ELEVATION FT. MSL): 190.473
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-15', Silty medium sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 30% fine, 10% very fine; sub-angular; moderately-poorly graded; loose; dry	SM	0.0	1-2 ft.	
	5	@6.5-7', Clay interbed; gray (5YR 6/1)		0.0	6-7 ft.	4-10-17-23
	10			0.0	11-12 ft.	3-7-11-18
	15	15-21', Clayey fine sand; 60% sand, 20% clay, 20% silt; strong brown (7.5Y 5/6); low plasticity; sand%: 80% fine, 10% medium, 10% very fine; sub-angular; poorly graded; dense; saturated	SC	0.0		2-6-9-11
	20			0.0		4-6-9-13
	25	21-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated @26-26.5', Clay interbed	SW	0.0		2-4-9-13
		T.D. = 27 FT.				
	30					
	35					

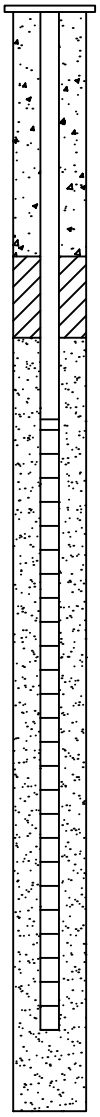
1004-MW-103.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: SVE-1

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/15/06	DATE COMPLETED: 6/15/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 23.20	WATER DEPTH (FT. BTOC): 18.26
TOC ELEVATION (FT. MSL): 193.524	GROUND ELEVATION FT. MSL): 190.591
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5', Silty fine sand; 70% sand, 25% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 80% fine, 15% very fine, 5% medium; sub-angular; moderately-poorly graded; loose; dry; strong VOC odor	SM	1522	-	
	5	5-14', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 20% fine, 10% very fine, 10% coarse; sub-rounded; graded; dense; dry; strong VOC odor		1777		3-6-17-25
	10		SM	1640		3-8-10-13
	15	14-23', Clayey fine sand; 60% sand, 25% clay, 15% silt; yellow (10YR 7/6); medium plasticity; sand%: 80% fine, 10% medium, 10% very fine; sub-rounded; moderately-poorly graded; dense; saturated		1086		2-5-7-8
		@17-17.5', Medium sand interbed; 90% sand, 10% silt; yellow (10YR 8/8); non-plastic; sand%: 70% medium, 20% fine, 10% very fine; sub-rounded; poorly graded; loose; saturated	SC/SP	940		
	20			50.9		2-3-5-7
				15.7		
	25	23-27', Medium sand; 80% sand, 15% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 70% medium, 20% fine, 5% coarse, 5% very fine; sub-angular; moderately-poorly graded; loose; saturated	SP	842		1-5-11-18
				16.0		
		T.D. = 27 FT.				
	30					
	35					

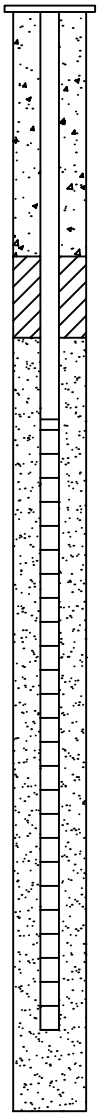
1004-SVE-1.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: SVE-2

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/15/06	DATE COMPLETED: 6/15/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 25.90	WATER DEPTH (FT. BTOC): 17.94
TOC ELEVATION (FT. MSL): 193.262	GROUND ELEVATION FT. MSL): 190.395
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-5.5', Silty fine sand; 60% sand, 25% silt, 15% clay; light red (2.5YR 6/8); low plasticity; sand%: 70% fine, 20% very fine, 10% medium; sub-angular; moderately-poorly graded; dense; dry; strong VOC odor	SM	650	-	
	5			1615		3-15-21-18
		5.5-14', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 50% medium, 35% fine, 10% very fine, 5% coarse; sub-angular; graded; dense; dry; strong VOC odor	SM			
	10			1756		3-6-2-15
	15	14-25.5', Clayey fine sand; 70% sand, 20% silt, 10% clay; brownish yellow (10YR 6/6); low plasticity; dense; saturated; VOC odor @15-15.5', Sandy clay interbed; yellowish red (5YR 5/6) @16.7-17', Medium sand interbed; 80% sand, 15% silt, 5% clay; pale yellow (2.5Y 8/4); non-plastic; sand%: 50% medium, 35% fine, 15% very fine; sub-rounded; graded; loose; saturated	SC	1325		3-5-9-12
	20	@20-20.5', Sandy clay interbed; yellowish red (5YR 5/6); 40% clay, 35% sand, 35% silt @20.5-20.7', Medium sand interbed; as above		58.5 20.9		3-5-8-9
	25	25.5-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-angular; graded; loose; saturated	SW			2-3-7-11
		T.D. = 27 FT.				
	30					
	35					

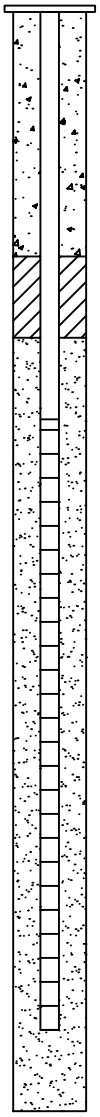
1004-SVE-2.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: SVE-3

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/15/06	DATE COMPLETED: 6/15/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 26.61	WATER DEPTH (FT. BTOC): 18.09
TOC ELEVATION (FT. MSL): 193.400	GROUND ELEVATION FT. MSL): 190.575
LOGGED BY: NED TURNER	

WELL COMPLETION	DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
	0	0-16', Silty medium sand; 70% sand, 25% silt, 5% clay; light red (2.5YR 6/8); non-plastic; sand%: 50% medium, 40% fine, 10% very fine; sub-angular; graded; loose; dry; mild VOC odor	SM	407	-	
	5			570		2-5-13-17
	10	@10-14', Color change to reddish yellow (5YR 6/8)		610		2-10-6-6
	15	@15-16', Color change to yellow (10YR 7/6)		992 278		1-3-6-9
		16-25', Clayey fine sand; 60% sand, 15% silt, 25% clay; yellow (10YR 7/6); moderate plasticity; sand%: 50% fine, 35% medium, 15% very fine; sub-rounded; moderately-poorly graded; dense; saturated; VOC odor	SC			
	20	@20.5', Hydrocarbon stained		26.0		1-5-7-12
		@21-21.3', Medium sand interbed; 90% sand, 10% silt; pale yellow (2.5Y 8/4); non-plastic; sand%: 60% medium, 15% coarse, 15% fine, 5% very coarse, 5% very fine; sub-rounded; moderately-well graded; loose; saturated		2.4		
		@21.7-22', Medium sand interbed; yellowish red (5YR 5/8); as above				
	25	25-27', Medium sand; 85% sand, 10% silt, 5% clay; reddish yellow (7.5YR 6/8); non-plastic; sand%: 60% medium, 20% fine, 10% coarse, 10% very fine; sub-rounded; graded; loose; saturated	SW	1.7		2-4-6-12
		T.D. = 27 FT.				
	30					
	35					

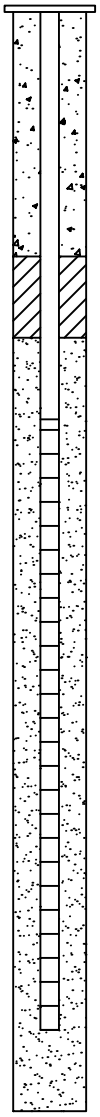
1004-SVE-3.dwg

CAMERON-COLE

SOIL BORING LOG AND WELL COMPLETION DATA

BORING NO.: SVE-4

CLIENT/PROJECT: PERMA-FIX VALDOSTA	DRILLER: BETTS ENVIRONMENTAL
DRILL RIG TYPE: DIEDRICH D-120	DRILL METHOD: HOLLOW STEM AUGER
DATE STARTED: 6/16/06	DATE COMPLETED: 6/16/06
PROJECT NUMBER: 1004	
TOTAL DEPTH (FT. BTOC): 24.86	WATER DEPTH (FT. BTOC): 18.00
TOC ELEVATION (FT. MSL): 193.330	GROUND ELEVATION FT. MSL): 190.487
LOGGED BY: NED TURNER	



DEPTH FEET	DESCRIPTION	USCS CODE GRAPHIC	OVM PPM	SAMPLE NUMBER	BLOW COUNT
0	0-15.5', Silty medium sand; 75% sand, 20% silt, 5% clay; yellowish red (5YR 5/6); non-plastic; sand%: 60% medium, 20% fine, 10% very fine, 10% coarse; sub-rounded; moderately-poorly graded; loose; dry; VOC odor	SM	29.7	1-2 ft.	
5			704	6-7 ft.	1-2-9-13
10			545	11-12 ft.	1-2-7-7
15	15.5-21', Clayey fine sand; 60% sand, 15% silt, 25% clay; yellow (10YR 7/6); moderate plasticity; sand%: 70% fine, 20% medium, 10% very fine; sub-angular; moderately-poorly graded; dense; saturated	SC	111		2-4-4-5
	@16', Hydrocarbon stained		40.2		
	@16.7-17', Medium sand; 80% sand, 15% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 70% medium, 10% coarse, 15% fine, 5% very fine; sub-rounded; graded; loose; saturated		83.1		
20	@20-20.5', Coarse sand; 80% sand, 15% silt, 5% clay; yellow (10YR 7/6); non-plastic; sand%: 50% coarse, 20% medium, 20% very coarse, 10% fine; sub-rounded; graded; loose; saturated		8.3		2-5-7-8
	21-27', Medium sand; 85% sand, 10% silt, 5% clay; yellow (10YR 8/6); non-plastic; sand%: 50% medium, 20% fine, 20% coarse, 10% very fine; sub-rounded; graded; loose; saturated	SW			
25			2.8		3-7-9-11
	T.D. = 27 FT.				
30					
35					

1004-SVE-4.dwg

July 29, 2024

Ms. Sharon Priyadarshini,
Ms. Becky Ferguson, and
Ms. Andrea Kemberling
Georgia Department of Natural Resources
Environmental Protection Division
Land Protection Branch
2 Martin Luther King Jr. Drive S.E.
Suite 1054 East
Atlanta, GA 30334

RE: Letter of Transmittal
Third Revision Air Sparge and Soil Vapor Extraction Pilot Test Report
Perma-Fix of South Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, GA
EPA ID No. GAD093380814
GDNR HW Facility Permit No. HW-020(D)

Dear Ms. Priyadarshini, Ms. Ferguson, and Ms. Kemberling:

On behalf of Perma-Fix Environmental Services, Inc., Trihydro Corporation hereby submits the enclosed *Revised Air Sparge and Soil Vapor Extraction Pilot Test Report* for the Perma-Fix of South Georgia, Inc. (PFSG) facility in Valdosta, Georgia. This document was prepared in response to an email received from the Georgia Department of Natural Resources, Environmental Protection Division (GEPD) on July 15, 2024, and follow-up communications and a separate email from the GEPD on July 15, 2024.

The following text provides a specific response to the GEPD's comments:

GEPD 1) *Appendix L, Revised Conceptual PCCP Schedule: Please update the title of this Appendix and the title block of the figure contained in this appendix to "Revised Conceptual PCCP Preparation Schedule".*

PFSG 1) Appendix L: The title and figure text have been revised.

GEPD 2) *Section 5.5, Recommendations: 1st paragraph, 2nd sentence: Kindly make the same revision to the title of the Schedule as contained in above comment #1.*

PFSG 2) Section 5.5: The text has been revised.

GEPD 3) *Section 5.5, Recommendations: The 2nd paragraph should be deleted and replaced with the following (this will clarify the two separate actions that will ultimately take place): "Implementation of the Schedule will commence within "x" number of days of approval of this Report. Upon finalization of the revised PCCP, a Class 3 Permit Modification can then be initiated to incorporate the revised PCCP into the facility's permit.*

PFSG 3) Section 5.5, Recommendations: The text has been revised.

Thank you for your continued cooperation and guidance in this important effort. If you have any questions or comments, please contact Mr. Kevin Schmuggerow of Perma-Fix Environmental Services, Inc. at (770) 587-9898, Ext. 6007, or via email at kevin.schmuggerow@perma-fix.com.

Respectfully submitted,
Trihydro Corporation

William Kelly

Digitally signed by William Kelly
DN: cn=William Kelly, c=US, o=Trihydro Corporation, ou=Jacksonville FL, email=bkelly@trihydro.com
Date: 2024.07.30 16:58:06 -04'00'

William C. Kelly, P.G.
Senior Project Manager

ec: Mr. Kevin Schmuggerow, Perma-Fix

Attachment

PERMA-023-0004

THIRD REVISION AIR SPARGE AND SOIL VAPOR EXTRACTION PILOT TEST REPORT

PERMA-FIX OF SOUTH GEORGIA, INC.

1612 JAMES P. RODGERS CIRCLE

February 8, 2024
Revised June 12, 2024
Revised July 11, 2024
Revised July 29, 2024

Project #: PERMA-023-0004

SUBMITTED BY: Trihydro Corporation

1252 Commerce Drive, Laramie, WY 82070

Certification and Signatories

40 CFR 260.10

Pursuant to 40 CFR § 260.10, I certify that I am a Qualified Groundwater Scientist who has received a Baccalaureate or Post-Graduate Degree in the Natural Sciences or Engineering and have sufficient training and experience in groundwater hydrology and related fields as demonstrated by state registration and completion of accredited university courses that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by myself or by a subordinate working under my direction.

I also hereby certify that this "Third Revision Air Sparge and Soil Vapor Extraction Pilot Test Report" was prepared under the direction of a Georgia Registered Professional Engineer.

GEORGIA REGISTERED No. PE036886 PROFESSIONAL ENGINEER GABRIEL S. PASTRANA

7/29/2024

Gabriel S. Pastrana, P.E. Date
Staff Engineer
Georgia Registered Professional Engineer No. PE36886
Qualified Ground-Water Scientist

Gabriel S Pastrana

Digitally signed by Gabriel S Pastrana
DN: cn=Gabriel S Pastrana, c=US, o=Florida, email=g.pastrana@outlook.com
Reason: I attest to the accuracy and integrity of this document
Date: 2024.07.29 18:37:51 -04'00'

Certification and Signatories

40 CFR 270.11

The certifications as required by 40 CFR § 270.11(b)(1) and (d)(1) are provided below:

Certification is provided by Kevin Schmuggerow, Vice President, Industrial Business, Perma-Fix Environmental Services, Inc., as a responsible corporate officer in accordance with 40 CFR § 270.11(b).

In accordance to 40 CFR § 270.11(b)(1) and 270.11(d)(1), the following certification is made with respect to the Perma-Fix of South Georgia Revised Air Sparge and Soil Vapor Extraction Pilot Test Report submitted June 12, 2024.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kevin Schmuggerow Digitally signed by Kevin Schmuggerow
Date: 2024.07.29 17:23:12 -04'00'

Kevin Schmuggerow
Vice President, Industrial Business
Perma-Fix Environmental Services, Inc.
8302 Dunwoody Place, Suite 250
Atlanta, GA 30350

Date

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List of Acronyms and Abbreviations

%	percent
µg/m^3	micrograms per cubic meter
AQD	Air Quality Division
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CO_2	carbon dioxide
COC	contaminants of concern
DCA	dichloroethane
DO	dissolved oxygen
DTW	depth to water
GEPD	Georgia Environmental Protection Division
inWC	inches water column vacuum
LNAPL	light nonaqueous phase liquids
MNA	monitored natural attenuation
mg/L	milligrams per liter
MDL	method detection limit
MTGW	migration to groundwater
NSZD	natural source-zone depletion
O&M	Operation and Maintenance
ORP	oxidation-reduction potential
PNA	plugging and abandonment
poly	polyethylene
PRA	Preliminary Remediation Agreement

List of Acronyms and Abbreviations (cont.)

PSI	pounds per square inch
PVC	polyvinyl chloride
QA/QC	Quality Assurance/Quality Control
ROI	Radius of Influence
SCFM	standard cubic feet per minute
SCR	Site Characterization Report
SVE	Soil Vapor Extraction
SVOC	semivolatile organic compound
VOC	volatile organic compound
VRP	Voluntary Remediation Program

1.0 INTRODUCTION

This Revised Pilot Test Report has been prepared by Trihydro Corporation (Trihydro) to present the results of the air sparging (AS) and soil vapor extraction (SVE) pilot test completed at the Perma-Fix of South Georgia, Inc. (PFSG) facility, located in Valdosta, Georgia (the Site). The Site location is depicted on Figure 1. The Site layout and pertinent Site features, including groundwater monitoring well locations, are depicted on Figure 2. The purpose of the pilot test was to evaluate the potential effectiveness of AS/SVE technologies as a remedy to address identified source area volatile organic compound (VOC) impacts in the soil and groundwater horizons beneath the Site.

This report presents a description of activities completed in accordance with the approved Revision 2 - Air Sparge and Soil Vapor Extraction Pilot Test Work Plan (PTWP) (Trihydro, 2023a). In a letter dated November 17, 2023, the Georgia Department of Natural Resources, Environmental Protection Division (GEPD) provided conditional approval for installation of pilot test wells. Revision 2 of the PTWP was subsequently approved by GEPD in a letter dated December 5, 2023. Copies of the GEPD approval letters are presented in Appendix A. Pilot test field activities were completed in November and December 2023, as described in Sections 2.0 and 3.0.

1.1 BACKGROUND

In 2006, AS, SVE, and multiphase extraction (MPE) pilot testing was performed at the Site to assess the potential effectiveness of these technologies to address known soil and groundwater impacts beneath the facility. Based upon the pilot test findings, the previous consultant concluded that AS-SVE technologies were the most suitable and cost-effective technologies to address the VOCs beneath the Site. An Interim Measures Work Plan (IMWP 2016) was subsequently submitted to the Georgia Department of Natural Resources, Environmental Protection Division (GEPD) as part of a Post-Closure Care Plan (PCCP) Application dated April 1, 2022, that contained a work plan for the installation of an AS/SVE remediation system. This PCCP Application was included as part of a Class 3 Resource Conservation and Recovery Act (RCRA) Hazardous Waste Permit Modification Request that was transmitted to the GEPD on April 13, 2022. Prior to GEPD approval of the permit modification request (that included incorporation of the PCCP Application), PFSG submitted comments, including a request to perform an updated pilot test to reconfirm the previous findings. In February 2023, the GEPD issued a RCRA Permit Renewal that included an endorsement for updated pilot testing.

During April-May 2023, a semi-annual groundwater monitoring event was performed at the Site, as documented in the 2023 Semi-Annual Groundwater Monitoring Report (Trihydro, 2023b). Field activities for the 2023 annual event were completed in November-December 2023 (report pending). A summary of monitoring well construction details and

groundwater elevation data for the period between December 2021 and May 2023 is presented in Table 1. A summary of water quality data for the second quarter 2023 monitoring event is presented in Table 2.

1.2 SITE SHALLOW LITHOLOGY AND HYDROGEOLOGY

The Site is underlain by up to 18.5 feet of silty fine sand interbedded with layers of clayey sand. The base of the unsaturated vadose zone is composed of a clayey fine sand layer with a thickness of between 5 and 10 feet. The potentiometric surface occurs within this upper portion of the clayey sand unit or within the lower portions of the overlying silty fine sand, with depths to groundwater beneath the pilot test study area generally ranging between 15.5 and 20 feet below ground surface (bgs), as measured in monitoring wells B-108, B-113, B-114, and MW-8S (Table 1). A medium to coarse-grained sand underlies the clayey sand unit. This unit is referred to as the upper water-bearing unit. At a depth below approximately 40 feet bgs, the sand layer becomes increasingly more clayey, culminating in a sandy clay observed during the installation of the deeper facility monitoring wells.

Pilot testing is intended to demonstrate the effectiveness of AS and SVE technologies at the Site by influencing a portion of the soil and groundwater impacts within the unsaturated soil horizon and the underlying upper water-bearing unit, respectively. The data obtained from this pilot test are anticipated to serve as a reference design basis for development of a full-scale AS-SVE remedial system.

2.0 PILOT TEST TREATMENT AND OBSERVATION WELL INSTALLATION

AS-SVE pilot test field activities were conducted by Trihydro in November and December 2023, in general accordance with the GEPD-approved Revision 2 - PTWP (Trihydro, 2023a). Activities associated with drilling and installation of the new pilot test wells were completed between November 28 and December 2, 2023. Drilling and well installation was completed by Betts Environmental Recovery, Inc., a well drilling contractor licensed in the State of Georgia, under subcontract to Trihydro.

One new AS well (ASI-2), one new SVE well (SVE-5), and four new observation wells (OW-1 through OW-4) were installed to support the pilot testing. The locations of the wells installed for this effort were based on a map depicting the distribution of Total VOCs in the soil horizon beneath the Site (Cameron-Cole, 2021). The referenced map is provided in Appendix B. Based on the distribution of VOC-impacted soil, as illustrated on the referenced map, the north-central portion of the Drum Storage & Processing Area 2 (DSPA 2) was selected as the target area for pilot testing. The approximate locations of the AS and SVE pilot test wells are depicted on Figures 2 and 3. The four new observation wells were installed at distances approximately 12, 24, 36, and 48 feet radially outward from the SVE treatment well (Figure 3). The following subsections discuss the installation, completion, and development of the new treatment and observation wells.

2.1 DRILLING ACTIVITIES

Pilot test soil borings were installed using a GeoProbe® Model 7800 drill rig, which has both direct-push technology (DPT) and hollow stem auger (HSA) drilling capabilities. After coring through the concrete floor and underlying base gravel (limestone gravel fill) at each location, the upper 4 feet of soil penetration was completed using a hand auger as a precaution to clear potential underground utilities. Soil samples were then collected using DPT equipment and methods. Soil samples were obtained using 5-foot-long, acetate-lined, Macro-Core® DPT samplers.

Soil samples were inspected by a Trihydro geologist for lithologic description and samples were screened for the presence of VOCs using an organic vapor analyzer equipped with a photoionization detector (PID) fitted with an 11.7 eV lamp. PID readings were recorded at approximately 1-foot intervals from the retrieved 5-foot sample interval immediately after opening the acetate liner. Samples were also collected from each 2-foot interval (minimum) and placed in quart-size zip-loc style bags for headspace PID screening. Soil descriptions and PID readings were recorded on the field boring logs, presented in Appendix C. The soil descriptions were used to confirm target depth lithology and verify proper placement of the pilot test well screened intervals during well installation. Decontamination procedures are discussed in Section 2.4, below.

2.2 WELL COMPLETION

Wells were completed in general accordance with the Region 4 United States Environmental Protection Agency (USEPA) Design and Installation of Monitoring Wells guidance (USEPA, 2018). The DPT soil borings for the air sparge well and the four observation wells were over-drilled using 4.25-inch inside diameter (ID) hollow stem augers, creating a nominal 6-inch diameter borehole to accommodate construction of the 2-inch diameter air sparge and observation wells. A 6.25-inch ID hollow-stem auger was used to install the 4-inch diameter SVE well, creating a nominal 8-inch diameter borehole. Well completion diagrams are presented in Appendix D.

2.2.1 ASI-2

ASI-2 was completed to a total depth of 40.5 feet bgs and constructed (beginning at top of casing) with 2 feet of 2-inch diameter schedule (Sch) 80 polyvinyl chloride (PVC) riser (for added wellhead pressure safety protection), glued fitting-connected to approximately 36 feet of 2-inch diameter Sch 40 PVC casing, thread-connected to 2 feet of 2-inch diameter 0.010-inch machine-slotted PVC well screen. The borehole void between the casing and native sediments was filled from total depth to 1 foot above the screen interval with 20/30-grade silica sand, capped with a 2-foot-thick bentonite seal hydrated per manufacturer's instructions, and the remainder of the borehole was filled to approximately 1.5 feet bgs with Type I Portland cement/bentonite grout. The remaining annulus just above and inside the bottom of the well box was filled with concrete.

2.2.2 SVE-5

SVE-5 was completed to a total depth of approximately 20.2 feet bgs, constructed (beginning at top of casing) with 5 feet of 4-inch diameter Sch 40 PVC riser and thread-connected to 15 feet of 4-inch diameter 0.010-in machine-slotted PVC well screen. The borehole void between the casing and native sediments was filled from total depth to approximately 1 foot above the screen interval with 20/30-grade silica sand, capped with a minimum 2-foot-thick bentonite seal hydrated per manufacturer's instructions, and the remainder of the borehole was filled to approximately 2 feet bgs with Type I Portland cement/bentonite grout. The remaining annulus to just above and inside the bottom of the well box was filled with concrete.

2.2.3 OBSERVATION WELLS

Observation wells (OW-1 through OW-4) were completed to total depths of 25.5, 24.5, 24.5, and 25 feet bgs, respectively. They were constructed (beginning at top of casing) with 10 feet of 2-inch diameter Sch 40 PVC riser and thread-connected to 15 feet of 2-inch diameter 0.010-in machine-slotted PVC well screen. The borehole void between the casing and native sediments was filled from total depth to approximately 1 foot above the screen interval with

20/30-grade silica sand, capped with a minimum 2-foot-thick bentonite seal hydrated per manufacturer's instructions, and the remainder of the borehole was filled to approximately 1.5 feet bgs with Type I Portland cement/bentonite grout. The remaining annulus to just above and inside the bottom of the well box was filled with concrete.

2.3 WELL DEVELOPMENT

The six new wells were developed on December 2, 2023; at least 24 hours following well completion. The wells were developed by pumping and surging in general accordance with Design and Installation of Monitoring Wells (USEPA, 2018). The wells were developed with a Mini-Monsoon submersible pump until the water purged from the well was free of visible sediment and the pH, temperature, turbidity, and specific conductivity had stabilized. New tubing was used at each well location and development water was pumped directly from the wells into steel 55-gallon drums.

The following data were recorded as the development progressed: time, depth to water, estimated flow rate, estimated cumulative volume purged, conductivity, pH, temperature, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP). The SVE well (SVE-5), which was screened in fine-grained silty sand strata across the top of the water table, produced insufficient water to fully develop the well to meet the stated water quality criteria; however, this is not likely to affect the usability of the well for SVE. The wells were allowed to equilibrate for over nine days prior to commencement of pilot testing described on Section 3.0. Well development logs are presented in Appendix E.

2.4 EQUIPMENT DECONTAMINATION

A temporary decontamination (decon) pad was constructed to contain fluids and solids generated during equipment decontamination. The decon pad was constructed using pretreated lumber framing to which a plastic liner was attached. The pad was set over concrete flooring inside a concrete-bermed area that served as secondary containment.

Downhole drilling equipment was decontaminated following general procedures of the Region 4 USEPA Laboratory Services and Applied Science Division (LSASD) Field Equipment Cleaning and Decontamination Procedure (USEPA, 2020). The following procedures were used:

- At the beginning of work and between uses, all downhole DPT steel soil sampling probe equipment was decontaminated using a tap water and non-phosphate detergent (Alconox®) solution, along with brushing to remove particulate matter and surface films. After the scrubbing and detergent wash, equipment was rinsed thoroughly with tap water.

- Steel hollow-stem auger drilling equipment was placed on sawhorses at least two feet above the floor of the decontamination pad and the equipment was decontaminated by pressure washing with a tap water and non-phosphate detergent and using a brush to remove residual particulate matter and surface films. Hollow-stem augers and drill rods were cleaned on the inside with pressure washing and vigorous brushing to remove particulate matter. After the scrubbing and detergent wash, equipment was rinsed thoroughly with tap water.

During well development activities, the pump was decontaminated before use and between well locations by pumping a potable water and non-phosphate detergent solution, followed by a thorough potable water rinse. Well development water was pumped directly into steel 55-gallon drums. Please note that the well development pump decontamination effort was intended to be consistent with the decontamination procedure for the other drilling equipment that was described in the GEPD-approved Pilot Test Work Plan and as provided in Section 3.9.4 of USEPA Region 4 LSASD Procedure 205-R4 (Field Decontamination Procedure for Drilling Equipment). No groundwater sampling (for analytical testing) was performed in conjunction with the pilot test effort. Therefore, in this instance the pump was used strictly for well development and was not used for purging associated with groundwater sampling. Trihydro acknowledges that field parameters were recorded during well development efforts, but those data were used to confirm successful well development (removal of suspended sediments from casing and gravel pack, to achieve effective communication with native formation), not for groundwater quality sampling. Therefore, the portions of Sections 3.4 and 3.7 of USEPA Region 4 LSASD Procedure 205-R4 (Field Equipment Decontamination Procedures) for decontamination of *sampling* equipment used for field investigations was not deemed applicable.

Following completion of drilling and well installation activities, liquid and solid contents were transferred from the liner into 55-gallon steel drums. The dirty plastic liner was then removed from the lumber frame and placed in a 55-gallon steel drum. "Pending Analysis" labels were placed on each drum. Waste characterization, transport, and disposal were managed by Perma-Fix.

2.5 WELL SURVEY

On January 23, 2023, a survey was conducted to document elevations and locations for each of the six pilot test wells. The survey was completed by a Georgia-licensed professional land surveyor, ASA Engineering and Surveying, LLC, of Valdosta, Georgia (GA RLS No. 2913).

Elevations for the well casings and adjacent ground were surveyed to the nearest 0.01foot, based on the NAD 83 datum and were tied in to an existing on-site, surveyed well. Survey location coordinates follow the Georgia State Plane

Coordinate System (as defined by the National Geodetic Survey, based on the National Spatial Reference System). Survey data is presented in Table 3.

2.6 WASTE CONTAINERIZATION AND DISPOSAL

Soil cuttings, decon fluids, and well development water generated during soil boring activities and well installation/development activities associated with this pilot test were containerized in 55-gallon steel drums. Composite samples were collected from the drummed investigative derived waste (IDW) and submitted to a laboratory for testing requested by Perma-Fix for waste characterization purposes. "Pending Analysis" labels were placed on each drum and drums were staged on site at a location under roof and on concrete flooring, pending waste characterization and subsequent transport/disposal by Perma-Fix. IDW disposal documentation is provided in Appendix F.

3.0 AS AND SVE PILOT TESTING

Air sparge and soil vapor extraction pilot testing was conducted in general accordance with the Revision 2 - Air Sparge and Soil Vapor Extraction Pilot Test Work Plan (Trihydro, 2023a) to confirm AS and SVE efficacy as components of the recommended groundwater and soil remedy for the Site and to obtain data needed to design a full-scale remediation system. AS and SVE influences within the subsurface were evaluated via data collected in nearby observation wells. Prior to conducting pilot testing, depth to water (DTW) was measured using an oil/water interface probe at the observation wells associated with the pilot test (see Figure 3). DO concentrations were also recorded using a submersible optical DO meter to establish pre-sparging baseline conditions. Air injection parameters including pressures, flow rates, and temperatures were observed via indicators on a control manifold and were recorded by hand at various intervals throughout the test steps. A photo log of the pilot test is included as Appendix G. Field data recorded on field forms during this pilot test is presented in Appendix H.

3.1 PILOT TEST OBJECTIVES AND PROCEDURES

Per the GEPD-approved Work Plan, a multi-step AS/SVE pilot test was conducted at the Site on December 12, 2023, for a total duration of approximately 8.5 hours. The testing equipment included a trailer-installed air compressor and regenerative vacuum blower to provide pressurized air flow into the groundwater horizon via the AS treatment well, and vacuum vapor recovery from the unsaturated soil horizon via the SVE treatment well. An electrical generator powered the motors and controls, and a drum of granular activated carbon (GAC) was attached to the effluent side of the SVE system for vapor treatment prior to discharge to the atmosphere. Pilot test treatment well locations are depicted on Figure 3.

In general, pilot testing sought to establish:

- What pressures are required for air injection, and what flow rates are achievable and optimal at the test location for effective AS and SVE influence
- Transient groundwater trends (changes in DO) during pilot testing
- The AS/SVE Radii of Influence (ROI) to be utilized for full-scale system design

AS treatment is intended to increase DO concentrations to promote organic chemical oxidation, along with the delivery of air bubbles across the groundwater impact interval to promote volatilization of dissolved organic chemicals in the water column and convective transport of the vaporized chemicals to water surface for subsequent vacuum vapor recovery.

3.1.1 AS-SVE PILOT TEST EQUIPMENT

The mechanical equipment used during this pilot test allowed observation of operational parameters and flow/pressure adjustments throughout the test. An enclosed equipment trailer combined with a trailer-mounted generator was used for this test. Photos of the equipment are included in Appendix G. The equipment was selected based on factors described in the Work Plan. Among others, some factors considered were average depth to water (16.5 feet bgs in the DSPA 2) and AS well top of screen depth (38 feet bgs). Trihydro estimated that a displacement pressure of 9.3 pounds per square inch (psi) would be required to depress the water column in the AS well casing to the top of the well screen to achieve breakthrough to influence the surrounding native sediments ((38 feet-16.5 feet)/2.31 pounds per square inch/foot of water column). Observational equipment used is described in Section 3.1.2.

The AS portion of the test utilized a Rietschle DLR-100 7.5 hp air compressor (29 psi/70 standard cubic feet per minute [scfm]). The pilot test equipment included a trailer with an AS system heat exchanger, temperature gauges, flow control valving, and flow and pressure measurement gauges.

Soil vacuum influence within the unsaturated soil horizon was evaluated by applying sustained vacuum pressure to the SVE treatment well via a Rietschle VLR-301 7.5 hp rotary claw vacuum blower (340 inches water column [inWC]/203 scfm). The SVE portion of the pilot test equipment trailer included an influent stream moisture separator, temperature gauges, flow control valving, flow and vacuum measurement gauges, and sample ports. Detailed specifications and schematics of the AS/SVE system are provided as Appendix I.

3.1.2 AS-SVE PILOT TEST INFLUENCE MONITORING

In general, four pilot test observation wells (OW-1 through OW-4), and one existing monitoring well (MW-8S) were used to measure system influence during the AS/SVE pilot test (Figure 3). The AS/SVE wells are identified as ASI-2 and SVE-5, respectively. The observation wells were installed at distances of approximately 12, 24, 36, and 48 feet radially outward from the SVE treatment well. During active pilot testing, organic vapor readings were recorded from the undiluted SVE influent (pre-GAC) and from the effluent (post-GAC) vapor streams using a PID fitted with an 11.7 eV lamp. The 11.7 eV lamp was selected due to the ionization potential (IP) of contaminants of concern such as 1,1,1-Trichloroethane, which has an IP of 11. DO was recorded using a Hanna 98198 DO Meter. A calibration and equipment check certificate is presented as Appendix J. DTW was measured throughout the pilot test with an oil/water interface probe at the observation wells. Vacuum pressure was measured with a handheld pressure manometer that was fitted to observation wells via wellhead adapters. The DTW, vacuum, and DO were measured prior to starting the pilot test to identify baseline conditions.

Following recording of static baseline measurements from the treatment and observation wells, the pilot test was conducted in three 2–3-hour phases: SVE only, AS/SVE combined, and optimized AS/SVE combined (Phase 1, 2, and 3, respectively). During Phase 1 and Phase 2, the vacuum and flow rates were increased in three steps, allowing for dynamic stabilization to be achieved. The duration of each step during Phase 1 and Phase 2 was approximately 30-60 minutes. Discussion regarding the individual phases is presented in the following subsections.

3.2 PHASE 1 SUMMARY/OBSERVATIONS

Following collection of static baseline measurements, the SVE system was activated to begin Phase 1 procedures. The baseline water level was approximately 15.8 feet bgs. Vacuum was applied to SVE-5 at the anticipated step intervals of approximately 25, 50, 75, and 100 inWC. As noted in the field forms (Appendix H), observation well data (DTW and vacuum) was recorded at 15-to-30-minute intervals to evaluate the ROI of the treatment well. In addition, treatment system performance measurements (influent vacuum and flow; undiluted influent and final effluent vapor concentrations using PID; air dilution percentage; and line temperature) were recorded at the system trailer. Influent PID readings ranged from 25.3 to 275.0 parts per million (ppm). The data recorded during Phase 1 SVE only test are presented in Table 4.

The duration of Phase 1 was approximately 180 minutes. As described above, the Phase 1 SVE test consisted of 4 steps at increasing applied SVE wellhead vacuums prior to air sparging.

1. 25 inWC for 40 minutes
2. 50 inWC for 45 minutes
3. 75 inWC for 35 minutes
4. 100 inWC for 60 minutes

Vacuum influence of greater than 0.5 inWC was observed at OW-1 (12 feet), OW-2 (24 feet), OW-3 (36 feet). Peak manometer negative pressure (vacuum) readings at OW-1 through OW-4 (at applied vacuum of 100 inWC at SVE-5) were -2.94, -0.50, -0.63, and -0.10 inWC, respectively. For the purposes of this pilot test, and as defined in the Revision 2 - PTWP (Trihydro, 2023a), effective SVE vacuum influence is defined by an observed vacuum of 0.5 inWC. SVE vacuum influence was not observed at MW-8S (55 feet). Based on observations by the field team, the optimal SVE conditions were determined to be approximately 100 inWC wellhead vacuum with a system vacuum of 110 inWC, which resulted in a vapor flow rate of approximately 11.8 scfm. Water level mounding throughout the Phase 1 testing steps was negligible (maximum of 0.07 ft). A graph depicting SVE vacuum vs air flow is provided on Figure 5. The plot suggests that a vacuum of greater than 100 inWC may be possible, yielding a flow rate of at least

11.8 scfm. A graph depicting applied vacuum vs vacuum influence measured at the four OW wells is provided on Figure 6. This graph demonstrated that an effective vacuum influence of greater than 36 feet was detected at the observation well network once a vacuum of at least 100 inWC was applied to the SVE well. A graph depicting SVE vacuum vs distance at 100 inWC applied vacuum is depicted on Figure 7. This graph confirmed an effective ROI of 39 feet at an applied SVE wellhead vacuum of 100 inWC.

The total duration of Phase 1 was approximately 120 minutes.

3.3 PHASE 2 SUMMARY/OBSERVATIONS

Following completion of Phase 1, the SVE system was adjusted to a flow rate of 75 inWC and the AS system was simultaneously applied to ASI-2. Upon initiating Phase 2, air pressure was increased until breakthrough occurred at 13 psi; then, pressure was reduced and sustained at 10-11 psi for the duration of the first step of Phase 2. Breakthrough pressure is the minimum air pressure required to overcome the existing water column in the injection well and the formation entry pressure. The data recorded during the Phase 2 AS/SVE test are presented in Table 5.

Following breakthrough, and as described in the PTWP, AS air flow was adjusted in step intervals of 5, 7.5, and 10 scfm. Observation well data (water level, mounding, DO, and vacuum) were recorded by hand at approximately 15-to-30-minute intervals to evaluate the ROI of the treatment wells. Similar to Phase 1, performance measurements of the treatment system (air pressure and flow; influent vacuum and flow; undiluted influent and final effluent vapor concentrations, using a PID; air dilution percentage; and line temperatures) were recorded in the system trailer. As the AS influence was increased, the measurement procedures were repeated for each subsequent step until completion of this phase of the pilot test.

During the three air flow step intervals, water table mounding was observed in OW-1 through OW-4. Mounding of 0.65 to 1.34 ft was measured in the four observation wells during the 5 scfm step. When air flow was increased to 7.5 scfm, the mounding increased significantly, ranging from 1.18 to 2.90 ft in the four observation wells and air bubbling was detected in OW-1 and OW-3 (36 ft distance). When air flow was increased to 10 scfm, mounding further increased, ranging from 1.45 to 2.94 ft in the four observation wells and air bubbling was detected in OW-1 through OW-3 (36 ft distance) and at the end of Phase 2 effervescence was observed near the top of casing in OW-3. The mounding observations are provided on a chart on Figure 8. The mounding data suggested a hydraulic ROI of more than 48 ft was achieved during this phase from all three air flow steps (5 – 10 scfm).

During the three air flow step intervals, DO concentrations fluctuated at the flow rate of 5 scfm, showing decreases in OW-2 and OW-3 (0.20 and 0.04 mg/L, respectively), but showed increases in OW-1 and OW-4 (1.18 and 0.14 mg/L, respectively), a distance of 48 ft. At the flow rate of 7.5 scfm, DO concentrations also fluctuated, showing decreases in OW-2 and OW-4 (0.17 to 0.03 mg/L, respectively), but showed increases in OW-1 and OW-3 (5.09 to 1.40 mg/L, respectively), a distance of 36 ft. At the flow rate of 10 scfm, DO concentrations increased in OW-1 to OW-4 (0.15 to 5.82 mg/L), a distance of 48 ft. The change in DO observations are provided on a chart on Figure 9. These data illustrate that a ROI of more than 48 ft was achieved during this phase from all three air flow steps (5 – 10 scfm), but that an effective AS ROI of at least 24 feet and up to 36 ft could be achieved at an air flow rate of 6 scfm.

PID measurements ranged from 7.4 to 114.6 ppm at OW-1, and 25.1 to 168.1 ppm at OW-3. In general, elevated PID readings appear to correlate with increased AS/SVE system activity. These data represent effective AS/SVE influence of VOCs.

Vacuum readings measured during this phase indicated vacuum influence at 24 ft. (OW-2) through all three AS air flow (5, 7.5, and 10 scfm) steps. However, positive pressure was noted in OW-1 and OW-3. During this phase, the SVE was operated at 75 inWC and a flow rate of 9.3-11.2 scfm. These data supported an interpretation that the AS system achieved an ROI of approximately 36 ft based on pressure data. As noted above, our post-test interpretation was that operating at 100 inWC or greater would provide optimized results for the SVE to provide an effective ROI that included capture of contributions from the AS and maintain vacuum conditions across the treatment area in the final design.

The total duration of Phase 2 was approximately 155 minutes.

3.4 PHASE 3 SUMMARY/OBSERVATIONS

During Phase 3, the AS system was operated at a sustained air flow of 7.5 scfm and injection pressure of 10.5 psi. The AS air flow was maintained at 7.5 scfm during this phase, due in part to the significant water table mounding observed more than 48 ft from the AS and significant effervescence noted in OW-3 (36 ft) at the end of the previous phase, when the AS was operating at 10 scfm. The SVE system was operated at a sustained air flow of 8.6 to 9.2 scfm and a wellhead vacuum of 75 inWC. Observation well data (water level, mounding, DO, and vacuum) were recorded by hand at intervals of approximately 20 to 30 minutes. In addition, treatment system performance measurements (air pressure and flow; influent vacuum and flow; undiluted influent and final effluent vapor concentrations, using PID; air dilution percentage; and line temperatures) were recorded in the system trailer. The results of the Phase 3 AS/SVE test are provided in Table 6.

As observed in Phase 2, bubbling continued at OW-1. At OW-1, DO remained substantially elevated from a baseline measurement 3.61 mg/L, and appeared to stabilize between 6.28 and 7.09 mg/L. Mounding continued at OW-1, but slowly diminished in OW-2 and OW-4. Note that the DTW data was approximate due to the bubbling influence affecting the water level probe. This is discussed further in Section 3.5.

Vapor concentrations continued to increase in OW-1, OW-2, and OW-4 during this sustained rate testing phase. The gradual increase in vapor VOC concentrations is interpreted to include effective capture of organic vapors resident in the unsaturated soil horizon along with dissolved organic vapors released from the groundwater horizon into the overlying unsaturated soil horizon by the AS influence.

During this final phase, three air samples were collected from the undiluted SVE influent at intervals spanning approximately the full duration of Phase 3. The air samples were submitted to SGS (a NELAC-certified laboratory) and analyzed for VOCs using USEPA Method TO-15. The analytical results of these samples are discussed in Section 4.0.

The total duration of Phase 3 was approximately 145 minutes.

3.5 DEVIATIONS

The AS/SVE pilot test was conducted in general accordance with the Work Plan. Deviations are discussed below:

- As mentioned above, three undiluted SVE influent air samples were collected during Phase 3 and analyzed via USEPA Method TO-15, which represents one additional sample. Shortly after deploying the 30-minute flow controller to collect the beginning sample, the field team observed no change in vacuum on the Summa canister. It was quickly determined that the laboratory had not placed the canister under sufficient vacuum to compensate for the influent vacuum of the operating SVE system. Therefore, the initial sample was collected in two 1.4L Tedlar bags (AS-PHASE3-BEG). Upon laboratory receipt, the Tedlar bag samples were transferred to a Summa canister and analyzed via EPA TO-15. The purpose of this additional sample was to ensure that the initial sample was collected while Phase 3 was in progress. The analytical results of the three samples are discussed in Section 4.0.
- In general, observational readings, intended to be recorded at 10–15-minute intervals, deviated from the planned frequency in the Work Plan. The practical challenges with respect to the number of observational wells and data collection procedures resulted in recording intervals ranging between approximately 15 to 45 minutes.

- Observational monitoring at OW-3 was omitted during Phase 3, due to the significant effervescence observed in this well at the end of Phase 2.
- Observational monitoring was not conducted at MW-8S during Phase 3, due to no observed influence achieved at this distance (55 ft) during Phases 1 and 2.
- Although not technically a deviation, it should be noted that the recorded DTW during instances of bubbling is approximate due to the turbulent conditions within the well.

The deviations discussed above do not significantly affect the overall interpretation of conclusions from this pilot test.

4.0 ANALYTICAL DATA SUMMARY

The conclusions from the analysis of the three vapor samples collected during Phase 3 are discussed below. Analytical data are provided as Appendix K and a side-by-side comparison of the analytical data is provided in Table 7.

- Three SVE off-gas samples were collected from the undiluted SVE influent and submitted for laboratory analyses to characterize VOC concentrations during Phase 3. The first sample (AS-PHASE3-BEG) was collected in two 1.4L Tedlar bags at the beginning of Phase 3. The second and third samples (AS-PHASE3-MID and AS-PHASE3-END) were collected at the midpoint and end of Phase 3.
- In general, analytical data shows that contaminant levels continued to increase throughout Phase 3. This confirmed that the placement of the AS and SVE wells were located near the source area and demonstrated that the AS was effective in hydraulically influencing (mounding) and mobilizing dissolved organic impacts from the underlying groundwater horizon, while the SVE was effective in capturing organic vapors in the overlying unsaturated soil horizon. The data from the samples collected during Phase 3 demonstrated that the highest organic concentrations were detected in the final air sample collected during Phase 3 and these data will provide essential information for future remedial system design and performance criteria for captured vapor treatment.

5.0 CONCLUSIONS

Based on the pilot test observations discussed in Sections 3.2, 3.3, and 3.4, the conclusions of the pilot test event are presented below.

5.1 PHASE 1 CONCLUSIONS

- The conducted SVE test during Phase 1, with wellhead vacuums ranging from 25 to 100 inWC, demonstrated optimization at 100 inWC or greater, as indicated by vacuum measurements at the observation wells.
- An applied SVE wellhead vacuum of 100 inWC resulted in negligible water table mounding (0.07 feet) and a vacuum air flow rate of up to 11.8 scfm.
- Based on the presented vacuum response data, a ROI of at least 39 feet was demonstrated for SVE-5. Figure 4 depicts the SVE radius of influence observed during the pilot test.

5.2 PHASE 2 CONCLUSIONS

- Air flow was successfully injected into the subsurface at 10-11 psi and air flow rates of 5-10 scfm. At a flow rate of 5 scfm, water table mounding of at least 0.65 feet was observed at a distance of up 48 feet from the AS. At flow rates of 7.5 to 10 scfm, water table mounding increased significantly within 48 feet of the AS and bubbles were observed at a distance of up to 36 feet.
- DO measurements during the test indicated a illustrate that a ROI of more than 48 ft was achieved during this phase from all three air flow steps (5 – 10 scfm), but that an effective ROI of up to 36 feet could be achieved at an air flow rate of 6 scfm.
- Although AS influence was observed at OW-3 (36 feet), this occurred near the end of Phase 2 with an above-optimal AS flow. This suggests a conservative AS ROI of approximately 24 feet would be optimal for AS/SVE system operation. Figure 4 depicts the conservative AS radius of influence observed during the pilot test.

5.3 PHASE 3 CONCLUSIONS

- Phase 3 tested the system performance using a sustained AS injection pressure of 10.5 psi, with an airflow rate of 7.5 scfm, and the soil vapor extraction vacuum of 79 inWC, with a corresponding airflow rate of approximately 9 scfm. This also provided a minimal safety factor for the SVE extraction rate exceeding the AS injection rate by at least 20%.
- Air samples collected during initial, midpoint, and end of this phase of testing were laboratory analyzed and indicated a progressive increase in VOC concentrations. These data confirmed that the placement of the AS and SVE wells were located near the source area and demonstrated that the AS was effective in hydraulically influencing (mounding) and mobilizing dissolved organic impacts from the underlying

groundwater horizon, while the SVE was effective in capturing organic vapors in the overlying unsaturated soil horizon.

5.4 COMPARISON TO PREVIOUS PILOT TESTING RESULTS

The findings of this pilot test were compared against the findings of the previous air sparge and soil vapor extraction pilot test performed by others in 2008.

- The previous AS/SVE pilot test used an AS well that partially penetrated the upper shallow aquifer. The well was installed to a total depth of 35 feet and screened from 30-35 feet bgs. Typically, the majority of air introduced into an AS well enters the surrounding formation near the top of the screen interval. The base of the upper shallow aquifer was previously reported to be approximately 40 feet bgs. The shallower AS well was thus interpreted to have not influenced groundwater to the base of the upper shallow aquifer and the ROI may have been reduced due to the shallower screen interval.
- The current AS/SVE pilot test installed AS-2 to the base of the upper shallow aquifer at a total well depth of 40.5 feet bgs. The screen interval was also reduced to a 2-foot interval from 38.5-40.4 feet bgs, intended to maximize potential ROI based upon depth of air introduction into the native sediments.
- The previous SVE pilot test conducted four steps of vacuum influence from 23 to 100 inWC, yielding air flow rates of 41 to 68 scfm. Based on the findings, the report recommended an optimal SVE rate of 56 inWC to achieve an air flow rate of 55 scfm. This was predicted to provide an effective SVE ROI of 34 feet, based on a 1.0 inWC vacuum reference.
- The current SVE pilot test conducted four steps of vacuum influence from 25 to 100 inWC, yielding air flow rates of 4.1 to 11.8 scfm. Based on the findings, the report recommended an optimal SVE rate of at least 100 inWC to achieve an air flow rate of 11.8 scfm. This was predicted to provide an effective SVE ROI of 39 feet, based on a 0.5 inWC vacuum reference.
- **SVE Comparison.** The well dimensions of the SVE wells used in both tests were similar. The lithologic log for the previous SVE well indicated a mixture of likely higher permeability sands interbedded with less permeable sandy clays. In contrast, the sediments encountered in the current SVE well were mostly silty sand. This indicates that there is sufficient heterogeneity in the shallow sediments beneath the site to yield contrasting air flow rates, but the overall effective ROI of both SVE pilot tests was somewhat similar.
- The previous Combined AS-SVE pilot test examined AS air flow rates of 2 to 10.8 scfm with injection pressures of 5 to 7 psi. The report estimated an effective AS ROI of greater than 2 feet.
- The current Combined AS-SVE pilot test conducted AS air flow rates at three steps (5, 7.5, and 10 scfm) with injection pressures of 10 to 11.2 psi. Based on the findings, the report recommended an optimal AS

rate of 6 scfm at 10 psi. This was predicted to provide an effective AS ROI of 24 feet, based on observed water table mounding, increase in DO, and pressure readings.

- **AS Comparison.** The top of screen of the AS well in the previous pilot test was completed 8.5 feet shallower than the current pilot test AS well. The increased depth of the top of screen likely contributed to the increased effective ROI and observed increased mounding and bubbles beyond 24 feet.
- The previous pilot test report used Method 14 for air sample analyses. This yielded a subset of screened analytes compared to the Method 15 analyte list screened for the current pilot test. The results of analyses will thus provide greater value when calculating total chemical loading when performing off gas treatment design calculations.

5.5 RECOMMENDATIONS

Trihydro recommends preparing a Revised PCCP to incorporate the pilot test findings and updating the AS/SVE design. A revised Conceptual PCCP Preparation Schedule, including reference to future updates has been prepared and is provided in Appendix L. Trihydro anticipates that the full scale AS/SVE system will be based on the following parameters:

- Operating the SVE system at an applied vacuum of at least 100 inWC, and a resultant air flow rate of 12 scfm or more per well. Based on these criteria, it is estimated that an SVE ROI of 39 feet may be referenced for full-scale design.
- Operating the AS system at a pressure of approximately 10 psi, and an air flow rate of 6 scfm. An AS ROI of 24 feet appears to be conservative for full-scale design.

Implementation of the Schedule will commence within 30 number of days of approval of this Report. Upon finalization of the revised PCCP, a Class 3 Permit Modification can then be initiated to incorporate the revised PCCP into the facility's permit.

Note that PFSG also seeks to secure GEPD approval to restore this facility to active use as a hazardous waste transport, storage, and disposal (TSD) facility. Therefore, the above recommendations will be completed concurrent with separate permitting efforts and the full-scale design layout will include consideration of current surface features and anticipated future land use.

6.0 REFERENCES

Cameron-Cole. 2008. Air Sparge and Soil Vapor Extraction Pilot Test, Perma-Fix of South Georgia, Inc., Valdosta, GA. April 30, 2008.

Trihydro. 2023a. Air Sparge and Soil Vapor Extraction Pilot Test Work Plan, Revision 2, Perma-Fix of South Georgia, Inc., Valdosta, GA. November 27, 2023.

Trihydro. 2023b. 2023 Semi-Annual Groundwater Monitoring Report, Perma-Fix of South Georgia, Inc., Valdosta, GA. July 28, 2023.

USACE. 2013-01. In-Situ Air Sparging Engineer Manual. December 31, 2013.

USEPA. 2018. Design and Installation of Monitoring Wells. January 16, 2018.

USEPA, 2020. Laboratory Services and Applied Science Division (LASASD) Field Equipment Cleaning and Decontamination, June 22, 2020.

TABLES

TABLE 1
Monitoring Well Construction Details and 2021-2023 Groundwater Levels
2023 Semi-Annual Groundwater Monitoring Report
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

								December (4th Q) 2021		May (2nd Q) 2022		November (4th Q) 2022		April (4th Q) 2023		May (4th Q) 2023		
	Monitor Well Designation	Install Date	Casing Diameter (Inches)	Total Depth (ft BTOC)	Screened Interval (ft bgs)	Elevation of Top of Casing (ft MSL)	Ground Elevation (ft MSL	Depth to Groundwater (ft BTOC)	GWE (ft MSL)	Depth to Groundwater (ft BTOC)	GWE (ft MSL)	Depth to Groundwater (ft BTOC)	GWE (ft MSL)	Depth to Groundwater (ft BTOC)	GWE (ft MSL)	Depth to Groundwater (ft BTOC)	GWE (ft MSL)	5-Month GWE Change (1) (ft)
On-Site	B-106	6/19/06	2	24.35	15 - 25	190.596	191.139	14.57	176.03	14.48	176.12	15.63	174.97	NM	NM	NM	NM	NM
Monitoring Wells	B-108	6/20/06	2	24.22	15 - 25	191.973	192.085	15.87	176.10	16.22	175.75	17.30	174.67	NM	NM	NM	NM	NM
Shallow	B-113	6/20/06	2	24.4	15 - 25	191.493	191.527	15.63	175.86	16.30	175.19	17.10	174.39	NM	NM	NM	NM	NM
	B-114	6/20/06	2	24.48	15 - 25	192.23	192.066	16.08	176.15	15.91	176.32	17.43	174.80	NM	NM	NM	NM	NM
	MP-8	8/1/04	1.25	22.21	17 - 19	191.889	191.889	16.00	175.89	16.05	175.84	17.27	174.62	NM	NM	NM	NM	NM
	MW-1S*	NA	2	25.04	NA	190.55	187.485	15.40	175.15	15.30	175.25	16.33	174.22	15.76	174.79	16.11	174.44	0.57
	MW-2S*	NA	2	19.94	NA	187.99	186.21	12.69	175.30	NM	NM	13.57	174.42	NM	NM	13.48	174.51	NM
	MW-3*	NA	2	20.69	NA	194.457	191.996	14.93	179.53	14.91	179.55	15.94	178.52	15.52	178.94	15.74	178.72	0.42
	MW-4S*	NA	2	28.12	NA	189.391	189.391	14.15	175.24	13.97	175.42	15.12	174.27	14.45	174.94	14.86	174.53	0.67
	MW-5S	3/22/96	2	28.35	10 - 25	188.809	185.951	14.12	174.69	13.86	174.95	14.93	173.88	14.35	174.46	14.84	173.97	0.58
	MW-6S	3/21/96	2	27.91	10 - 25	191.332	187.878	15.69	175.64	NM	NM	16.76	174.57	16.00	175.33	16.35	174.98	0.76
	MW-7S	3/27/96	2	24.93	10 - 25	187.45	188.311	12.37	175.08	NM	NM	13.38	174.07	12.69	174.76	12.84	174.61	0.69
	MW-8S	3/22/96	2	27.8	10 - 25	194.61	191.339	18.96	175.65	NM	NM	20.03	174.58	19.34	175.27	19.60	175.01	0.69
	MW-9S	3/22/96	2	24.67	10 - 25	190.17	190.66	14.06	176.11	NM	NM	15.11	175.06	14.57	175.60	14.86	175.31	0.54
	MW-10S	3/23/96	2	24.94	10 - 25	190.17	190.416	14.57	175.60	14.78	175.39	15.53	174.64	14.96	175.21	15.26	174.91	0.57
	MW-11S	3/21/96	2	24.9	10 - 25	195.115	192.224	18.83	176.29	NM	NM	19.81	175.31	19.36	175.76	19.60	175.52	0.45
	MW-12S	3/23/96	2	27.61	10 - 25	189.04	186.35	13.79	175.25	13.52	175.52	14.70	174.34	14.05	174.99	14.43	174.61	0.65
	MW-13S	6/6/97	2	23.89	10 - 25	187.71	187.852	11.56	176.15	12.42	175.29	13.06	174.65	12.49	175.22	12.86	174.85	0.57
	MW-24S*	NA	2	21.69	NA	189.30	NA	13.20	176.10	NM	NM	14.31	174.99	13.70	175.60	13.98	175.32	0.61
	MW-103	6/16/06	2	22.33	10 - 25	193.315	190.473	13.70	179.62	13.61	179.71	14.70	178.62	14.27	179.05	14.50	178.82	0.43
Deep	MW-1D*	NA	2	46.4	37 - 47	190.59	187.53	15.00	175.59	15.34	175.25	16.41	174.18	15.86	174.73	16.22	174.37	0.55
	MW-2DR*	3/24/10	2	44.64	NA	189.52	186.4	14.03	175.49	NM	NM	14.87	174.65	14.55	174.97	14.80	174.72	0.32
	MW-4D*	NA	2	44.57	NA	189.47	186.53	14.38	175.09	NM	NM	15.26	174.21	14.78	174.69	15.14	174.33	0.48
	MW-5D	3/28/96	2	43.71	31 - 41	188.9	185.96	13.83	175.07	NM	NM	14.76	174.14	14.35	174.55	14.72	174.18	0.41
	MW-6D	3/21/96	2	43.55	31 - 41	191.37	188.01	15.73	175.64	NM	NM	16.65	174.72	16.13	175.24	16.51	174.86	0.52
	MW-7D	3/27/96	2	40.93	31 - 41	188.06	188.35	12.34	175.72	NM	NM	13.26	174.80	13.26	174.80	15.40	172.66	0.00
	MW-8DR	3/1/10	2	43.91	NA	195.43	191.37	19.49	175.94	NM	NM	20.43	175.00	19.90	175.53	20.23	175.20	0.53
	MW-9D	3/27/96	2	40.76	31 - 41	190.24	190.6	14.08	176.16	NM	NM	15.16	175.08	14.65	175.59	14.97	175.27	0.51
	MW-10D	3/24/96	2	40.78	31 - 41	190.17	190.45	14.51	175.66	NM	NM	15.59	174.58	15.02	175.15	15.35	174.82	0.57
	MW-11D	3/20/96	2	43.56	31 - 41	195.14	192.29	18.80	176.34	18.63	176.51	19.79	175.35	19.30	175.84	19.55	175.59	0.49
	MW-12D	3/24/96	2	42.65	31 - 41	189.04	186.38	13.94	175.10	NM	NM	14.79	174.25	14.34	174.70	14.68	174.36	0.45
	MW-13D	6/3/97	2	41.32	31 - 41	187.61	187.86	12.48	175.13	12.90	174.71	13.20	174.41	12.63	174.98	12.98	174.63	0.57
	MW-13D3	NA	2	138.38	122 - 138	187.50	187.86	85.56	101.94	85.92	101.58	91.58	95.92	86.28	101.22	87.18	100.32	5.30
	MW-13DD	12/23/00	2	68.23	60 - 65	187.65	187.86	18.52	169.13	19.09	168.56	19.86	167.79	19.20	168.45	19.56	168.09	0.66
	MW-24D	9/8/04	2	38.82	35 - 40	188.87	189.67	13.06	175.81	NM	NM	14.10	174.77	13.69	175.18	13.94	174.93	0.41
Off-Site	MW-14S*	NA	2	24.38	NA	175.86	NA	5.15	170.71	5.27	170.59	5.50	170.36	5.08	170.78	5.48	170.38	0.42
Monitoring Wells	MW-16	12/22/00	2	36.11	20 - 35	181.45	178.77	9.23	172.22	NM	NM	10.10	171.35	9.25	172.20	NM	NM	0.85
Shallow	MW-18*	NA	2	39.34	NA	181.47	NA	12.03	169.44	NM	NM	13.07	168.40	12.06	169.41	12.60	168.87	1.01
	MW-19R	3/24/10	2	40.11	NA	188.82	189.07	13.34	175.48	NM	NM	14.40	174.42	13.90	174.92	14.25	174.57	0.50
	MW-26	9/9/04	2	22.43	12.75 - 22.75	192.55	192.95	15.88	176.67	NM	NM	16.99	175.56	16.49	176.06	17.05	175.50	0.50
	MW-27	9/9/04	2	22.37	12.7 - 22.7	191.44	191.96	15.44	176.00	NM	NM	16.41	175.03	15.91	175.53	16.55	174.89	0.50
	MW-28	9/9/04	2	24.28	14 - 24	194.97	195.21	17.64	177.33	NM	NM	18.90	176.07	16.63	178.34	17.84	177.13	2.27
	TW-1	12/20/00	2	6	1 - 6	171.83	168.8	NM	NM	NM	NM	3.45	168.38	NM	NM	NM	NM	NM
	TW-2	12/20/00	2	4	1 - 4	171.07	166.75	3.83	167.24	NM	NM	4.90	166.17	3.72	167.35	NM	NM	1.18
	TW-3	12/20/00	2	6	1 - 6	170.02	167.15	2.79	167.23	NM	NM	3.68	166.34	2.91	167.11	NM	NM	0.77
Deep	MW-14D*	NA	2	39.11	NA	175.79	NA	7.41	168.38	7.42	168.37	8.14	167.65	7.45	168.34	7.85	167.94	0.69
	MW-15	12/19/00	2	42.23	24 - 39	186.98	184.18	12.57	174.41	12.50	174.48	13.48	173.50	12.75	174.23	12.99	173.99	0.73
	MW-17*	NA	2	40.3	NA	171.70	NA	3.93	167.77	3.95	167.75	4.58	167.12	3.89	167.81	4.31	167.39	0.69
	MW-20*	NA	2	42.01	28 - 38	170.13	170	2.05	168.08	2.05	168.08	2.80	167.33	1.93	168.20	2.46	167.67	0.87
	MW-21*	NA	2	41.94	NA	169.43	NA	1.00	168.43	0.40	169.03	1.90	167.53	0.85	168.58	1.39	168.04	1.05
	MW-22	4/16/03	2	38.56	29.5 - 39.5	171.02	167.79	3.43	167.59	3.23	167.79	4.33	166.69	3.00	168.02	3.70	167.32	1.33
	MW-23 (2)	9/2/04	2	78.72	68 - 78	175.21	176	25.54	149.67	NM	NM	31.38	143.83	28.25	146.96	25.88	149.33	3.13
	MW-29	9/10/04	2	40.28	35.5 - 40.5	175.68	176.32	5.29	170.39	NM	NM	7.05	168.63	NM	NM	NM	NM	NM
							Shallow Zone Avg.	14.25	175.53	14.04	175.78	14.18	173.72	13.37	174.42	14.91	174.83	0.70
							Deep Zone Avg. (2)	15.07	169.95	16.49	164.74	16.27	168.74	15.90	169.56	16.38	169.08	0.82
							Overall Avg. (2)	14.18	172.80	15.12	170.26	15.23	171.23	14.63	171.99	15.64	171.96	0.76

Notes:
NA = Not Available
NM = Not Measured
NC = Not Calculated
GWE = Groundwater Elevation
BTOC = Below Top of Casing
ft MSL = Feet Mean Sea Level
* = No well logs available for these wells
(1) 5-Month GWE Change = 4Q2022 GWE - 2Q2023 GWE
(2) Average does not include data from well MW-23. This well is screened much deeper and generally yields much lower groundwater elevations.

TABLE 2
Summary of Constituents of Concern and Other Detected Constituents in Groundwater - Second Quarter 2023
2023 Semi-Annual Groundwater Monitoring Report
Perma-Fix of South Georgia, Inc. Valdosta, Georgia

Parameter		Chlorinated and Non-Chlorinated VOCs (µg/l)																									Aromatic/Hydrocarbon VOCs (µg/l)						Method 8081B			
		1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2,4-Trimethylbenzene	1,2-Dichlorobenzene	1,2-Dichloroethane	1,3,5-Trimethylbenzene	2-Butanone	2-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-Pentanone	Acetone	Carbon Tetrachloride	Chloroethane	Chloroform	Chloromethane	Cis-1,2-Dichloroethene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	N-Propylbenzene	Naphthalene	Tetrachloroethene (PCE)	Trans-1,2-Dichloroethene	Trichloroethene (TCE)	Vinyl Chloride	Benzene	Toluene	Ethylbenzene	Methyl Tert-Butyl Ether	M,P-Xylenes	O-Xylene	Heptachlor	Total Chlorinated and Non-Aromatic VOCs (µg/l)	Total Aromatic/Hydrocarbon VOCs (µg/l)	TOTAL VOCs (µg/l)
Groundwater Protection Standard		200 [a]	1 [b]	7 [a]	1 [b]	600 [a]	5 [a]	1 [b]	5 [b]	1 [b]	1 [b]	5 [b]	25 [b]	5 [a]	2 [b]	80 [a]	2 [b]	70 [a]	50 [a]	1 [b]	5 [a]	1 [b]	5 [b]	5 [a]	100 [a]	5 [a]	2 [a]	5 [a]	1000 [a]	700 [a]	1 [b]	2 [b]	1 [b]	0.4[a]	---	---	---
1% Solubility		12,900	50,400	24,200	570	1,560	86,000	482	2,200,000	3,740	234	190,000	10,000,000	7,930	67,100	79,500	530	64,100	32	613	130,000	522	310	2,060	45,200	12,800	88,000	17,900	5,260	1,690	510,000	1,780	1,780	1.8	---	---	---
10% Solubility		129,000	504,000	242,000	5,700	15,600	860,000	4,820	22,000,000	37,400	2,340	1,900,000	100,000,000	79,300	671,000	795,000	5,300	641,000	320	6,130	1,300,000	5,220	3,100	20,600	452,000	128,000	880,000	179,000	52,600	16,900	5,100,000	17,800	17,800	18	---	---	---
On-Site Wells																																					
Shallow	MW-1S	99.1	**54.3**	**78**	<5	<5	1.9 J	<5	<25	<5	<5	<25	<130	<5	**10.1**	5.5	<10	**287**	<10	<5	<25	<5	<25	**28.1**	<5	**53.3**	**67.6**	<5	<5	<5	<5	<10	<5	0.014 J	684.9	nd	684.9
	MW-3	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<5	<25	<1	<2	<1	<2	<1	<2	<1	<5	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<0.04	nd	nd	nd
	MW-4S	<1	0.42 J	<1	<1	<1	<1	<1	<5	<1	<1	<5	<25	<1	<2	<1	<2	<1	<2	<1	<5	<1	<5	<1	<1	<1	0.7 J	1.1	<1	<1	<1	<2	<1	<0.038	1.12	1.1	2.22
	MW-5S	<1	<1	<1	<1	<5	<1	<1	<5	<1	<1	<5	<25	<1	<2	<1	<2	<1	<5	0.4	<5	<1	<5	<1	<1	<1	<1	<1	<1	<1	0.32	<2	<1	<0.038	0.4	0.32	0.72
	DUP-1	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.04	nd	nd	nd
	MW-10S	**227000**	**913 J**	**15200**	*<1000*	*<1000*	*<1000*	*<1000*	*<5000*	*<1000*	*<1000*	*<5000*	*<25000*	*<1000*	*<2000*	*<1000*	*<2000*	*<1000*	*<2000*	*<1000*	*<5000*	*<1000*	*<5000*	**14500**	*<1000*	**10700**	*<1000*	*<1000*	**35100**	*<1000*	*<1000*	*<2000*	*<1000*	<0.038	268313	35100	303413
	DUP-2	**221000 E**	**1180**	**17300**	*<500*	<500	*<500*	*<500*	*<2500*	*<500*	*<500*	*<2500*	*<13000*	*<500*	*<1000*	*<500*	*<1000*	**2190**	*<1000*	*<500*	*<2500*	*<500*	*<2500*	**17600**	*<500*	**13000**	**324 J**	*<500*	**41900**	655	*<500*	**1990**	**524**	<0.038	272594	44414	317008
	MW-12S	<1	0.51 J	1.4	<1	<1	<1	<1	<5	0.58 J	<1	<5	<25	<1	<2	<1	<2	<1	<2	<1	<5	<1	<5	<1	<1	3	1.7	<1	<1	<1	<1	<2	<1	<0.038	7.19	nd	7.19
	MW-13S	**2940**	**756**	**835**	<50	<50	<50	<50	<250	<50	<50	*<250*	*<1300*	**462**	*<100*	<50	*<100*	**423**	*<100*	*<50*	*<250*	*<50*	*<250*	**116**	<50	**85.3**	**117**	*<50*	<158	<50	*<50*	*<100*	*<50*	*<0.042*	5734.3	nd	5,734.3
Deep	MW-1D	<1	<1	5.4	<1	<1	<1	<1	<5	<1	<1	<5	<25	<1	<2	<1	<2	<1	<2	<1	<5	<1	<5	**86.8**	<1	0.99 J	<1	<1	<1	<1	<1	<2	<1	<0.038	93.19	nd	93.19
	MW-11D	<5	*<5*	<5	*<5*	<5	<5	*<5*	*<25*	*<5*	*<5*	*<25*	*<130*	<5	*<10*	<5	*<10*	<5	<10	*<5*	*<25*	*<5*	*<25*	**223**	<5	<5	*<5*	<5	<5	<5	*<5*	*<10*	*<5*	<0.038	223	nd	223
	MW-13D	**525**	**28.1**	**348**	*<10*	<10	*<10*	*<10*	*<50*	*<10*	*<10*	*<50*	*<250*	*<10*	**7.6 J**	<10	*<20*	<10	<20	*<10*	*<50*	*<10*	*<50*	**198**	<10	**70.2**	*<10*	*<10*	52.9	<10	*<10*	*<20*	*<10*	*<0.042*	1176.9	52.9	1229.8
	MW-13D3	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<5	<25	<1	<2	<1	<2	<1	<2	<1	<5	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<0.038	nd	nd	nd
	MW-13DD	<100	*<100*	**5200**	*<100*	<100	*<100*	*<100*	*<500*	*<100*	*<100*	*<500*	*<2500*	*<100*	*<200*	*<100*	*<200*	*<100*	*<200*	*<100*	*<500*	*<100*	*<500*	**669**	<100	**738**	*<100*	*<100*	<100	<100	*<100*	*<200*	*<100*	<0.038	6607	nd	6607
Off-Site Wells																																					
Shallow	MW-14S	<1	**20.3**	1.5	<1	<1	1.1	<1	<5	<1	<1	<5	<25	<1	**6.9**	<1	<2	2.9	<2	<1	<5	<1	<5	0.81 J	<1	3.5	**23**	4.6	<1	<1	0.29 J	<2	<1	<0.04	60.01	4.89	64.9
Deep	MW-14D	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<5	<25	<1	<2	<1	<2	<1	<2	<1	<5	<1	<5	4.2	<1	<1	<1	<1	<1	<1	<1	<2	<1	<0.038	4.2	nd	4.2
	MW-15	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<5	<25	<1	<2	<1	<2	<1	<2	<1	<5	<1	<5	0.49 J	<1	<1	<1	<1	<1	<1	<1	<2	<1	<0.038	0.49	nd	nd
	MW-20	<1	<1	**16.8**	<1	<1	<1	<1	<5	<1	<1	<5	<25	<1	<2	<1	<2	0.69 J	<2	<1	<5	<1	<5	**69**	<1	2	<1	<1	<1	<1	<1	<2	<1	<0.038	86.49	nd	86.49
	MW-21	<1	<1	3.3	<1	<1	<1	<1	<5	<1	<1	<5	<25	<1	<2	<1	<2	<1	<2	<1	<5	<1	<5	**11.9**	<1	<1	<1	<1	<1	<1	<1	<2	<1	<0.038	15.2	nd	15.2
	MW-22	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<5	<25	<1	<2	<1	<2	<1	<2	<1	<5	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<0.038	nd	nd	nd

Notes:
VOC - Volatile Organic Compound
RAO - Remedial Action Objective
COC - Constituent of Concern
ug/L=microgram per liter
nd = non-detect
NA = not analyzed
--- Indicates the parameter does not have an MCL or RSL.
J = The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.
E = Indicates value exceeds calibration range
a: Groundwater Protection Standard (GWPS): Groundwater Maximum Contaminant Level (MCL) as established in the Georgia Hazardous Waste Facility Permit No. HW-020(D)
b: Background Well MW-3 most recent reporting limit. There were no detections in the historical background and any detection will be considered above background.
Solubilities from Table 2-2 of EPA 542-R-04-010 (March 2004), EPA Chemical Summary Sheet (1994-EPA-749-022a), EPA Online Tools for Site Assessment Calculator, Fetter (1994) and ChemIDplus (2006)
Bolded values indicate results above the GWPS for a COC
Yellow shading indicates exceedances of the 1% solubility concentration
Green shading indicates exceedances of both the 1% and the 10% solubility concentrations
Italic value indicates the reporting limit exceeds the lowest standard shown.
< = Value was not detected at the reporting limit shown.

TABLE 3
Pilot Test Well Survey Results
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

ASA POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
6002	291181.247	2574712.042	190.08	OW-4/TOP-CASE-NORTH
6003	291181.272	2574712.73	190.38	OW-4/CS
6004	291148.908	2574698.808	190.99	OW-2/TOP-CASE-NORTH
6005	291148.793	2574699.494	191.32	OW-2/CS
6006	291135.781	2574711.455	190.79	ASI-2/TOP-CASE-NORTH
6007	291135.856	2574712.39	191.03	ASI-2/CS
6008	291133.789	2574717.488	190.84	SVE-5/TOP-CASE-NORTH
6009	291133.818	2574718.444	191.07	SVE-5/CS
6010	291130.418	2574729.099	190.84	OW-1/TOP-CASE-NORTH
6011	291130.377	2574730.012	191.14	OW-1/CS
6012	291121.425	2574697.002	190.68	MP-8/TOP-NOTCH-OLD
6013	291121.746	2574697.995	190.75	MP-8/CS
6014	291113.666	2574687.347	190.56	OW-3/TOP-CASE-NORTH
6015	291113.67	2574688.022	190.92	OW-3/CS

Notes:

Horizontal data is based on State Plane Georgia West Zone NAD 83. All vertical data is based on existing monitoring well elevations.

TOP-CASE = Top of well inner casing.

CS = Concrete surface (adjacent to well).

TABLE 4
Soil Vapor Extraction Pilot Study Data (Phase One)
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Date: 12/12/2023

Time	Time Interval (Min.)	System Vacuum (inWC)	SVE-5 Wellhead Vacuum (inWC)	Extracted GW Totalizer (gal)	Off Gas		Pre-Carbon Influent OVA Reading (ppm)	Post-Carbon Effluent OVA Reading (ppm)	MONITORING DATA							
									OW-1 Dist. 12 ft		OW-2 Dist. 24 ft		OW-3 Dist. 36 ft		OW-4 Dist. 48 ft		B113 Dist. 55.2 ft	
					Temp. (C^o)	Vapor Flow (scfm)			Vacuum (inWC)	DTW (ft BTOC)	Vacuum (inWC)	DTW (ft)	Vacuum (inWC)	DTW (ft BTOC)	Vacuum (inWC)	DTW (ft BTOC)	Vacuum (inWC)	DTW (ft BTOC)
08:30	Baseline									16.15		16.24		15.81		15.23		19.00
09:15	45	26	25	0	53	4.1	257.0	7.9	-0.29	16.18	-0.11	16.23	-0.25	15.84	0.0	15.25	0.0	19.03
09:30	60	52	50	0	55	6.8	195.2	12.6	-0.72	16.19	-0.35	16.27	-0.25	15.86	-0.04	15.29	0.0	19.03
09:50	80	52	50	0	57	7.8	439.1	13.5	-0.71	16.18	-0.33	16.25	-0.32	15.84	-0.05	15.29	0.0	19.03
10:15	105	78	75	0	58	10.6	102.2	19.1	-1.49	16.16	-0.51	16.23	-0.37	15.82	-0.05	15.27	0.0	19.03
10:30	120	78	75	0	58	11.2	41.0	23.4	-1.85	16.19	-0.45	16.23	-0.61	15.81	-0.08	15.28	0.0	19.03
10:45	135	110	100	0	60	11.5	109.0	26.7	-2.94	16.09	-0.50	16.24	-0.63	15.82	-0.10	15.29	0.0	19.03
11:15	165	110	100	0	61	11.8	25.3	33.3	-2.60	16.08	-0.49	16.21	-0.62	15.82	-0.08	15.27	0.0	19.03

NOTES:

Step 1 - SVE @ 25 inWC
Step 2 - SVE @ 50 inWC
Step 3 - SVE @ 75 inWC
Step 4 - SVE @ 100 inWC
Plan to run each step for 30+ min (until dynamic equilibrium is observed)

psi = pound per square inch
inWC = inches water column vacuum
min = minutes
gal = gallons
^oC = degrees Celsius
scfm = standard cubic feet per minute
ppm = parts per million
DTW = depth to water
ft =feet
BTOC = below top of casing

TABLE 5
Air Sparge/SVE Pilot Study Data (Phase Two)
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Date: 12/12/2023

Time	Time Interval (Min.)	ASI-2 AS Well Pressure (psi)	ASI-2 AS Well Flow (scfm)	System Vacuum (inWC)	SVE-5 Wellhead Vacuum (inWC)	Off Gas		Pre-Carbon Influent OVA (ppm)	Post Carbon Effluent OVA (ppm)	Extracted GW Collected (gal)
						Temp. (C^o)	Flow (scfm)			
Baseline 11:40		13.0	5.0	79	75					
11:55	15	11.0	5.0	79	75	62	10.0	87	45.0	0
12:25	45	10.0	5.0	79	75	64	10.7	14.2	39.0	0
12:50	70	11.0	7.5	79	75	66	11.2	14.4	49.4	0
13:15	95	10.5	7.5	79	75	67	10.5	8.0	49.1	0
13:55	135	11.0	10.0	79	75	67	9.3	13.0	49.8	0

MONITORING DATA																								
OW-1 Dist. 12 ft					OW-2 Dist. 24 ft					OW-3 Dist. 36 ft					OW-4 Dist. 48 ft					B113 Dist. 55 ft				
Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)	Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)	Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)	Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)	Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)
Baseline		3.61					3.41					3.11					3.81					3.22		
Post Phase One		0.36					0.23					0.24					0.30					0.38		
2.6	15.09	0.37	7.4	N	-0.31	15.52	0.15	16.8	N	0.34	15.38	0.30	25.1	N	0	14.78	0.28	79.6	N	0	19.03	0.38	NM	N
1.32	14.74	1.54	1.8	N	-0.37	15.29	0.03	18.9	N	0.53	15.10	0.20	20.4	N	0	14.62	0.44	68.0	N	0	19.03	0.39	NM	N
0.53	13.73	4.26	2.3	Y	-0.32	14.68	0.23	2.0	N	0.35	14.55	0.29	7.9	Y	0	14.22	0.36	15.70	N	0	19.03	0.38	NM	N
0.70	13.18	5.45	114.6	Y	-0.32	14.38	0.06	3.5	N	1.51	13.98	1.64	168.1	Y	0	14.09	0.27	6.1	N	0	19.03	0.37	NM	N
9.50	13.14	6.18	96.1	Y	-0.29	13.78	3.07	7.9	Y	4.73	13.01	6.11	17.4	Y	0	13.82	0.45	70.4	N	0	19.03	0.39	NM	N

NOTES:
Targeting AS 5-10 scfm @ ~ 5-10 psi (est. breakout pressure ~ 9-10 psi) & SVE @ 75-100 inWC)
Step 1 - ASI-2 5 scfm
Step 2 - ASI-2 7.5 scfm
Step 3 - ASI-2 10 scfm
Plan to run each step for 30+ min (until dynamic equilibrium is observed)

Actual AS Breakout Pressure = 13 psi

5 scfm = Comp. Press. 14 psi; Manifold Temp. 75°F; Manifold Press. 11 psi

psi = pound per square inch
DTW = depth to water (approximate, when bubbling present in well)
inWC = inches water column vacuum
°C = degrees Celsius
min = minutes
gal = gallons
scfm = standard cubic feet per minte
ppm = parts per million
ft =feet
BTOC = below top of casing
mg/L = milligrams per liter

TABLE 6
Air Sparge/SVE Pilot Study Data (Phase Three)
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Date: 12/12/2023

Time	Time Interval (Min.)	ASI-2 AS Well Pressure (psi)	ASI-2 AS Well Flow (scfm)	System Vacuum (inWC)	SVE-5 Wellhead Vacuum (inWC)	Off-Gas		Pre-Carbon Influent OVA (ppm)	Post Carbon Effluent OVA (ppm)	Extracted GW Collected (gal)
						Temp. (C^o)	Flow (scfm)			
Baseline										
14:55	20	10.5	7.5	79	75	67	8.60	54	18	0
15:15	40	10.5	7.5	79	75	65	9.20	6.7	51	0
16:20	105	10.5	7.5	79	75	64	8.85	13.2	75	0
16:55	140	10.5	7.5	79	75	63	8.81	14.1	81	0

MONITORING DATA																								
OW-1 Dist. 12 ft					OW-2 Dist. 24 ft					OW-3 Dist. 36 ft					OW-4 Dist. 48 ft					B113 Dist. 55 ft				
Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)	Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)	Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)	Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)	Vacuum (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (Y/N)
10.89	11.85	6.28	79.5	Y	0.35	13.73	4.48	397	N	No measurements were taken during Phase 3 because of groundwater surfacing during Phase 2.					0	13.97	0.16	27		No measurements were taken during Phase 3 because no influence was observed during Phase1 or Phase 2.				
22.59	11.70	7.09	118.2	Y	0.53	13.94	4.72	404	N						0	14.10	0.29	58.1	N					
30.57	11.65	6.70	161	Y	0.87	13.97	4.58	642.9	N						0	14.12	0.15	51.2	N					
28.74	11.60	6.72	182	Y	1.10	13.98	4.86	673.2	N						0.1	14.14	0.17	68.2	N					

NOTES:
Targeting AS 5 scfm @ ~ 5-10 psi (est. breakout pressure ~ 9-10 psi) & SVE @ 75-100 inWC)
Collect Lab Air Sample 1 for TO-15 Analysis (Initial part of Phase)
Collect Lab Air Sample 2 for TO-15 Analysis (End of Phase)
Plan to run AS and SVE at optimized and constant rate

psi = pound per square inch
DTW = depth to water (approximate, when bubbling present in well)
inWC = inches water column vacuum
^oC = degrees Celsius
min = minutes
gal = gallons
scfm = standard cubic feet per minte
ppm = parts per million
ft =feet
BTOC = below top of casing

TABLE 7
Air Sparge/SVE Pilot Study Air Sample Analytical Data
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Date: **12/12/2023**

		AS-PHASE3-BEG	AS-PHASE3-MID	AS-PHASE3-END		AS-PHASE3-BEG	AS-PHASE3-MID	AS-PHASE3-END
Acetone (2-Propanone)	ppbv	**99.7**	**4130**	**6540**	µg/m^3	**237**	**9810**	**15500**
1,3-Butadiene	ppbv	6.7 U	1100 U	1500 U	µg/m^3	15 U	2400 U	3300 U
Benzene	ppbv	**285**	1800 U	**5410**	µg/m^3	**910**	5800 U	**17300**
Bromodichloromethane	ppbv	2.4 U	380 U	550 U	µg/m^3	16 U	2500 U	3700 U
Bromoform	ppbv	5.7 U	890 U	1300 U	µg/m^3	59 U	9200 U	13000 U
Bromomethane	ppbv	5.5 U	860 U	1300 U	µg/m^3	21 U	3300 U	5000 U
Bromoethene	ppbv	4.9 U	760 U	1100 U	µg/m^3	21 U	3300 U	4800 U
Benzyl Chloride	ppbv	10 U	1600 U	2300 U	µg/m^3	52 U	8200 U	12000 U
Carbon disulfide	ppbv	3.6 U	560 U	830 U	µg/m^3	11 U	1700 U	2600 U
Chlorobenzene	ppbv	5.9 U	930 U	1400 U	µg/m^3	27 U	4300 U	6400 U
Chloroethane	ppbv	5.4 U	850 U	1300 U	µg/m^3	14 U	2200 U	3400 U
Chloroform	ppbv	**30.6**	**1690 J**	**4070**	µg/m^3	**149**	**8250 J**	**19900**
Chloromethane	ppbv	7.2 U	1100 U	1700 U	µg/m^3	15 U	2300 U	3500 U
3-Chloropropene	ppbv	6.6 U	1000 U	1500 U	µg/m^3	21 U	3100 U	4700 U
2-Chlorotoluene	ppbv	5.8 U	900 U	1300 U	µg/m^3	30 U	4700 U	6700 U
Carbon tetrachloride	ppbv	**7.9 J**	500 U	740 U	µg/m^3	**50 J**	3100 U	4700 U
Cyclohexane	ppbv	**74.2**	560 U	**2260 J**	µg/m^3	**255**	1900 U	**7780 J**
1,1-Dichloroethane	ppbv	**40.7**	**12600**	**23300**	µg/m^3	**165**	**51000**	**94300**
1,1-Dichloroethylene	ppbv	**127**	**70700**	**110000**	µg/m^3	**504**	**280000**	**436000**
1,2-Dibromoethane (EDB)	ppbv	2.4 U	380 U	550 U	µg/m^3	18 U	2900 U	4200 U
1,2-Dichloroethane	ppbv	5.6 U	880 U	1300 U	µg/m^3	23 U	3600 U	5300 U
1,2-Dichloropropane	ppbv	5.0 U	780 U	1100 U	µg/m^3	23 U	3600 U	5100 U
1,4-Dioxane	ppbv	9.4 U	1500 U	2200 U	µg/m^3	34 U	5400 U	7900 U
Dichlorodifluoromethane	ppbv	8.3 U	1300 U	1900 U	µg/m^3	41 U	6400 U	9400 U
Dibromochloromethane	ppbv	4.2 U	650 U	960 U	µg/m^3	36 U	5500 U	8200 U
trans-1,2-Dichloroethylene	ppbv	2.2 U	350 U	520 U	µg/m^3	8.7 U	1400 U	2100 U
cis-1,2-Dichloroethylene	ppbv	**74.9**	**10400**	**24400**	µg/m^3	**297**	**41200**	**96700**
cis-1,3-Dichloropropene	ppbv	5.0 U	780 U	1100 U	µg/m^3	23 U	3500 U	5000 U
m-Dichlorobenzene	ppbv	3.2 U	500 U	740 U	µg/m^3	19 U	3000 U	4400 U
o-Dichlorobenzene	ppbv	5.5 U	860 U	1300 U	µg/m^3	33 U	5200 U	7800 U
p-Dichlorobenzene	ppbv	6.3 U	990 U	1500 U	µg/m^3	38 U	6000 U	9000 U
trans-1,3-Dichloropropene	ppbv	8.1 U	1300 U	1900 U	µg/m^3	37 U	5900 U	8600 U
Ethanol	ppbv	**40.6**	4900 U	7200 U	µg/m^3	**76.5**	9200 U	14000 U
Ethylbenzene	ppbv	**151**	760 U	1100 U	µg/m^3	**656**	3300 U	4800 U
Ethyl Acetate	ppbv	8.3 U	1300 U	1900 U	µg/m^3	30 U	4700 U	6800 U
4-Ethyltoluene	ppbv	**10.9 J**	1200 U	1700 U	µg/m^3	**53.6 J**	5900 U	8400 U
Freon 113	ppbv	2.5 U	**3210**	**4570**	µg/m^3	19 U	**24600**	**35000**
Freon 114	ppbv	4.0 U	630 U	920 U	µg/m^3	28 U	4400 U	6400 U
Heptane	ppbv	**199**	**4950**	**29600**	µg/m^3	**816**	**20300**	**121000**
Hexachlorobutadiene	ppbv	5.0 U	780 U	1100 U	µg/m^3	53 U	8300 U	12000 U
Hexane	ppbv	**150**	650 U	**1770 J**	µg/m^3	**529**	2300 U	**6240 J**
2-Hexanone	ppbv	12.0 U	1800 U	2700 U	µg/m^3	49 U	7400 U	11000 U
Isopropyl Alcohol	ppbv	**18.9**	1800 U	2600 U	µg/m^3	**46.5**	4400 U	6400 U
Methylene chloride	ppbv	**1080**	**344000**	**599000**	µg/m^3	**3750**	**1200000**	**2080000**
Methyl ethyl ketone	ppbv	**87.7**	**1650 J**	**4980**	µg/m^3	**259**	**4870 J**	**14700**
Methyl Isobutyl Ketone	ppbv	**8.4 J**	910 U	1300 U	µg/m^3	**34 J**	3700 U	5300 U
Methyl Tert Butyl Ether	ppbv	6.4 U	1000 U	1500 U	µg/m^3	23 U	3600 U	5400 U
Methylmethacrylate	ppbv	5.6 U	880 U	1300 U	µg/m^3	23 U	3600 U	5300 U
Propylene	ppbv	11 U	1800 U	2600 U	µg/m^3	19 U	3100 U	4500 U
Styrene	ppbv	4.2 U	660 U	980 U	µg/m^3	18 U	2800 U	4200 U
1,1,1-Trichloroethane	ppbv	**79.6**	**18700**	**44800**	µg/m^3	**434**	**102000**	**244000**
1,1,2,2-Tetrachloroethane	ppbv	3.8 U	600 U	880 U	µg/m^3	26 U	4100 U	6000 U
1,1,2-Trichloroethane	ppbv	3.0 U	480 U	700 U	µg/m^3	16 U	2600 U	3800 U
1,2,4-Trichlorobenzene	ppbv	9.7 U	1500 U	2200 U	µg/m^3	72 U	11000 U	16000 U
1,2,4-Trimethylbenzene	ppbv	**20.9**	1100 U	1600 U	µg/m^3	**103**	5400 U	7900 U
1,3,5-Trimethylbenzene	ppbv	**9.6 J**	1000 U	1500 U	µg/m^3	**47 J**	4900 U	7400 U
2,2,4-Trimethylpentane	ppbv	**420**	500 U	740 U	µg/m^3	**1960**	2300 U	3500 U
Tertiary Butyl Alcohol	ppbv	**87.5**	1200 U	1700 U	µg/m^3	**265**	3600 U	5200 U
Tetrachloroethylene	ppbv	**172**	180 U	**8830**	µg/m^3	**1170**	1200 U	**59900**
Tetrahydrofuran	ppbv	**106**	1100 U	1700 U	µg/m^3	**313**	3200 U	5000 U
Toluene	ppbv	**695**	**3290**	**70000**	µg/m^3	**2620**	**12400**	**264000**
Trichloroethylene	ppbv	**2480**	**71100**	**451000**	µg/m^3	**13300**	**382000**	**2420000**
Trichlorofluoromethane	ppbv	12 U	1900 U	2800 U	µg/m^3	67 U	11000 U	16000 U
Vinyl chloride	ppbv	**27.4**	**36900**	**47400**	µg/m^3	**70**	**94300**	**121000**
Vinyl Acetate	ppbv	9.0 U	1400 U	2100 U	µg/m^3	32 U	4900 U	7400 U
m,p-Xylene	ppbv	**237**	1700 U	**2900 J**	µg/m^3	**1030**	7400 U	**12600 J**
o-Xylene	ppbv	**38.1**	960 U	1400 U	µg/m^3	**165**	4200 U	6100 U
Xylenes (total)	ppbv	**275**	960 U	**2900 J**	µg/m^3	**1190**	4200 U	**12600 J**

NOTES:
MDL - method detection limit
U - Not detected at the reporting limit (or MDL where applicable)
J - Indicates an estimated value
ppbv = parts per billion by volume
µg/m^3 = micrograms per cubic meter

FIGURES

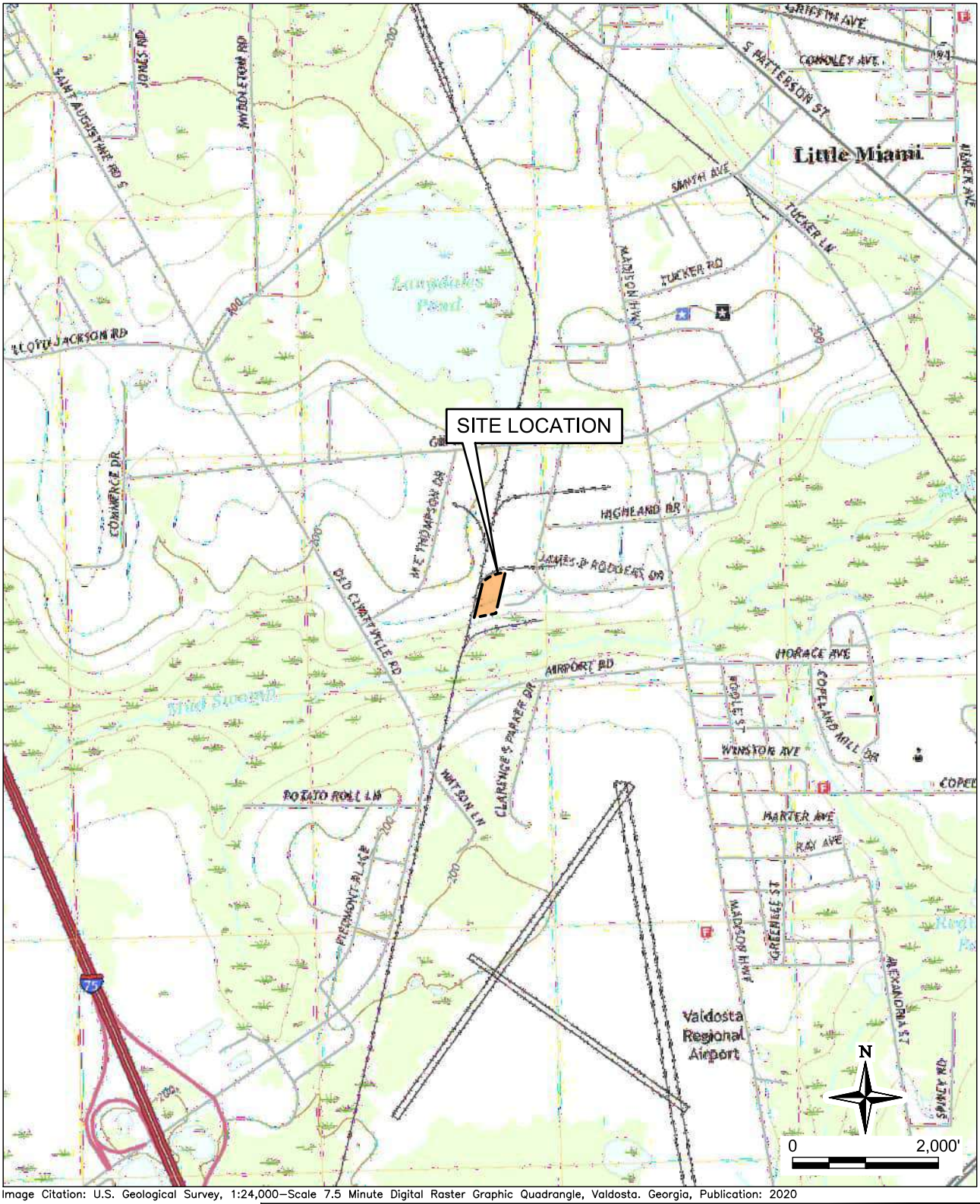

Image Citation: U.S. Geological Survey, 1:24,000–Scale 7.5 Minute Digital Raster Graphic Quadrangle, Valdosta. Georgia, Publication: 2020

QUADRANGLE LOCATION

Trihydro CORPORATION
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FIGURE 1

SITE LOCATION MAP

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

Drawn By: PAC	Checked By: RP	Scale: 1" = 2,000'	Date: 12/7/2023	File:61A-V-SITELOCATION202306

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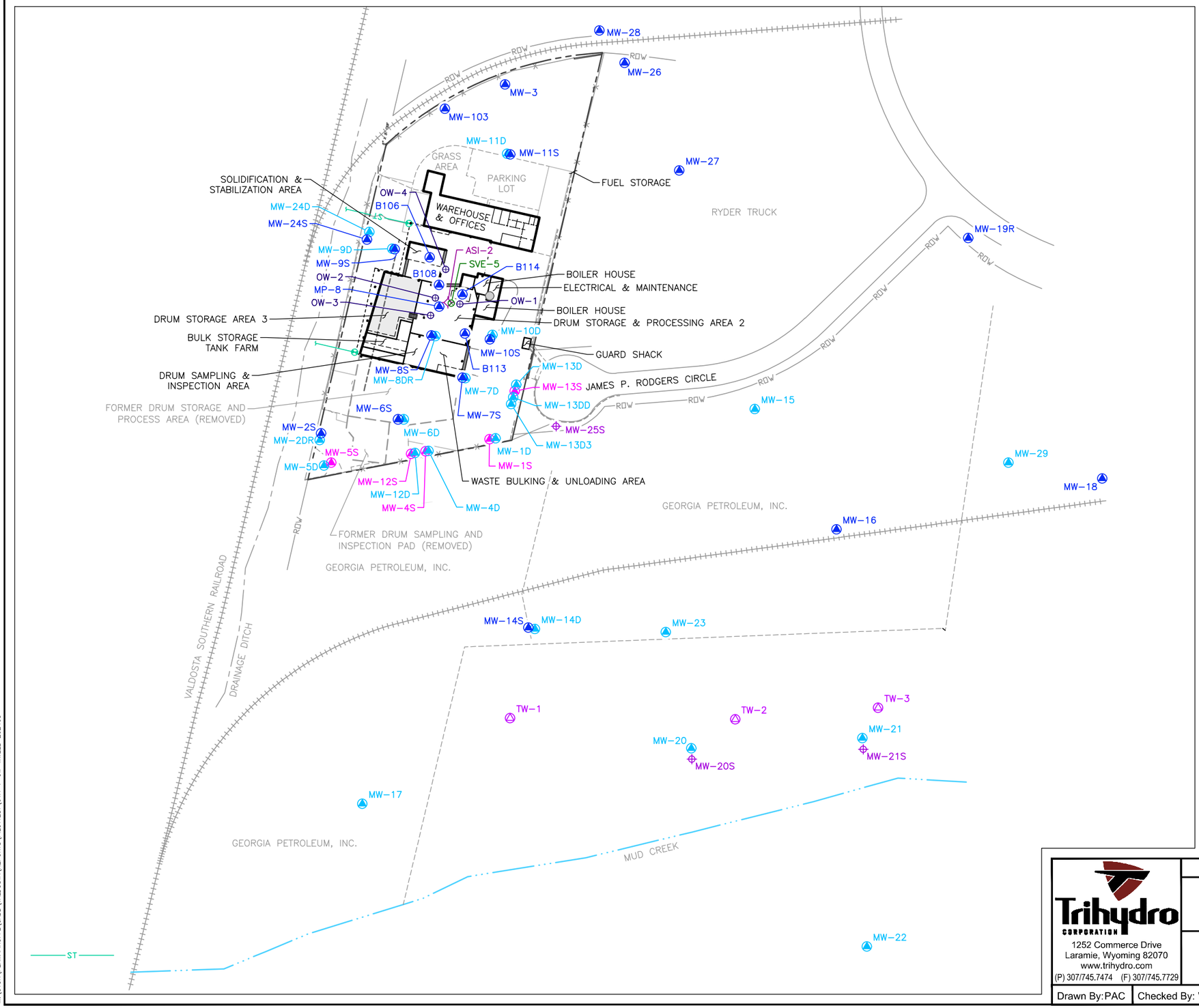

EXPLANATION

- MW-27 — SHALLOW MONITORING WELL AND DESIGNATION
- MW-13D — DEEP MONITORING WELL AND DESIGNATION
- MW-13S — POC MONITORING WELL AND DESIGNATION
- MW-25S — PROPOSED MONITORING WELL AND DESIGNATION
- TW-3 — SHALLOW MONITORING WELL (MILL CREEK ENVIRONMENTAL SERVICES, DECEMBER 2000)
- WITHDRAWAL WELL
- ROOF DRAIN
- ST — DRAINAGE LINE
- PROPERTY BOUNDARY
- FENCE
- ROW — RIGHT-OF-WAY
- BUILDING OUTER WALL
- DRAINAGE DITCH
- MUD CREEK
- ROOF LINE
- ROAD/CURB & GUTTER EDGE
- EXISTING STRUCTURE (REMOVED)
- OTHER EXISTING FEATURE
- VALDOSTA SOUTHERN RAILROAD

N

0 150'

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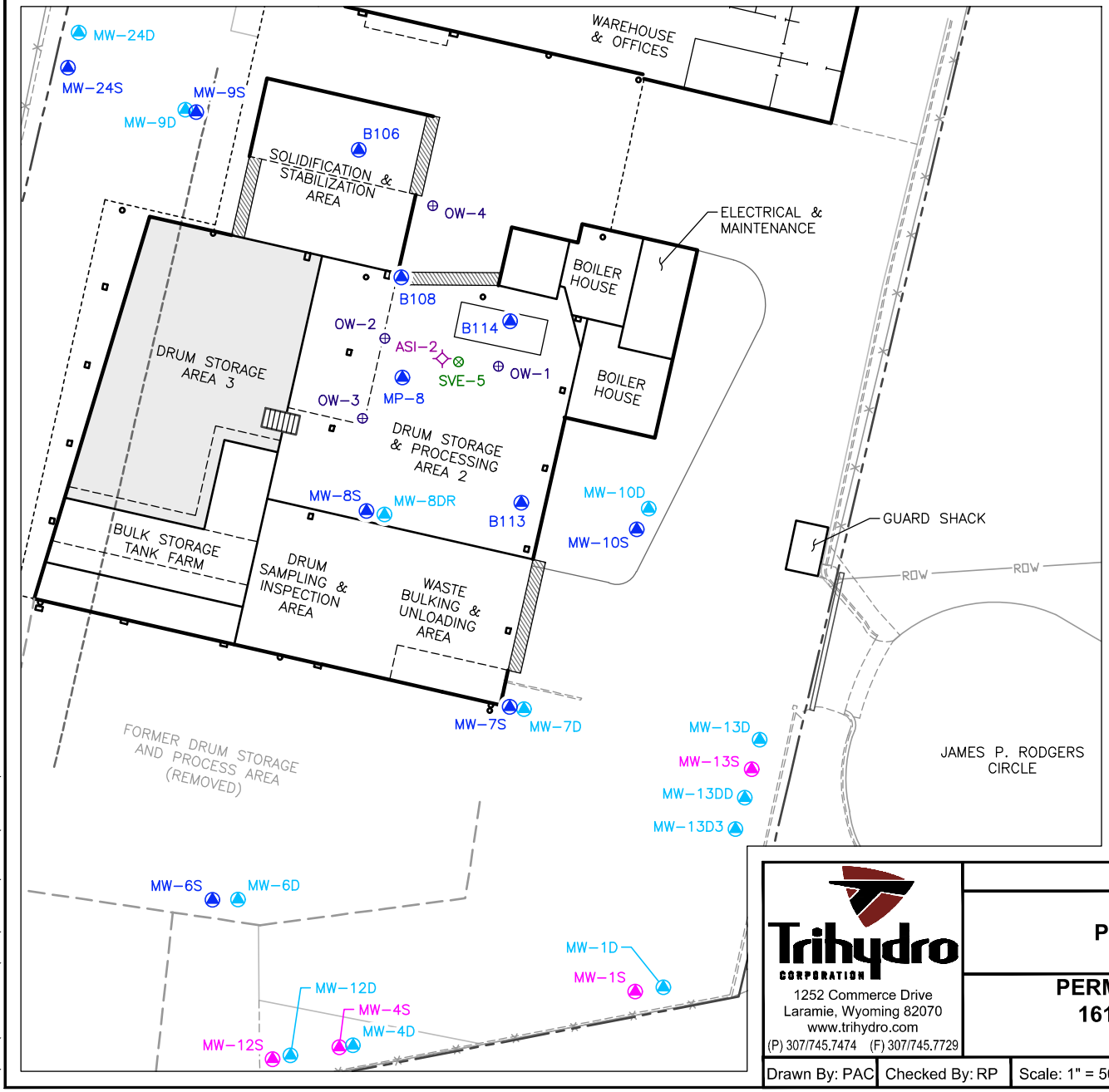
FIGURE 2

SITE LAYOUT AND GROUNDWATER MONITORING WELL LOCATIONS

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

Drawn By: PAC	Checked By: WK	Scale: 1" = 150'	Date: 5/21/2024	File: 61A-V-GW-MWELL-202405



EXPLANATION

- ASI-2 — AIR SPARGE PILOT TEST WELL AND DESIGNATION
- SVE-5 — SOIL VAPOR EXTRACTION PILOT TEST WELL AND DESIGNATION
- OW-1 — PILOT TEST OBSERVATION WELL AND DESIGNATION
- MW-27 — SHALLOW MONITORING WELL AND DESIGNATION
- MW-13D — DEEP MONITORING WELL AND DESIGNATION
- MW-13S — POC MONITORING WELL AND DESIGNATION
- ROOF DRAIN
- ST — DRAINAGE LINE
- PROPERTY BOUNDARY
- FENCE
- ROW — RIGHT-OF-WAY
- BUILDING OUTER WALL
- DRAINAGE DITCH
- ROOF LINE
- ROAD/CURB & GUTTER EDGE
- EXISTING STRUCTURE (REMOVED)
- OTHER EXISTING FEATURE

N

0 50'

FIGURE 3

PILOT TEST WELL LOCATIONS

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

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Laramie, Wyoming 82070
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Drawn By: PAC	Checked By: RP	Scale: 1" = 50'	Date: 1/16/2024	File: 61A-V-PILOTTESTWELL202401

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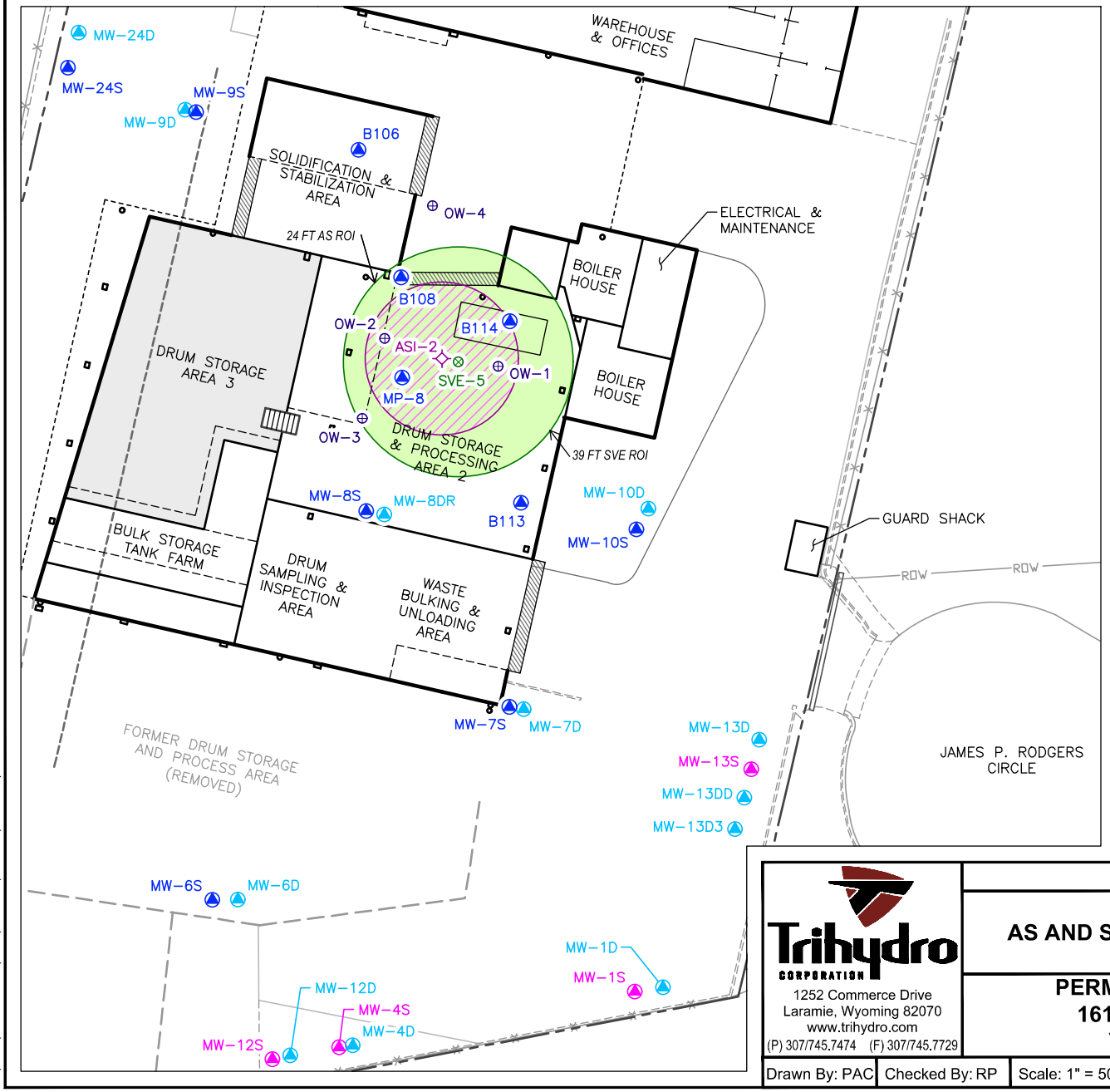

EXPLANATION

- ASI-2 — AIR SPARGE PILOT TEST WELL AND DESIGNATION
- SVE-5 — SOIL VAPOR EXTRACTION PILOT TEST WELL AND DESIGNATION
- OW-1 — PILOT TEST OBSERVATION WELL AND DESIGNATION
- MW-27 — SHALLOW MONITORING WELL AND DESIGNATION
- MW-13D — DEEP MONITORING WELL AND DESIGNATION
- MW-13S — POC MONITORING WELL AND DESIGNATION
- ROOF DRAIN
- ST — DRAINAGE LINE
- PROPERTY BOUNDARY
- FENCE
- ROW — RIGHT-OF-WAY
- BUILDING OUTER WALL
- DRAINAGE DITCH
- ROOF LINE
- ROAD/CURB & GUTTER EDGE
- EXISTING STRUCTURE (REMOVED)
- OTHER EXISTING FEATURE
- SVE RADIUS OF INFLUENCE
- AS RADIUS OF INFLUENCE

N

0 50'

M:\OTOR\PERMAFIXOFFL\CADD\VALDOSTA\REPORTS\PILOTTEST\61A-V-AS-SVE-INFLUENCE202401

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FIGURE 4

AS AND SVE PILOT TEST RADII OF INFLUENCE

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

Drawn By: PAC	Checked By: RP	Scale: 1" = 50'	Date: 1/16/2024	File: 61A-V-AS-SVE-INFLUENCE202401

FIGURE 5
Perma-Fix of South Georgia, Inc.
Valdosta, GA

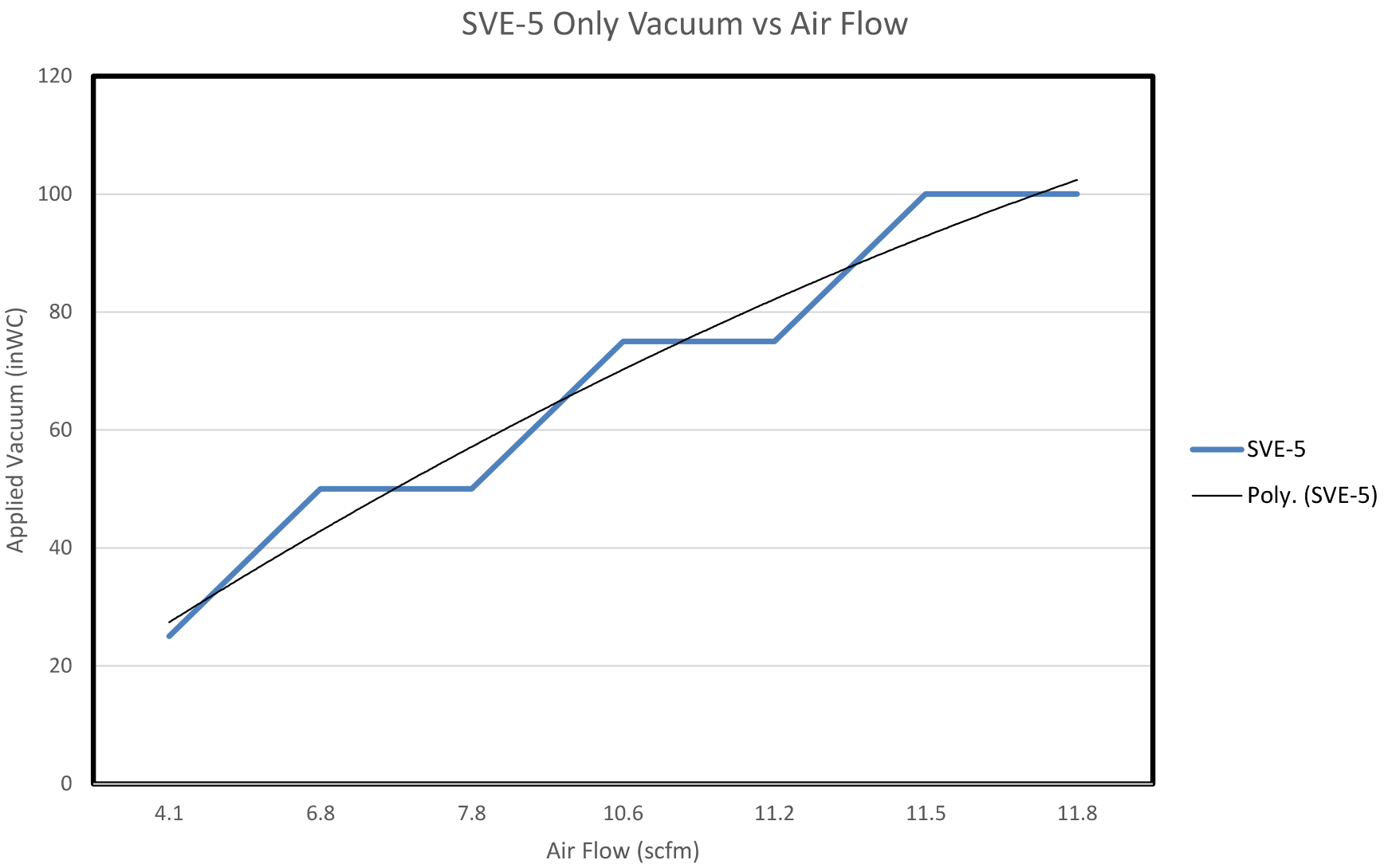


FIGURE 6
Perma-Fix of South Georgia, Inc.
Valdosta, GA

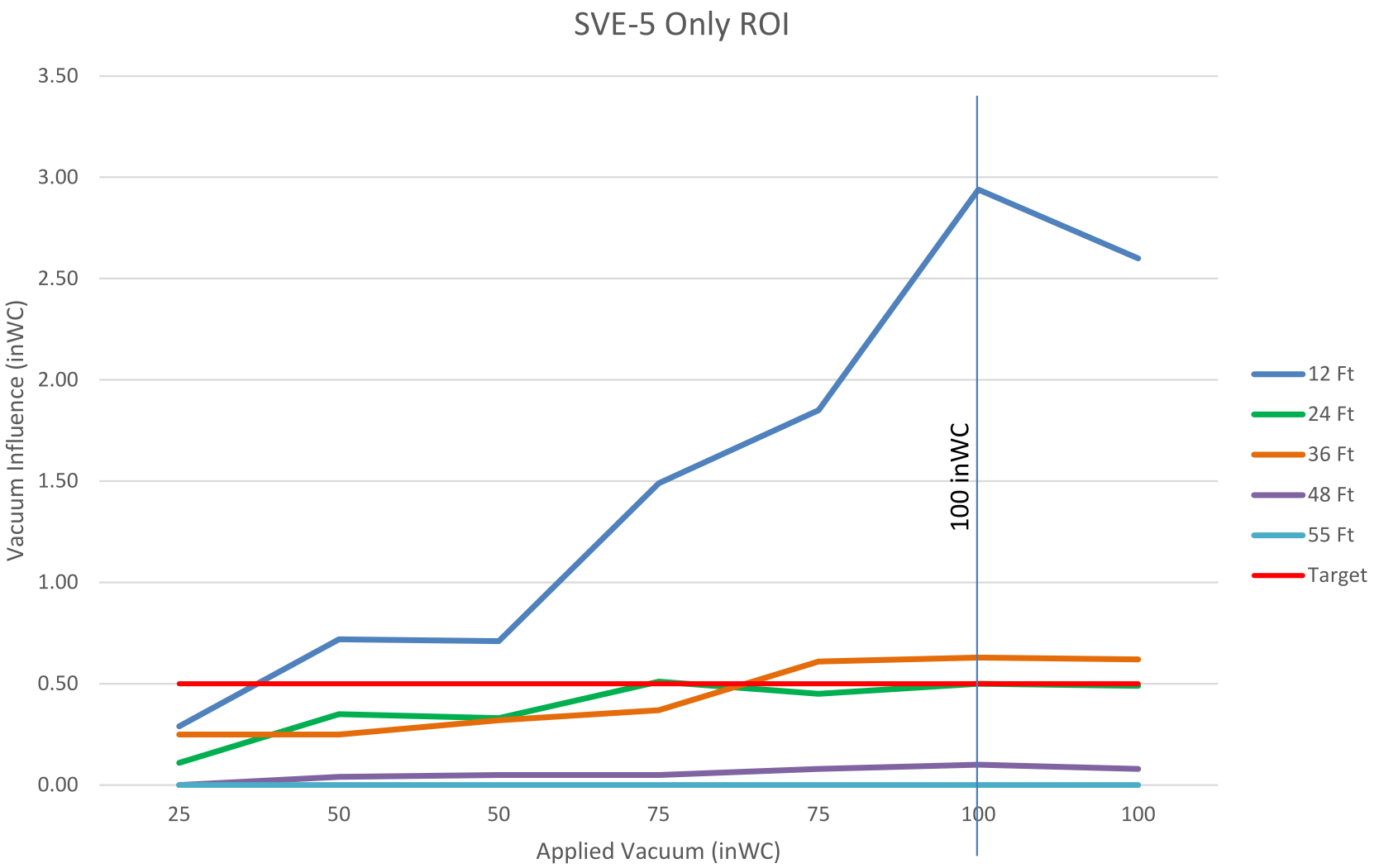


FIGURE 7
Perma-Fix of South Georgia, Inc.
Valdosta, GA

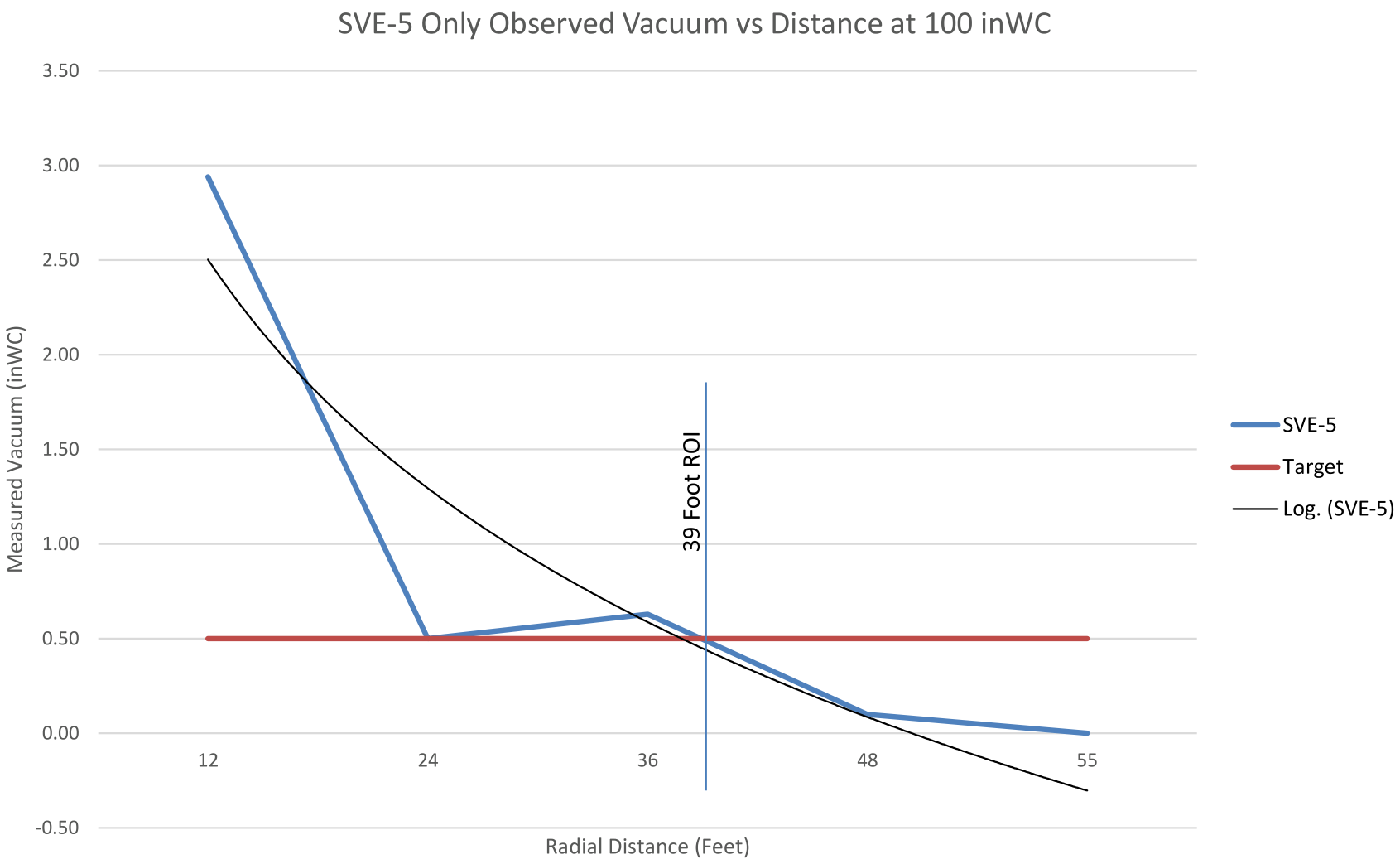


FIGURE 8
Perma-Fix of South Georgia, Inc.
Valdosta, GA

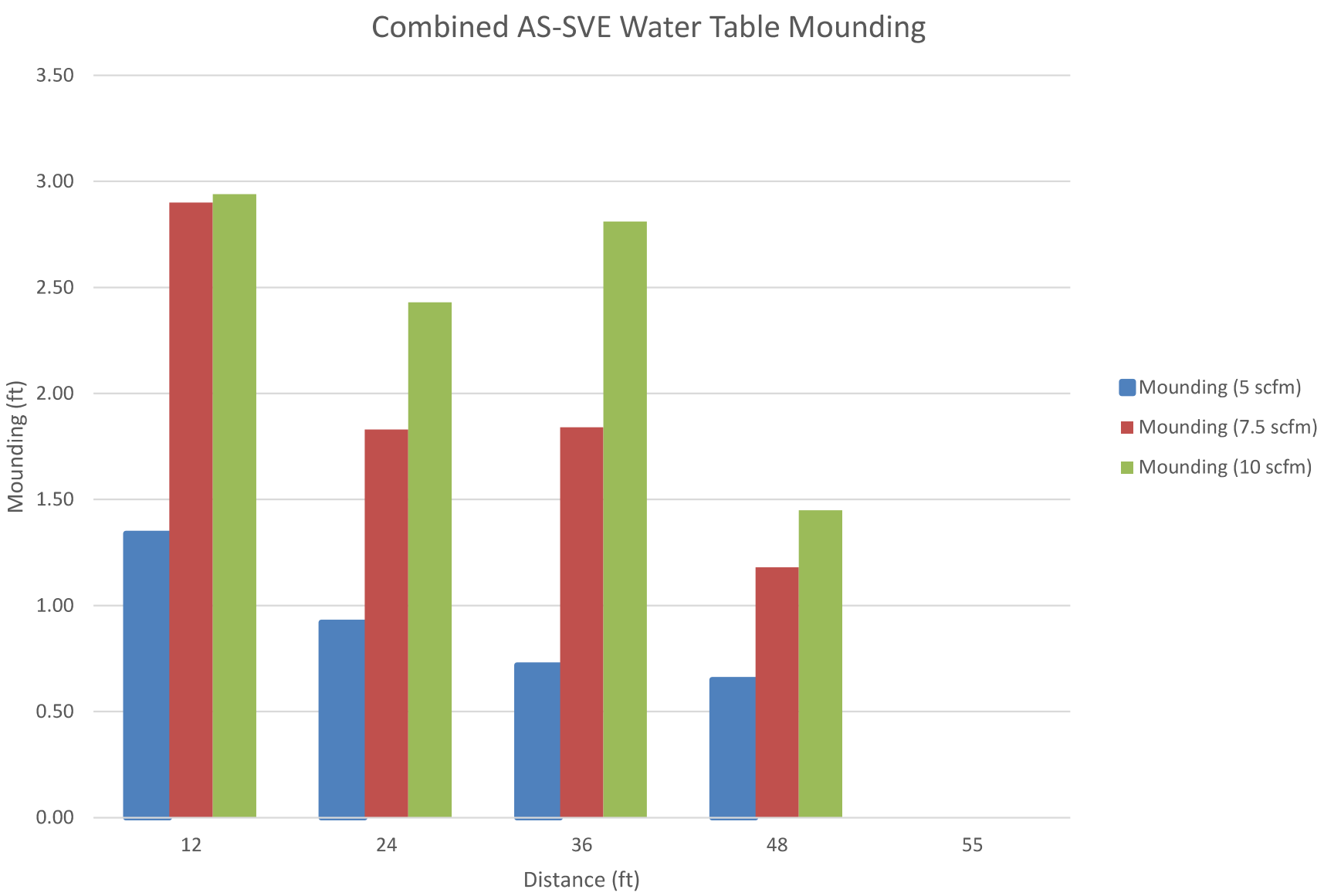
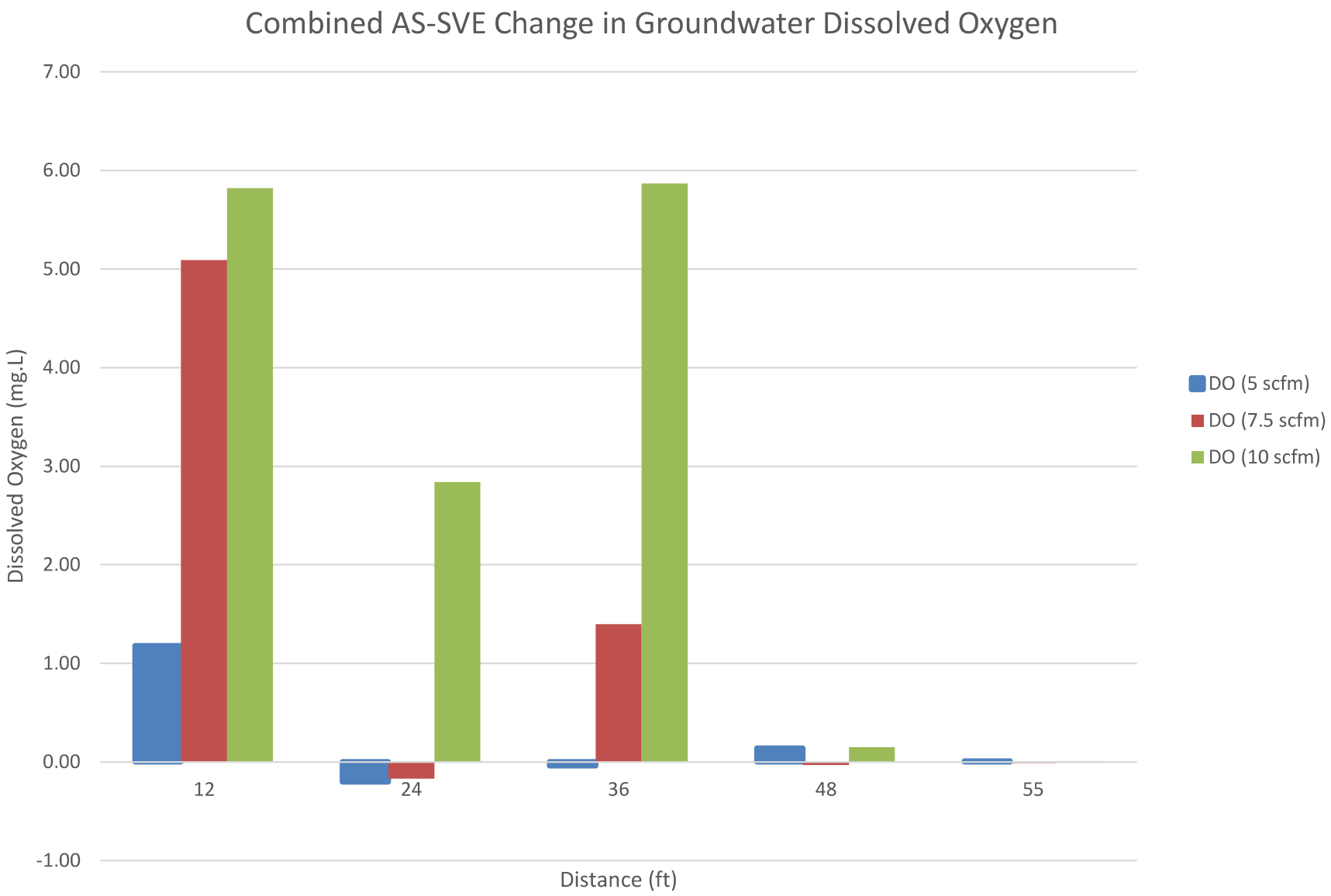


FIGURE 9
Perma-Fix of South Georgia, Inc.
Valdosta, GA



APPENDIX A

GEPD PILOT TEST WORK PLAN APPROVAL LETTERS

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Jeffrey W. Cown, Director

Land Protection Branch
2 Martin Luther King, Jr. Drive
Suite 1054, East Tower
Atlanta, Georgia 30334
404-657-8600

November 17, 2023

SENT VIA ELECTRONIC MAIL

Mr. Kevin Schmuggerow
VP, Industrial Business
8302 Dunwoody Pl., Suite 250
Atlanta, Ga. 30350

SUBJECT: REVISED AS/SVE PILOT TEST WORK PLAN CONDITIONAL APPROVAL
Perma-Fix of South Georgia, Inc.
Valdosta, Georgia
EPA I.D. No. GAD093380814
Permit No. HW-020 (D)

Dear Mr. Schmuggerow:

The Georgia Environmental Protection Division (EPD) has reviewed the Revised Air Sparge/Soil Vapor Extraction Pilot Test Work Plan (Revised Work Plan) dated November 14, 2023, for the above referenced facility.

The Revised Work Plan is conditionally approved, with the following condition:

- All review comments for the Revised Work Plan contained in the attachment to an email delivered to PFSG on November 17, 2023, are fully incorporated into a Final Revised Work Plan.

Please provide one complete hard copy and one CD copy of the Final Revised Work Plan to EPD on or before Monday, December 4, 2023, and proceed with the scope of work provided in the Final Revised Work Plan according to the implementation schedule contained within it.

Should you have any questions, please contact Becky Ferguson at Becky.Ferguson@dnr.ga.gov [(470) 524-0529], or Andrea Kemberling at andrea.kemberling1@dnr.ga.gov [(470) 524-0726].

Thank you for your cooperation in protecting Georgia's environment.

Sincerely,

Sharon Priyadarshini

Sharon Priyadarshini
Manager, Treatment & Storage Unit
Hazardous Waste Management Program

SP/BF

Ec: Bill Kelly, Trihydro

File: Perma-Fix of South Georgia, Inc. (254-0062) (G)

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Jeffrey W. Cown, Director

Land Protection Branch
2 Martin Luther King, Jr. Drive
Suite 1054, East Tower
Atlanta, Georgia 30334
404-657-8600

December 5, 2023

SENT VIA ELECTRONIC MAIL

Mr. Kevin Schmuggerow
VP, Industrial Business
8302 Dunwoody Pl., Suite 250
Atlanta, Ga. 30350

SUBJECT: REVISION 2 - AS/SVE PILOT TEST WORK PLAN APPROVAL, & PCCP SCHEDULE EXTENSION REQUEST APPROVAL
Perma-Fix of South Georgia, Inc.
Valdosta, Georgia
EPA I.D. No. GAD093380814
Permit No. HW-020 (D)

Dear Mr. Schmuggerow:

The Georgia Environmental Protection Division (EPD) has reviewed the Revision 2 – Air Sparge/Soil Vapor Extraction Pilot Test Work Plan (Work Plan, R2) revised November 27, 2023, for the above referenced facility. The Work Plan is approved.

Additionally, the PFSG response to EPD Comment #1 contained in the Letter of Transmittal accompanying the Work Plan, R2 states the following: "With this Letter of Transmittal, PFSG hereby formally requests an extension to the "Conceptual PCCP Schedule" contained in Figure 36 of the PCCP dated 4/1/2022. The proposed schedule has been updated and is provided in Appendix C of the attached Revision 2 – Air Sparge and Soil Vapor Extraction Pilot Test Work Plan.". This extension request for the Conceptual PCCP Schedule, provided as Attachment C of the Work Plan, R2 is hereby approved.

Please proceed with the scope of work contained in the Work Plan, R2 according to the approved project schedule contained in Attachment C. Also, please submit one hard copy and one CD copy of the Work Plan, R2, at your earliest convenience.

Should you have any questions, please contact Becky Ferguson at becky.ferguson@dnr.ga.gov [(470) 524-0529], or Andrea Kemberling at andrea.kemberling1@dnr.ga.gov [(470) 524-0726].

Thank you for your cooperation in protecting Georgia's environment.

Sincerely,

Sharon Priyadarshini

Sharon Priyadarshini
Unit Manager, Treatment & Storage Unit
Hazardous Waste Management Program

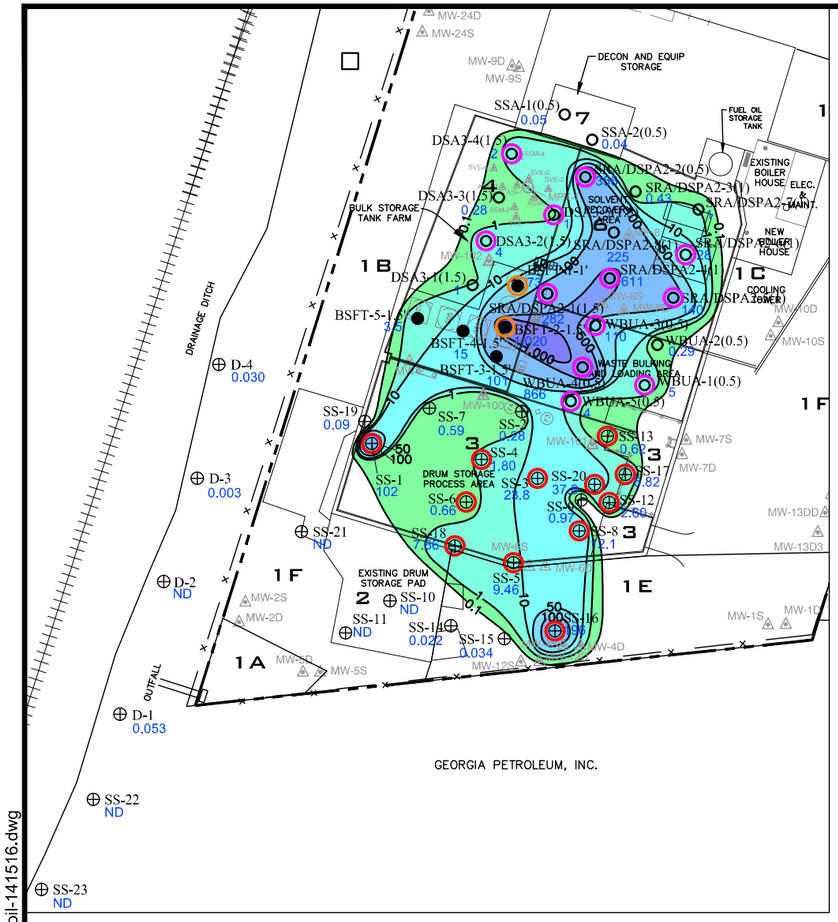
SP/BF

Ec: Bill Kelly, Trihydro

File: Perma-Fix of South Georgia, Inc. (254-0062) (G)

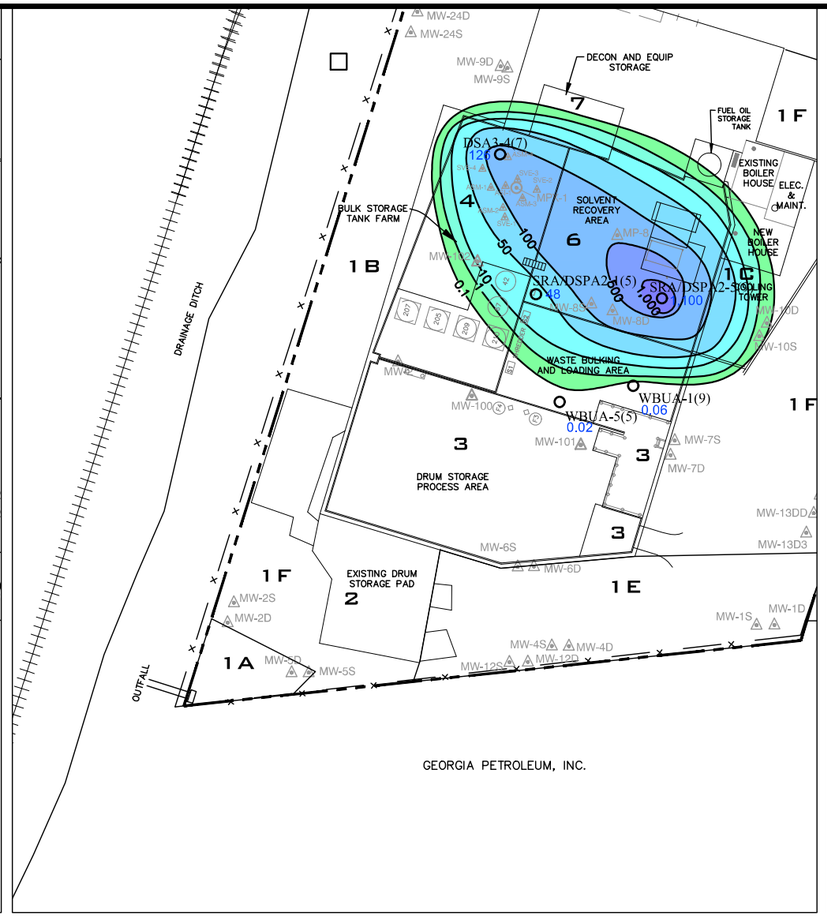
APPENDIX B

TOTAL VOCS IN SOIL MAP



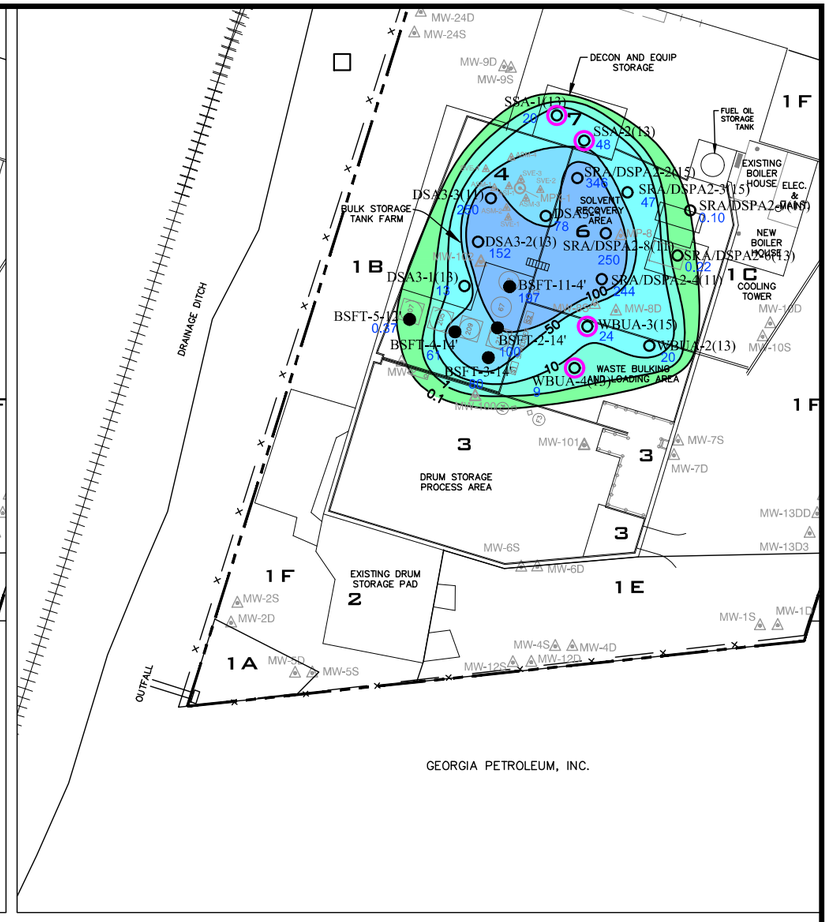
GEORGIA PETROLEUM, INC.

0-2.5 ft BGS



GEORGIA PETROLEUM, INC.

4-9 ft BGS



GEORGIA PETROLEUM, INC.

10-15 ft BGS

NOTE: WHERE DUPLICATES WERE COLLECTED THE HIGHER OF THE PRIMARY OR DUPLICATE RESULT WERE USED FOR CONTOURING

LEGEND

MW-27	SHALLOW MONITORING WELL	⊕	SURFICIAL SOIL SAMPLE (2014)
MW-5D	DEEP MONITORING WELL	●	SOIL BORING LOCATION (2015)
MPX-1	MPX SHALLOW TEST WELL	○	SOIL BORING LOCATION (2016)
SVE-1	SVE SHALLOW TEST WELL	19.1	TOTAL VOVs SOIL CONCENTRATION IN mg/kg
ASI-1	AS SHALLOW TEST WELL	ND	NO TOTAL VOCs DETECTED
○○○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)	J	RESULT IS ESTIMATED BELOW THE REPORTING LIMIT
			TOTAL VOCs CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)
○ DATA COLLECTED 2014 (JAN-MAR)	○ DATA COLLECTED 2015 (SEPT)	○ DATA COLLECTED 2016 (FEB)	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

N

0 75

FEET

	BY	DATE
DRAWN	JGM	08/29/16
CHECKED		
REVISED	JGM	04/06/21
APPROVED		
APPROVED		
APPROVED		

Cameron-Cole
5777 CENTRAL AVENUE, SUITE 200
BOULDER, COLORADO 80301
PHONE: (303) 938-5500
FAX: (303) 539-7283
http://www.cameron-cole.com

FIGURE 6

TOTAL VOCs IN SOIL (mg/Kg)
JANUARY - MARCH 2014, SEPTEMBER 2015, FEBRUARY 2016
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: 1" = 60'

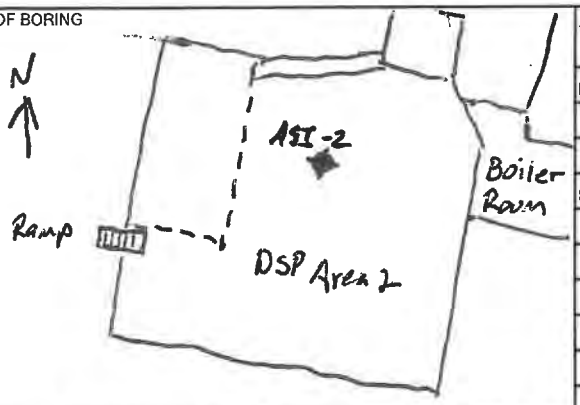
PROJECT: 1004

M:\clients\Cameron-Cole\1004-Perma-Fix-Valdosta\2020\ClosureVal-FIG 6-TVOCs-Soil-141516.dwg

APPENDIX C

FIELD SOIL BORING AND WELL LOGS

LOCATION OF BORING



JOB NO:	CLIENT:	LOCATION:
PERMA-023-2224	PFSG	Valdosta, GA

DRILLING METHOD: DPT - Soil Sampling; HSA - Well Installation

BORING NO.: ASI-2

SHEET: 1 OF 2

SAMPLING METHOD: HA 0-5'; DPT 5-40'

DRILLING

					START TIME	FINISH TIME
WATER LEVEL	~17.0	16.32				
TIME	1130	1530			1130	1245
DATE	11/28/23	12/1/23			DATE: 11/28/23	DATE: 11/29/23
CASING DEPTH	40'	40.20				

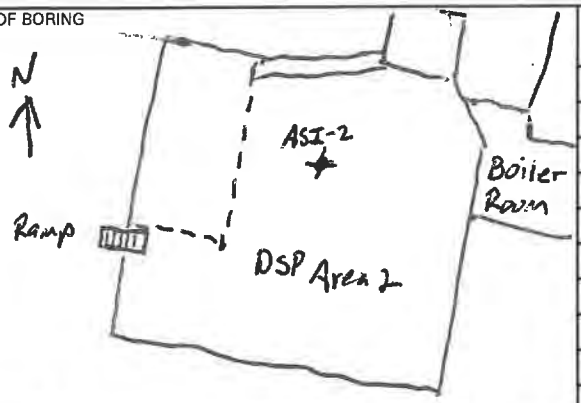
DRILLING CONTR.: Betts Drilling

DRILLER: James Tyler

DATE: 11/28/23 CHK'D BY: Ron Penne

SAMPLER TYPE	INCHES DRIVEN	Penetrometer (tons/sf)	Recovery	PID Reading (ppm)	PID Headspace (ppm)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: Concrete Flooring (~8 to 9" thickness)
HA				—		0		Concrete, 0-8"
				—		1		Gravel base (limestone) fill material
				0.3	403.5	2		Silty SAND, reddish brown, dry
				0.3	367.1	3		Same
				0.5	285.7	4		
↓				1.9	1,343	5		grades with more clay, light tan mottling, dry
DPT				0.1	623.1	6	SM	
				0.3		7		
				3.8	510.5	8		Same
				1.1	443.0	9		Same
				0.6	—	10		
				0.9	607.5	1		dense, friable, dry
				12.2		2		
				14.0	446.0	3		grades with less clay
				11.1	662.1	4		Clayey Fine Sand, very hard, dry
				10.6	—	15	SC	
				47.1	819.2	6		grades with more sand, moist
				63.6		▼ 7		Clayey, Silty Sand, moist to wet,
				40.1	616.1	8		grades with more Sand, wet
				20.1	108.5	9		grades greyish-tan, wet
↓				13.5	—	20		

LOCATION OF BORING



JOB NO:	CLIENT:	LOCATION:
PERMA-023-2024	PFSG	Valdosta, GA

DRILLING METHOD: DPT - Soil Sampling
HSA - Well Installation

SAMPLING METHOD: HA 0-5'
DPT 5-

BORING NO.: ASI-2

SHEET: 2 OF 2

DRILLING

					START	FINISH
WATER LEVEL						
TIME					TIME 1130	TIME 1245
DATE					DATE: 11/28/23	DATE: 11/28/23
CASING DEPTH						

Betts Drilling
James Tyler

SAMPLER TYPE	INCHES DRIVEN	Penetrometer (tons/sf)	Recovery	PID Reading (ppm)	PID Headspace (ppm)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: Concrete Flooring (~8 to 9" thickness)
DPT						20		
				3.2	53.9	1	SC	grades with more clay, wet
				2.2		2		Grayish-tan fine Sand with thin layers of sandy clay, wet
				1.9	16.1	3		grades with less clay, wet
				1.7	7.2	4		
				0.0		25		grades orange, wet
				0.0	3.5	6		
				0.0		7	SW	Same
				0.0	1.5	8		
				0.0	2.0	9		
				0.0		30		Same
				0.0	1.4	1		
				0.1		2		
				0.0	1.4	3		Same
				0.0	1.5	4		Light gray Medium Sand, wet
				0.0		35		
				0.0	1.9	6		
				0.0		7	SP	Same
				0.0	1.4	8		
				0.0	1.2	9		
						40		Same
								END OF BORING 40' BGS

CHK'D BY: Ron Pelle
DATE: 11/28/23

Well Completion Diagram

Well Designation: ASI-2
Job Number: PERMA-123-0004
Project: PFSG Pilot Test Drilling
Loc. or Coords.:
Datum Location and Elevation (if applicable):
Start Date: 11/28/23 DPT
End Date: 12/1/23 Set well

Logged by: Rob Pelle
Drilling Company and Drilling Personnel: Betts Drilling
Drilling Method/Fluid Used: Potable Water DPT HSA - Well Installation: 4.25" ID HSA
Surveyed By:

Location Sketch (show north if not up)

Diameter and Type of Flush Mount Box: 10" OD / 8" ID Steel w/ bolt down lid
Elevation of Top of Casing:
Type and Size of Apron:

Depth 0.0 — 0.75 — 1.5 — (complete flush mount information if applicable)

Depth 0.75 — 1.5 —

Diameter and Type of Protective Casing: 8" flush grade 10" OD
Elevation of Top of Protective Casing:
Elevation of Top of Casing:
Elevation of Survey Pin (if any):
Type and Size of Apron (if any):
Ground Surface Elevation:

Type of Surface Seal: Concrete 1.5' to floor surface

Diameter of Borehole: 6"

Type of Grout or Backfill: Type I Portland w/ bentonite (5-15%)

Diameter and Type of Casing: 2" Sch 80 PVC top 2' of riser, 2" Schedule 40 PVC from top of screen to 2' BGS

35.0 —

Type of Seal: Bentonite, hydrated

37.0 —

38.0 —

Type of Sand Pack: 20/30 Silica Sand

Diameter and Type of Well Screen: 2" Diameter Sch 40 PVC 0.010-inch slotted screen, 2' length

Perforation Size and Type: 0.010-inch Slot Size

40.0 —

Type and Length of Sediment Trap (if any): Bottom of end cap to bottom of screen = 6-inches

40.5 —

Type and Length of End Cap (if any): Flat bottom Sch 40 threaded cap

40.5 —

Include Fluid Levels, Date and Time for:
Depth to Water Encountered During Drilling: 11/28/23 17.0'
Depth to Water in Completed Well: 16.57
Depth to Water After Development:

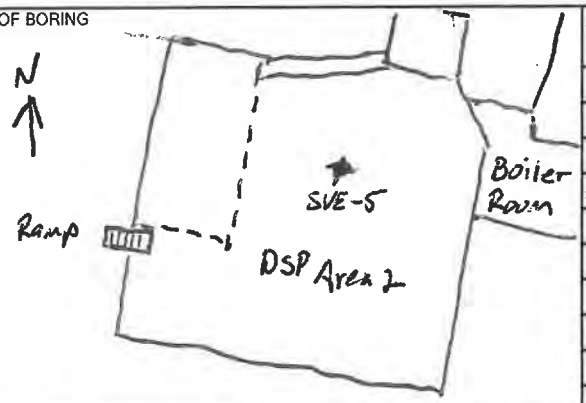
12/01/23

Materials Used in Well Construction:
2' Sch 40 PVC 0.010"-Slot PVC
36' Sch 40 PVC Riser
2' Sch 80 PVC Riser @ top

Trihydro Corporation
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474
(F) 307/745.7729

WELLCOMP 2005TEMP

LOCATION OF BORING



JOB NO:	CLIENT:	LOCATION:
PERMA-023-2024	PFSG	Valdosta, GA

DRILLING METHOD: DPT - Soil Sampling; HSA - Well Installation

BORING NO.: SVE-5

SHEET: 1 OF 1

SAMPLING METHOD: HA 0-5'; DPT 5-

DRILLING

					START	FINISH
WATER LEVEL	17'	16.38				
TIME	1500	1440			TIME 1445	TIME 1500
DATE	11/28/23	12/2/23			DATE: 11/28/23	DATE: 11/28/23
CASING DEPTH	20'	19.7'				

Betts Drilling

James Tyler

SAMPLER TYPE	INCHES DRIVEN	Penetrometer (tons/sf)	Recovery	PID Reading (ppm)	PID Headspace (ppm)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: Concrete Flooring (~8 to 9" thickness)
				–	–	0	/////	Concrete, 0-8"
HA				–	–	1	XXX	Limestone gravel base (fill)
				0.1	472.3	2	CL-SC	Silty CLAY w/ Sand, reddish brown, moist
				0.0		3		grades with more silt and Sand, dry
				0.0	33.3	4		Medium SAND with silt and fine Sand, reddish brown, dry
				0.2		5		grades to fine sand with silty, blocky, dry
DPT				12.7	477.6	6	SM	grades with more clay with light tan mottling, dry
				55.4		7		
				22.0	411.7	8		
				86.0	145.7	9		
				36.2		10		
				7.8	335.1	1		grades with more Sand, dry
				33.1		2		
				137.3	520.3	3		
				131.6	455.3	4		
				145.7		5		
				335.1	401.1	6		
				181.6		7		Clayey fine silty Sand, moist
				67.1	140.3	8	SC	becomes, wet
				40.3	78.6	9		grades w/ more Sand, wet
				28.6		20		Same
								END OF BORING 20' BGS

Ron Perue

CHK'D BY

DATE 11/28/23

Well Completion Diagram

Well Designation SVE-5
Job Number PERMA-023-0004
Project PFS 6 Pilot Test Wells
Loc. or Coords.

Datum Location and Elevation (if applicable)

Start Date 11/28/23 DPT
End Date 11/30/23 Set well

Logged by Ran Pelle
Drilling Company and Drilling Personnel Betts Drilling - James Tyler

Drilling Method/Fluid Used HSA 6.25-inch ID

Surveyed By

Location Sketch

(show north if not up)

Diameter and Type of Flush Mount Box: 8-inch ID/10" OD Steel w/ Bolt down Lover
Elevation of Top of Casing:
Type and Size of Apron:

Depth 0.33
Depth 0.75
1.5
Depth 0.75
1.5
(complete flush mount information if applicable)

Diameter and Type of Protective Casing
Elevation of Top of Protective Casing
Elevation of Top of Casing
Elevation of Survey Pin (if any)
Type and Size of Apron (if any)
Ground Surface Elevation

Type of Surface Seal Concrete

Diameter of Borehole 10-inch

Type of Grout or Backfill Type I Portland / Bentonite (5-15%)

Diameter and Type of Casing 4" sch 40 PVC

1.8
Type of Seal Hydrated Bentonite
3.3
4.8
Type of Sand Pack 20/30 Silica Sand

Diameter and Type of Well Screen 4" sch. 40 PVC

Perforation Size and Type 0.010-inch Slot sch 40 PVC

19.8
Type and Length of Sediment Trap (if any) ~0.4' From bottom of end Cap to bottom of Screen.
20.2
20.2
Type and Length of End Cap (if any) Flat end cap approx 4" threaded PVC

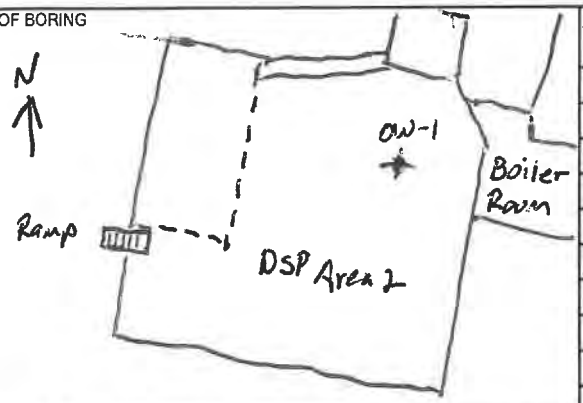
Include Fluid Levels, Date and Time for:
11/28/23 Depth to Water Encountered During Drilling 7.5
11/30/23 Depth to Water in Completed Well 15.3
Depth to Water After Development

Materials Used in Well Construction:
4" sch 40 PVC 0.010-in Slot Size
4" sch 40 PVC Riser

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474
(F) 307/745.7729

WELLCOMP 2005TEMP

LOCATION OF BORING



JOB NO:	CLIENT:	LOCATION:
PERMA-023-0224	PFSG	Valdosta, GA

DRILLING METHOD: DPT - Soil Sampling; HSA - Well Installation

SAMPLING METHOD: HA 0-5'; DPT 5-25'

BORING NO.: OW-1

SHEET: 1 OF 2

DRILLING

					START	FINISH
WATER LEVEL	17'	16.41				
TIME	1520	1220			TIME 1500	TIME 1530
DATE	11/28/23	12/1/23			DATE: 11/28/23	DATE: 11/28/23
CASING DEPTH	25'	25.4				

Betts Drilling

James Tyler

Ron Pelle

DATE 11/28/23 CHK'D BY

SURFACE CONDITIONS: Concrete Flooring (~8 to 9" thickness)

SAMPLER TYPE	INCHES DRIVEN	Penetrometer (tons/sf)	Recovery	PID Reading (ppm)	PID Headspace (ppm)	DEPTH IN FEET	SOIL GRAPH	
HA				—	—	0		Concrete 0-8"
				—	—	1		Limestone gravel base (FILL)
				0.0	87.9	2	CL-SC	Silty, Sandy CLAY, reddish brown, moist
				0.0		3		grades w/ more sand, dry
				0.0		4		Fine SAND w some silt, reddish brown, dry
				4.9	141.4	5		grades with more clay, light tan mottling, dry
DPT				2.9	50.7	6		
				8.7		7		grades with more sand, dry
				11.6	71.3	8	SM	
				8.4		9		
				42.5	37.4	10		same
				36.7		1		
				51.0	227.7	2		same, grades with more clay, dry
				50.5		3		
				44.8	150.3	4		same
				15.5		5		
				11.0	1283	6		grades with less clay, dry
				42.5		7		Clayey grades with more clay, moist
				17.1	80.2	8		
				5.4		9	SC-CL	Sandy CLAY / Clayey SAND mix,
				3.9	28.3	20		

LOCATION OF BORING

JOB NO:	CLIENT:	LOCATION:
PERMA-023-0224	PFSG	Valdosta, GA

DRILLING METHOD: DPT - Soil Sampling; HSA - Well Installation

BORING NO.: DW-1

SHEET: 2 OF 2

SAMPLING METHOD: HA 0-5'; DPT 5-25'

DRILLING

					START	FINISH
WATER LEVEL						
TIME					TIME: 1500	TIME: 1530
DATE					DATE: 11/28/23	DATE: 11/28/23
CASING DEPTH						

Drilling Co.: Betts Drilling

Driller: James Tyler

CHK'D BY: Ron Pelle

DATE:

SAMPLER TYPE	INCHES DRIVEN	Penetrometer (tons/sf)	Recovery	PID Reading (ppm)	PID Headspace (ppm)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: Concrete Flooring (~8 to 9" thickness)
DPT						20		
				2.2	15.2	1	SC-CL	dark gray Sand layer, 20-20.5', wet
				13.6		2		gravels with more sand, wet
				8.2	18.2	3		Same
				10.6		4		
				0.7	17.6	25	SW	Fine to medium SAND, tan, wet
								grades to orange, wet
								END OF BORING 25' BGS
						6		
						7		
						8		
						9		
						30		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

Well Completion Diagram

Well Designation OW-1
Job Number PERMA-023-0004
Project PFS & Pilot Test Wells
Loc. or Coords.

Datum Location and Elevation (if applicable)

Start Date 11/28/23 DPT
End Date 11/29/23 SH well

Logged by Ron Pelle
Drilling Company and Drilling Personnel
Betts Drilling
- James Tyler

Drilling Method/Fluid, Used
DPT - Sampling
HSA 4.25" ID for Well Installation

Surveyed By

Location Sketch

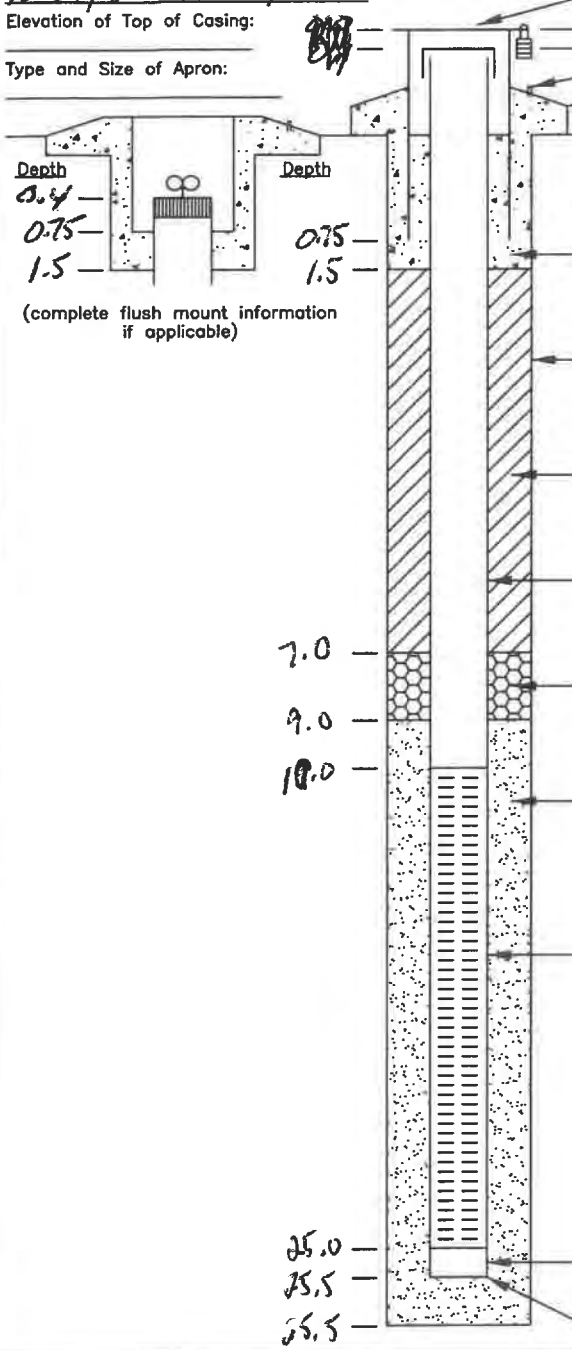
N

(show north if not up)

Diameter and Type of Flush Mount Box: 10" OD/8" ID Steel w/ bolt down cover

Elevation of Top of Casing:

Type and Size of Apron:



(complete flush mount information if applicable)

Diameter and Type of Protective Casing 8" ID/10" OD Flush

Elevation of Top of Protective Casing

Elevation of Top of Casing

Elevation of Survey Pin (if any)

Type and Size of Apron (if any)

Ground Surface Elevation

Type of Surface Seal Concrete 1.5' to floor surface

Diameter of Borehole 6-inch

Type of Grout or Backfill Type I Portland/Bentonite (5-15% bentonite)

Diameter and Type of Casing 2-inch diameter Schedule 40 PVC Riser Pipe

Type of Seal Bentonite, hydrated

Type of Sand Pack 20/30 Silica Sand

Diameter and Type of Well Screen 2" diameter Sch. 40 PVC

Perforation Size and Type 0.010-inch slotted screen

Type and Length of Sediment Trap (if any) 6" from bottom of cap to bottom of screen

Type and Length of End Cap (if any) Flat Bottom threaded Cap

Include Fluid Levels, Date and Time for:
Depth to Water Encountered During Drilling 17'
Depth to Water in Completed Well 16.73 BTOC
Depth to Water After Development

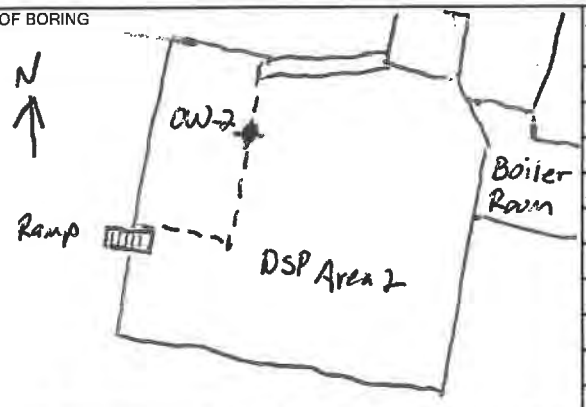
Materials Used in Well Construction:
15' Sch 40 PVC Screen 0.010"
10' Sch 40 PVC Riser

Trihydro Corporation
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474
(F) 307/745.7729

WELLCOMP 2005TEMP

11/28
10/30

LOCATION OF BORING



JOB NO:	CLIENT:	LOCATION:
PERMA-023-0004	PFSG	Valdosta, GA

DRILLING METHOD:
DPT - Soil Sampling
HSA - Well Installation

SAMPLING METHOD:
HA 0-5'
DPT 5-25'

BORING NO. OW-2

SHEET 1 OF 2

WATER LEVEL	17'	17.02		
TIME	0850	1700		
DATE	11/29/23	12/2/23		
CASING DEPTH	25'	24.5'		

DRILLING	START	FINISH
TIME	0830	0900
DATE:	11/29/23	11/29/23

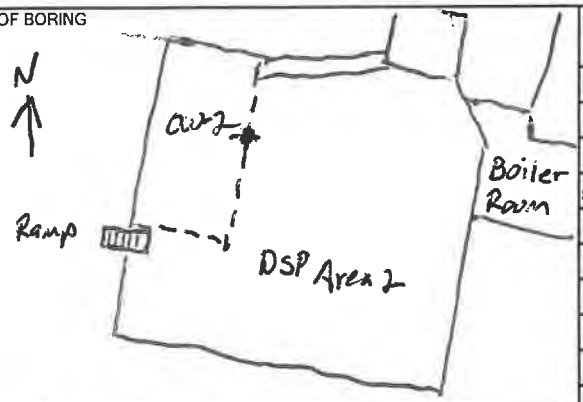
SURFACE CONDITIONS:
Concrete Flooring (~~[illegible]~~ 10" thickness)

SAMPLER TYPE	INCHES DRIVEN	Penetrometer (tons/sf)	Recovery	PID Reading (ppm)	PID Headspace (ppm)	DEPTH IN FEET	SOIL GRAPH	
HA				–	–	0		Concrete 0-10"
				–	–	1		Limestone gravel base (FILL) 10-12" Fine silty SAND, reddish-brown, dry
				0.7	346.8	2		
				0.9	192.9	3		
				0.9	1,243	4		grades very hard, dry
				600.3		5		grades with some clay, reddish-brown w/ tan mottling, dry
DPT				938.1	>2,000	6		
				1,995		7	SM	
				982.2	>2,000	8		
				1935	1,640	9		Same
				620.6		10		
				>2,000	>2,000	1		Same
				>2,000		2		
				1,197	>2,000	3		grades w/ less clay
				1,354	>2,000	4		
				>2,000		5		grades w/ more sand, moist
				486.1	707.6	6		
				288.2		7		
				265.8	707.8	8		Clayey fine SAND, tan to gray, wet
				1,253		9	SC	
				558.1	320.3	20		grades with more sand

DRILLING CONTR. Betts Drilling
James Tyler

BY Ron Pelle
DATE 11/29/23
CHK'D BY

LOCATION OF BORING



JOB NO:	CLIENT:	LOCATION:
PERMA-023-2244	PFSG	Valdosta, GA

DRILLING METHOD: DPT - Soil Sampling; HSA - Well Installation

BORING NO.: OW-2

SHEET: 2 OF 2

SAMPLING METHOD: HA 0-5'; DPT 5-25'

DRILLING

					START	FINISH
WATER LEVEL						
TIME					TIME: 0830	TIME: 0900
DATE					DATE: 11/29/23	DATE: 11/29/23
CASING DEPTH						

SURFACE CONDITIONS: Concrete Flooring (~8 to 9" thickness)

SAMPLER TYPE	INCHES DRIVEN	Penetrometer (tons/sf)	Recovery	PID Reading (ppm)	PID Headspace (ppm)	DEPTH IN FEET	SOIL GRAPH	
DPT						20	SC	
				279.4	300.6	1	SP	Fine SAND, wet
				50.2		2	CL	grades w/ Sandy Clay layer 22-23', wet
				31.4	88.7	3		Fine SAND, tan, wet
				25.4		4	SP	
				16.5	25.4	25		Same
						6		END OF BORING 25' BGS
						7		
						8		
						9		
						0		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

Drilling Co.: Betts Drilling

Driller: James Tyler

CHK'D BY: Ron Pelle

DATE: 11/29/23

Well Completion Diagram

Well Designation OW-2
Job Number PERMA-023-0004
Project PFSG Pilot Test Wells
Loc. or Coords.

Datum Location and Elevation (if applicable)

Start Date 11/28/23 DPT
End Date 12/1/23 Set well

Logged by Ron Peller
Drilling Company and Drilling Personnel
Betts Drilling
- James Tyler

Drilling Method/Fluid Used
HSA - 4.25" ID HSA

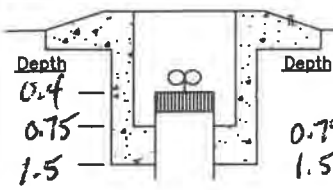
Surveyed By

Location Sketch

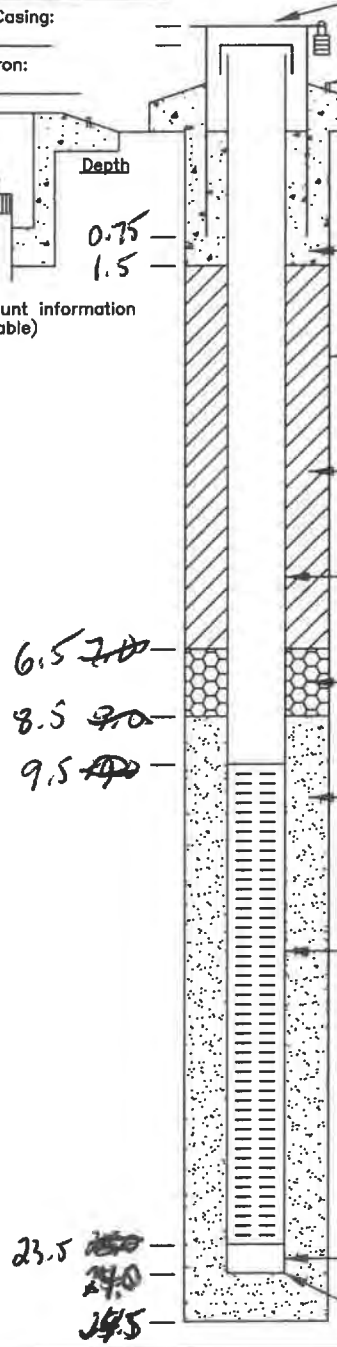
N

(show north if not up)

Diameter and Type of Flush Mount Box: 8-inch ID/10" OD
Elevation of Top of Casing:
Type and Size of Apron:



(complete flush mount information if applicable)



Diameter and Type of Protective Casing
Elevation of Top of Protective Casing
Elevation of Top of Casing
Elevation of Survey Pin (if any)
Type and Size of Apron (if any)
Ground Surface Elevation

Type of Surface Seal Concrete 1.5' to floor Surface

Diameter of Borehole 8-inch

Type of Grout or Backfill Type I Portland/Bentonite (5-15%)

Diameter and Type of Casing 2" Sch 40 PVC Casing

Type of Seal Bentonite, hydrated

Type of Sand Pack 20/30 Silica Sand

Diameter and Type of Well Screen 2" Dia Sch 40 PVC

Perforation Size and Type 0.010-inch Slotted Screen

Type and Length of Sediment Trap (if any) 6" between bottom of end cap & bottom of well screen

Type and Length of End Cap (if any) Flat Bottom Sch 40 PVC Threaded Cap 3"

11/28/23
12/01/23

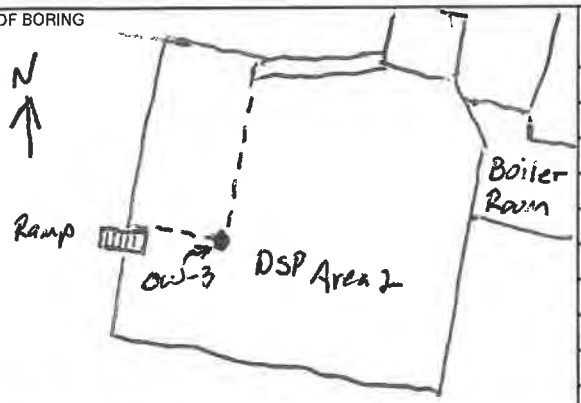
Include Fluid Levels, Date and Time for:
Depth to Water Encountered During Drilling 17.0'
Depth to Water in Completed Well 16.36' BTOC
Depth to Water After Development

Materials Used in Well Construction:

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474
(F) 307/745.7729

WELLCOMP 2005TEMP

LOCATION OF BORING



JOB NO:	CLIENT:	LOCATION:
PERMA-023-2224	PFSG	Valdosta, GA

DRILLING METHOD: DPT - Soil Sampling; HSA - Well Installation

BORING NO.: OW-3

SHEET: 1 OF 2

SAMPLING METHOD: HA 0-5'; DPT 5-25'

DRILLING

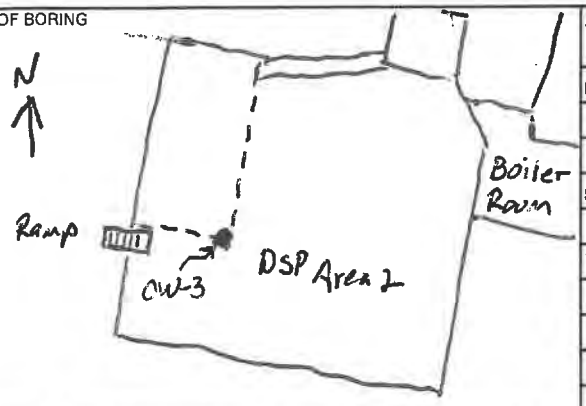
					START	FINISH
WATER LEVEL	17	16.08			TIME	TIME
TIME	1700	1315			1645	1715
DATE	11/28/23	12/1/23			DATE:	DATE:
CASING DEPTH	25	24.5			11/28/23	11/28/23

Drilling Contractor: Betts Drilling — Driller: James Tyler

SAMPLER TYPE	INCHES DRIVEN	Penetrometer (tons/sf)	Recovery	PID Reading (ppm)	PID Headspace (ppm)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: Concrete Flooring (~~6~~ 10" thickness)
				—	—	0	////	Concrete 0-10"
HA				—	—	1	XXX	Limestone gravel base (FILL)
				0.1	—	2	CL	Sandy CLAY, reddish brown, slightly moist
				0.1	1310	3		Fine SAND and silt, reddish brown, dry
				0.3	1,041	4	SM	
↓				313.3		5		
DPT				193.7	658.6	6		
				265.9		7		
				255.6	688.2	8		
				186.0	682.0	9		
				180.2		10		
				335.5	383.2	1		
				289.0		2		
				386.1	242.2	3		
				320.1	279.1	4		
				338.2		5		
				149.9	655.2	6		
				63.5		7		
				66.0	138.9	8		Grey clayey SAND, WET
				56.1	388.2	9	SC	
↓				29.5		20		

Logged by: Ron Pene — DATE: 11/28/23 — CHK'D BY

LOCATION OF BORING



JOB NO:	CLIENT:	LOCATION:
PERMA-023-0004	PFSG	Valdosta, GA

DRILLING METHOD:
DPT - Soil Sampling
HSA - Well Installation

SAMPLING METHOD:
HA 0-5'
DPT 5-25

BORING NO. OW-3

SHEET 2 OF 2

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DRILLING	
START	FINISH
TIME 1645	TIME 1715
DATE: 11/28/23	DATE: 11/28/23

SURFACE CONDITIONS:
Concrete Flooring (~8 to 9" thickness)

SAMPLER TYPE	INCHES DRIVEN	Penetrometer (tons/sf)	Recovery	PID Reading (ppm)	PID Headspace (ppm)	DEPTH IN FEET	SOIL GRAPH	
DPT						20		Clayey SAND, wet, tan to gray
				18.8	50.4	1	SC	grades w/ more Clay
				11.1		2		grades w/ less Clay
				4.2	20.5	3		Fine SAND, gray, wet
				1.4		4	SP	
				0.4	3.9	25		grades orange, with some silt
						6		END OF BORING 25.5' BGS
						7		
						8		
						9		
						0		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

DRILLING CONTR. Betts Drilling
James Tyler

BY Ron Pelle
DATE 11/28/23
CHK'D BY

Well Completion Diagram

Well Designation OW-3
Job Number PERMA-023-0004
Project PFS & Pilot Test Wells
Loc. or Coords.

Datum Location and Elevation (if applicable)

Start Date 11/28/23 DRT
End Date 11/30/23 Set well

Logged by Ron Pelle
Drilling Company and Drilling Personnel Betts Drilling - James Tyler

Drilling Method/Fluid Used HSA for well Install 4.25 ID HSA

Surveyed By

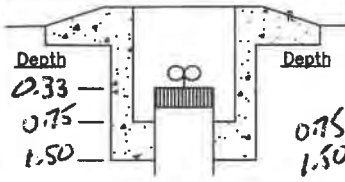
Location Sketch

(show north if not up)

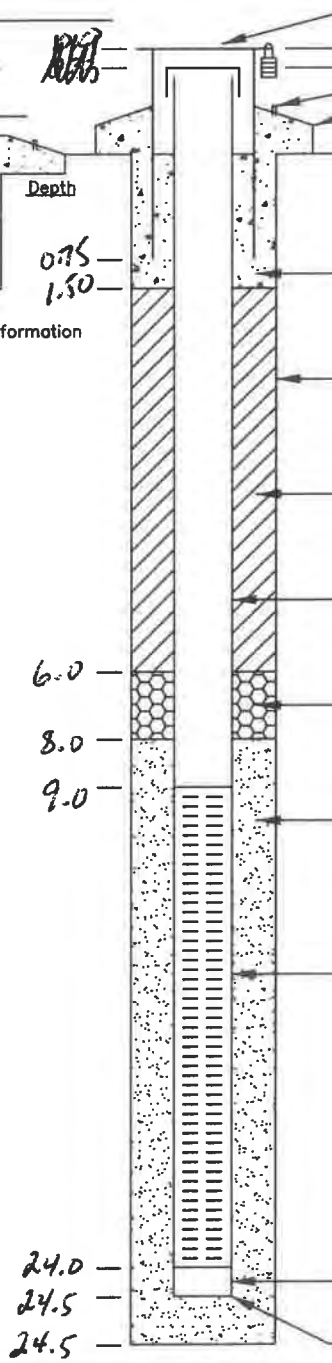
Diameter and Type of Flush Mount Box:

Elevation of Top of Casing:

Type and Size of Apron:



(complete flush mount information if applicable)



Diameter and Type of Protective Casing

Elevation of Top of Protective Casing

Elevation of Top of Casing

Elevation of Survey Pin (if any)

Type and Size of Apron (if any)

Ground Surface Elevation

Type of Surface Seal Concrete 1.5' to floor surface

Diameter of Borehole 6-inch

Type of Grout or Backfill Type I Portland/Bentonite (5-15% bentonite)

Diameter and Type of Casing 2" Sch 40 PVC riser pipe

Type of Seal Bentonite, hydrated

Type of Sand Pack 20/30 Silica Sand

Diameter and Type of Well Screen 2" diameter Sch 40 PVC

Perforation Size and Type 0.010-inch Slot Screen

Type and Length of Sediment Trap (if any) Between bottom of end cap & bottom of screen space = 6"

Type and Length of End Cap (if any)

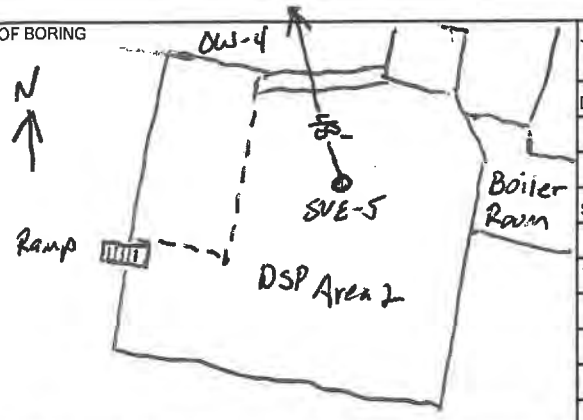
Include Fluid Levels, Date and Time for:
11/28/23 Depth to Water Encountered During Drilling 17'
12/1/23 Depth to Water in Completed Well 16.21'
Depth to Water After Development

Materials Used in Well Construction:
Sch 40 0.010-inch slot screen
Sch 40 PVC Riser

Trihydro Corporation
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474
(F) 307/745.7729

WELLCOMP_2005TEMP

LOCATION OF BORING



JOB NO:	CLIENT:	LOCATION:
PERMA-023-0024	PFSG	Valdosta, GA

DRILLING METHOD:
DPT - Soil Sampling
HSA - Well Installation

SAMPLING METHOD:
HA 0-5'
DPT 5-25'

BORING NO. OW-4

SHEET 1 OF 2

WATER LEVEL	17	16.89		
TIME	0940	1100		
DATE	11/29/23	12/2/23		
CASING DEPTH	25	24.9		

DRILLING

START TIME	FINISH TIME
0930	0950
DATE: 11/29/23	DATE: 11/29/23

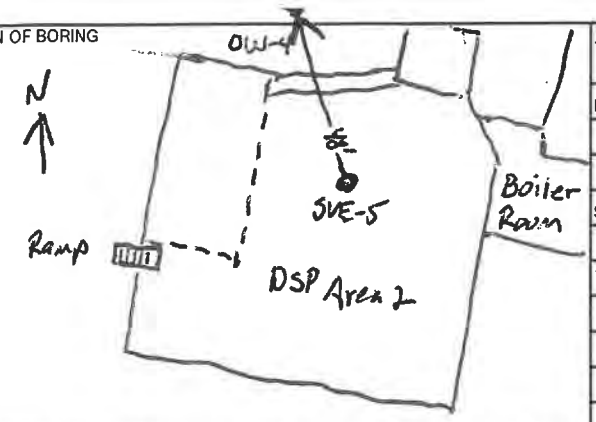
SURFACE CONDITIONS: Concrete Flooring (~8 to 9" thickness)

SAMPLER TYPE	INCHES DRIVEN	Penetrometer (tons/sf)	Recovery	PID Reading (ppm)	PID Headspace (ppm)	DEPTH IN FEET	SOIL GRAPH	
				—	—	0		Concrete, 0-8"
HA				—	—	1		Limestone gravel base (FILL)
								Silty fine SAND, reddish-brown, dry
				0.5	73.1	2		
				0.7	—	3		Same
				0.5	17.6	4	SM	
				6.4	140.7	5		grades w/ some clay, dry
DPT				36.1	123.5	6		
				33.0		7		
				39.7	134.8	8		
				51.5	130.7	9	CL	Sandy Clay, reddish-brown, dry
				38.2	—	10		Fine silty SAND w/ trace of Clay, reddish-brown, dry
				9.7	116.1	1		
				45.4		2		
				31.0	136.4	3	SM	grades w/ more Clay, dry
				21.6	179.7	4		grades w/ less Clay, dry
				32.1	—	5		
				40.4	269.9	6		grades to tan, moist
				50.5		7	CL	Sandy CLAY, reddish-brown, moist
								Fine SAND, w/ trace of Clay, tan, moist to wet
				67.2	347.1	8	SW	
				58.1	123.9	9		same, wet
				37.2	—	20		

DRILLING CONTRACTOR: Betts Drilling
James Tyler

CHK'D BY
Ron Pene
DATE 11/29/23

LOCATION OF BORING



JOB NO:	CLIENT:	LOCATION:
PERMA-023-0224	PFSG	Valdosta, GA

DRILLING METHOD: DPT - Soil Sampling; HSA - Well Installation

BORING NO.: OW-4

SHEET: 2 OF 2

SAMPLING METHOD: HA 0-5'; DPT 5-

					DRILLING START	DRILLING FINISH
WATER LEVEL						
TIME					TIME: 0930	TIME: 0950
DATE					DATE: 11/29/23	DATE: 11/29/23
CASING DEPTH						

Bettis Drilling

James Tyler

SAMPLER TYPE	INCHES DRIVEN	Penetrometer (tons/sf)	Recovery	PID Reading (ppm)	PID Headspace (ppm)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: Concrete Flooring (~8 to 9" thickness)
DPT						20		
				17.0	38.1	1	SW	grades to tan to orange, wet
				15.9		2	CL	Sandy CLAY, wet
				12.2	9.0	3	SW	Fine SAND, orange to tan, wet
				9.7		4		
				10.6	11.6	25		END OF BORING 25' BGS
						6		
						7		
						8		
						9		
						0		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

Ben reine

CHK'D BY

DATE 11/24/23

Well Completion Diagram

Well Designation: DW-4
Job Number: PERMA-023-0004
Project: PFSG Pilot Test Wells
Loc. or Coords.:
Datum Location and Elevation (if applicable):
Start Date: 11/29/23 DPT
End Date: 11/29/23 Set well

Logged by: Ron Pelle
Drilling Company and Drilling Personnel: Betts Drilling, James Tyler
Drilling Method/Fluid Used: HSA 4.25 inch ID
Surveyed By:

Location Sketch (show north if not up)

Diameter and Type of Flush Mount Box: 10" OD Steel w/ Bolt Down Cover 8" ID
Elevation of Top of Casing:
Type and Size of Apron:

Depth 0.33 — 0.75 — 1.5 —
Depth 0.75 — 1.5 —
(complete flush mount information if applicable)

Diameter and Type of Protective Casing: 8" ID/10" OD Flush
Elevation of Top of Protective Casing:
Elevation of Top of Casing:
Elevation of Survey Pin (if any):
Type and Size of Apron (if any):
Ground Surface Elevation:

Type of Surface Seal: Concrete 1.5' to floor surface

Diameter of Borehole: 6-inch

Type of Grout or Backfill: Type I Portland/Bentonite (5-15% bentonite)

Diameter and Type of Casing: 2-inch diameter Schedule 40 PVC Riser Pipe

6.5 — 8.5 —
Type of Seal: Bentonite, hydrated

9.5 —
Type of Sand Pack: 20/30 Silica Sand

Diameter and Type of Well Screen: 2"-diameter Sch. 40 PVC; 0.010-inch slot size
Perforation Size and Type: 0.010-inch Slotted screen

24.5 — 25' — 25' —
Type and Length of Sediment Trap (if any): Between bottom of screen and bottom end cap 6"
Type and Length of End Cap (if any): Flat bottom Sch 40 PVC 6"

Include Fluid Levels, Date and Time for:
Depth to Water Encountered During Drilling: 11/29/23 17.5'
Depth to Water in Completed Well: 11/29/23 15.8'
Depth to Water After Development:

Materials Used in Well Construction:
Sch 40 Screen 15' 0.010"
Sch 40 Riser 10'

Trihydro Corporation
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474
(F) 307/745.7729

WELLCOMP_2005TEMP

APPENDIX D

WELL COMPLETION DIAGRAMS

BORING LOG AND AIR SPARGE WELL CONSTRUCTION DIAGRAM

BOREHOLE ID: ASI-2	**CONTRACTOR:** BETTS DRILLING	**DRILLING RIG:** Geoprobe 3230 DT #2218
CLIENT: PERMA-FIX OF SOUTH GEORGIA	**DRILLER:** JAMES TYLER	**METHOD:** DPT / HSA / HA
PROJECT #: PERMA-023-0004	**GEOLOGIST:** R. PELLE	**SAMPLER:** 2" X 5' ACETATE LINER
LOCATION: VALDOSTA, GA	**DATE COMPLETED:** 12/01/2023	**TOTAL DEPTH (ft):** 40
EASTING (FEET): 2574711.455	**NORTHING (FEET):** 291135.781	**TOC/GSE (FT MSL):** 190.79 / 191.03

▽ DEPTH OF FIRST ENCOUNTERED WATER ▼ WATER LEVEL IN COMPLETED WELL (12/2/23)

DEPTH (ft bgs)	LITHOLOGIC DESCRIPTION	USCS	NOTES	MOISTURE CONTENT	PID HS (ppm)	AIR SPARGE WELL CONSTRUCTION	ELEV. (ft msl)
0	Concrete (0-8") over gravel FILL.	FILL	Boring was hand augered to 5 ft bgs.			Concrete	0
	Reddish brown silty SAND (SM), dry.				403.5		
					367.1		
					285.7		
5	grades with increasing clay, light tan mottling, dry.	SM	Highest PID soil sample collected 4-5 ft bgs.	Dry	1,343		-5
					623.1		
					510.5		
10					443.0		-10
					607.5		
					446.0		
					662.1		
15	Clayey fine SAND (SC), very hard, dry.				819.2		-15
	grades with more sand, moist to wet.			Moist			
	top of groundwater table.	SC			616.1	Type I portland with bentonite	
	grades with more sand, wet.				108.5		
20	grades grayish-tan, wet.				53.9	2" Sch. 40 PVC riser	-20
	grades with more clay, wet.						
	Grayish-tan fine SAND (SW), thin layers of sandy clay, wet.				16.1		
					7.2		
25	grades with less clay, wet.				3.5		-25
	grades orange, wet.	SW		Wet	1.5		
					2.0		
30					1.4		-30
					1.4		
	Light gray medium SAND (SP), wet.				1.5		
35		SP			1.9	Bentonite	-35
					1.4	20/30 silica sand	
40	Boring terminated at 40 ft bgs.				1.2	2" Sch. 40 PVC 0.010 slotted screen	-40

Trihydro CORPORATION

NOTES:
ft bgs - feet below ground surface
ft msl - feet above mean sea level
PID - photoionization detector
GPS-est. Survey Horizontal NAD 83 (State Plane, Georgia West)

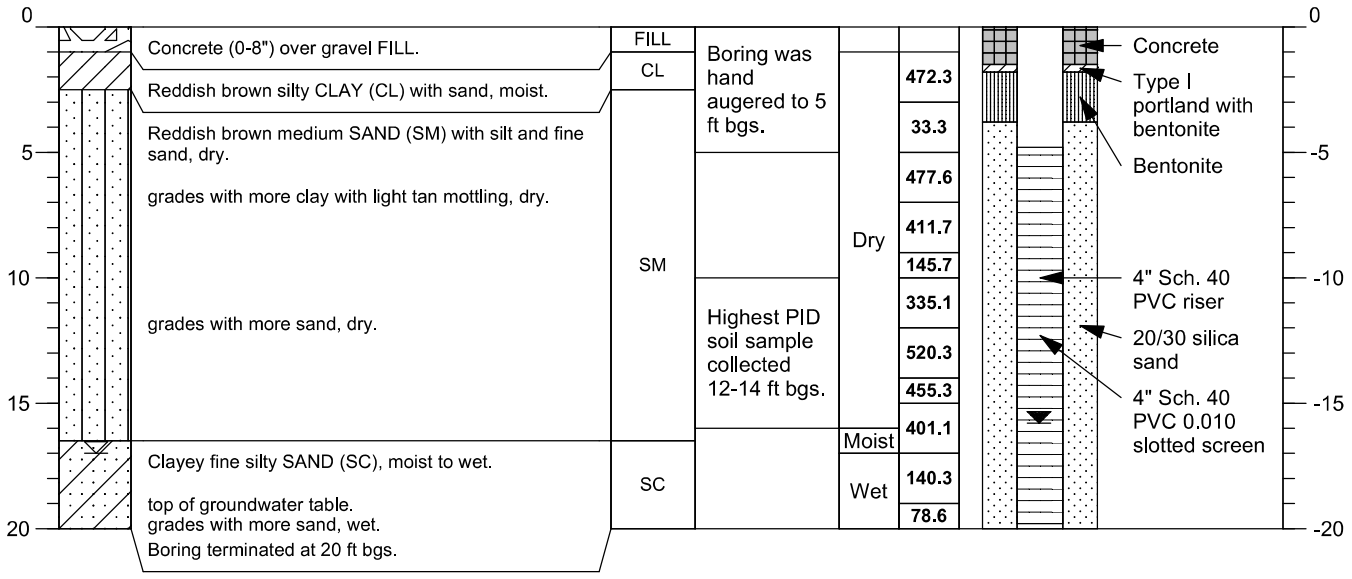
HS - head space
ppm - part per million
GSE - Ground Surface Elevation
DPT - direct push technology
HSA - hollow stem auger
HA - hand auger
TOC - top of casing

Not to be used separate from associated report

BORING LOG AND SOIL VAPOR EXTRACTION WELL CONSTRUCTION DIAGRAM

BOREHOLE ID: SVE-5	**CONTRACTOR:** BETTS DRILLING	**DRILLING RIG:** Geoprobe 3230 DT #2218
CLIENT: PERMA-FIX OF SOUTH GEORGIA	**DRILLER:** JAMES TYLER	**METHOD:** DPT / HSA / HA
PROJECT #: PERMA-023-0004	**GEOLOGIST:** R. PELLE	**SAMPLER:** 2" X 5' ACETATE LINER
LOCATION: VALDOSTA, GA	**DATE COMPLETED:** 11/30/2023	**TOTAL DEPTH (ft):** 20
EASTING (FEET): 2574717.488	**NORTHING (FEET):** 291133.789	**TOC/GSE (FT MSL):** 190.84 / 191.07

▽ DEPTH OF FIRST ENCOUNTERED WATER ▼ WATER LEVEL IN COMPLETED WELL (12/2/23)



Trihydro CORPORATION

NOTES:

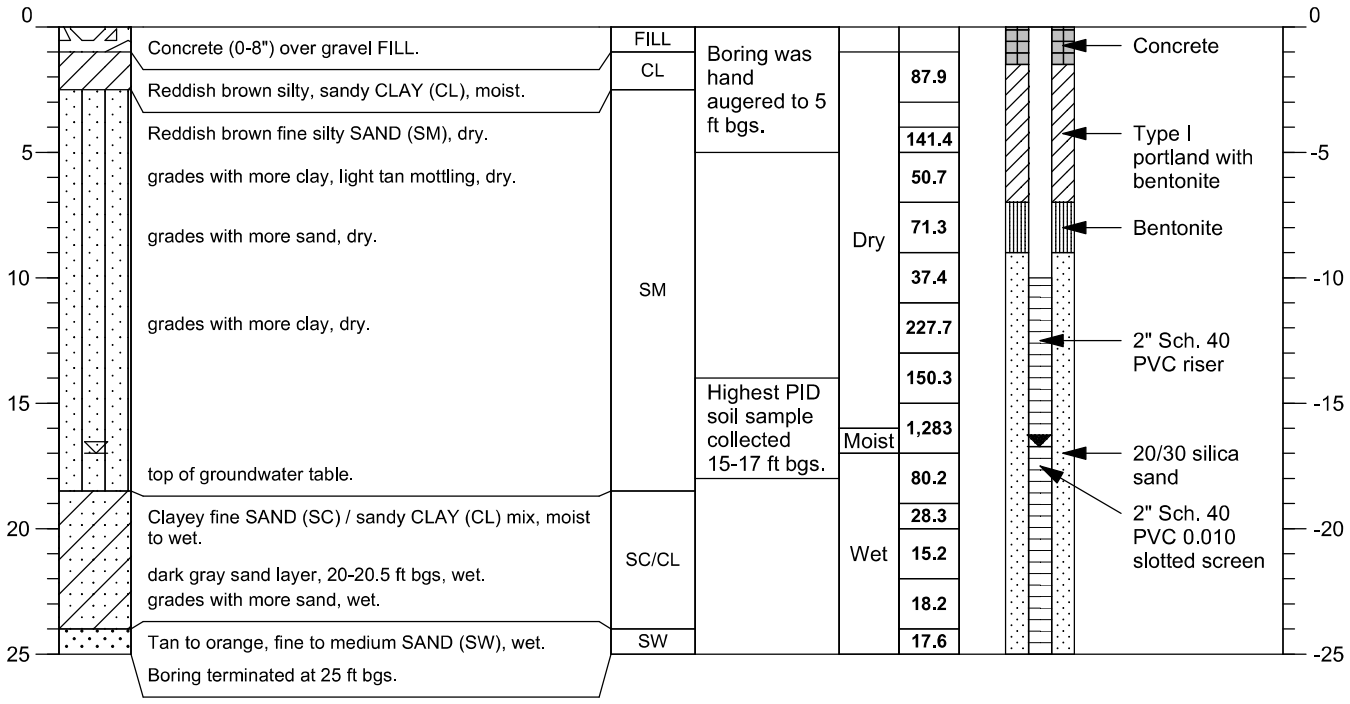
ft bgs - feet below ground surface
ft msl - feet above mean sea level
PID - photoionization detector
GPS-est. Survey Horizontal NAD 83 (State Plane, Georgia West)
HS - head space
ppm - part per million
GSE - Ground Surface Elevation
DPT - direct push technology
HSA - hollow stem auger
HA - hand auger
TOC - top of casing

Not to be used separate from associated report

BORING LOG AND OBSERVATION WELL CONSTRUCTION DIAGRAM

BOREHOLE ID: OW-1	**CONTRACTOR:** BETTS DRILLING	**DRILLING RIG:** Geoprobe 3230 DT #2218
CLIENT: PERMA-FIX OF SOUTH GEORGIA	**DRILLER:** JAMES TYLER	**METHOD:** DPT / HSA / HA
PROJECT #: PERMA-023-0004	**GEOLOGIST:** R. PELLE	**SAMPLER:** 2" X 5' ACETATE LINER
LOCATION: VALDOSTA, GA	**DATE COMPLETED:** 11/29/2023	**TOTAL DEPTH (ft):** 25
EASTING (FEET): 2574729.099	**NORTHING (FEET):** 291130.418	**TOC/GSE (FT MSL):** 190.84 / 191.14

▽ DEPTH OF FIRST ENCOUNTERED WATER ▼ WATER LEVEL IN COMPLETED WELL (12/2/23)



NOTES:

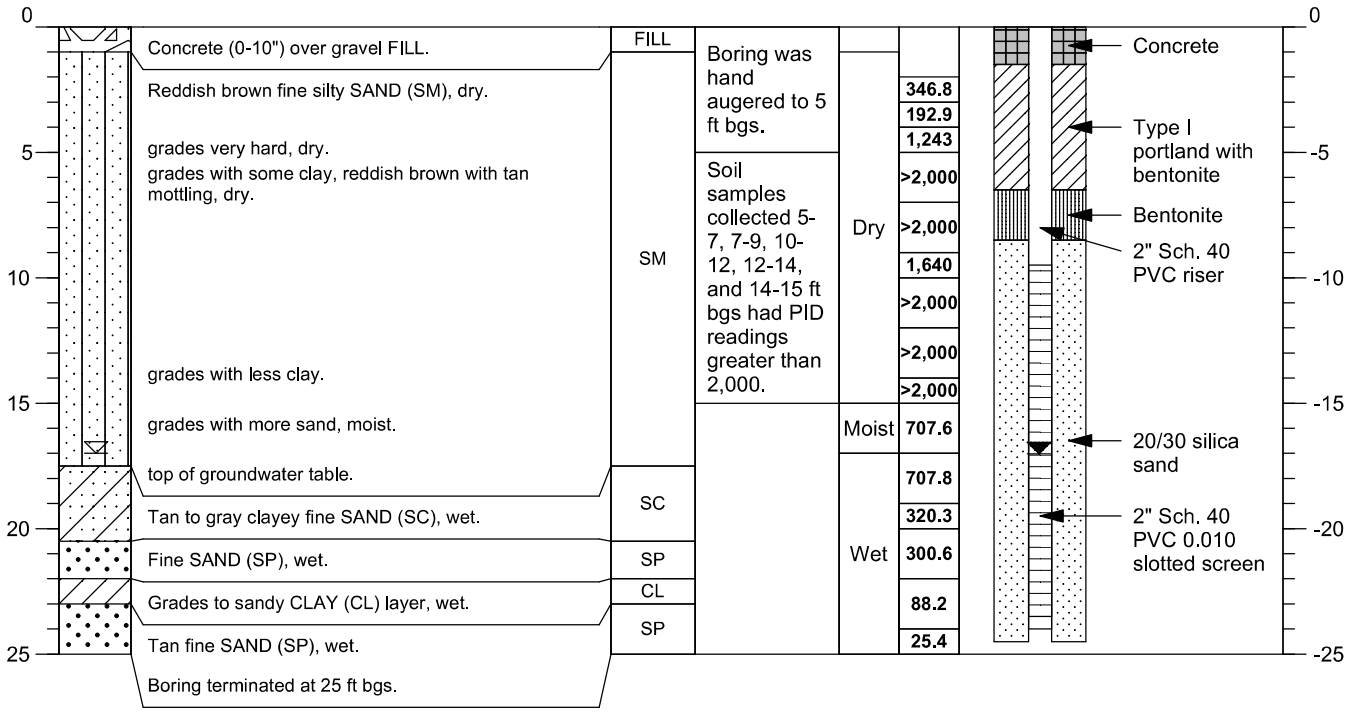
ft bgs - feet below ground surface
ft msl - feet above mean sea level
PID - photoionization detector
GPS-est. Survey Horizontal NAD 83 (State Plane, Georgia West)
HS - head space
ppm - part per million
GSE - Ground Surface Elevation
DPT - direct push technology
HSA - hollow stem auger
HA - hand auger
TOC - top of casing

Not to be used separate from associated report

BORING LOG AND OBSERVATION WELL CONSTRUCTION DIAGRAM

BOREHOLE ID: OW-2	**CONTRACTOR:** BETTS DRILLING	**DRILLING RIG:** Geoprobe 3230 DT #2218
CLIENT: PERMA-FIX OF SOUTH GEORGIA	**DRILLER:** JAMES TYLER	**METHOD:** DPT / HSA / HA
PROJECT #: PERMA-023-0004	**GEOLOGIST:** R. PELLE	**SAMPLER:** 2" X 5' ACETATE LINER
LOCATION: VALDOSTA, GA	**DATE COMPLETED:** 12/01/2023	**TOTAL DEPTH (ft):** 25
EASTING (FEET): 2574698.808	**NORTHING (FEET):** 291148.908	**TOC/GSE (FT MSL):** 190.99 / 191.32

▽ DEPTH OF FIRST ENCOUNTERED WATER ▼ WATER LEVEL IN COMPLETED WELL (12/2/23)



Trihydro CORPORATION

NOTES:

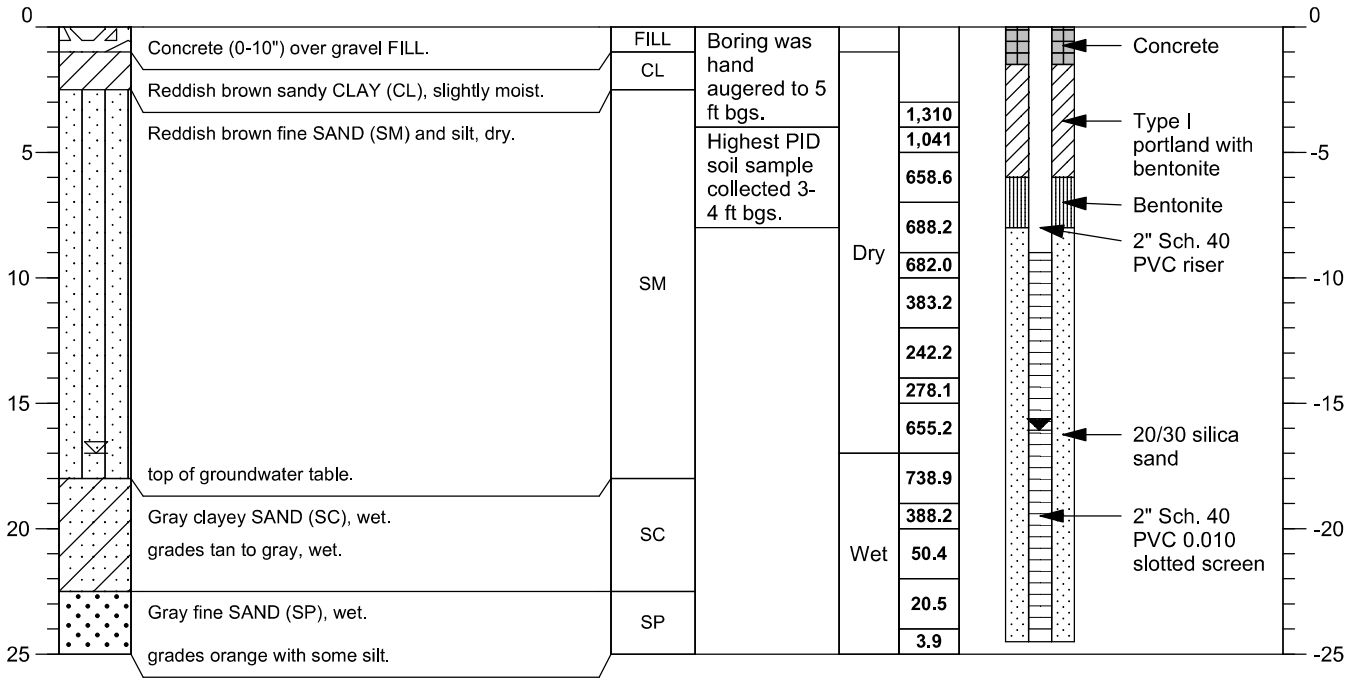
ft bgs - feet below ground surface
ft msl - feet above mean sea level
PID - photoionization detector
GPS-est. Survey Horizontal NAD 83 (State Plane, Georgia West)
HS - head space
ppm - part per million
GSE - Ground Surface Elevation
DPT - direct push technology
HSA - hollow stem auger
HA - hand auger
TOC - top of casing

Not to be used separate from associated report

BORING LOG AND OBSERVATION WELL CONSTRUCTION DIAGRAM

BOREHOLE ID: OW-3	**CONTRACTOR:** BETTS DRILLING	**DRILLING RIG:** Geoprobe 3230 DT #2218
CLIENT: PERMA-FIX OF SOUTH GEORGIA	**DRILLER:** JAMES TYLER	**METHOD:** DPT / HSA / HA
PROJECT #: PERMA-023-0004	**GEOLOGIST:** R. PELLE	**SAMPLER:** 2" X 5' ACETATE LINER
LOCATION: VALDOSTA, GA	**DATE COMPLETED:** 11/30/2023	**TOTAL DEPTH (ft):** 25.5
EASTING (FEET): 2574687.347	**NORTHING (FEET):** 291113.666	**TOC/GSE (FT MSL):** 190.56 / 190.92

▽ DEPTH OF FIRST ENCOUNTERED WATER ▼ WATER LEVEL IN COMPLETED WELL (12/2/23)



Trihydro CORPORATION

NOTES:

ft bgs - feet below ground surface
ft msl - feet above mean sea level
PID - photoionization detector
GPS-est. Survey Horizontal NAD 83 (State Plane, Georgia West)

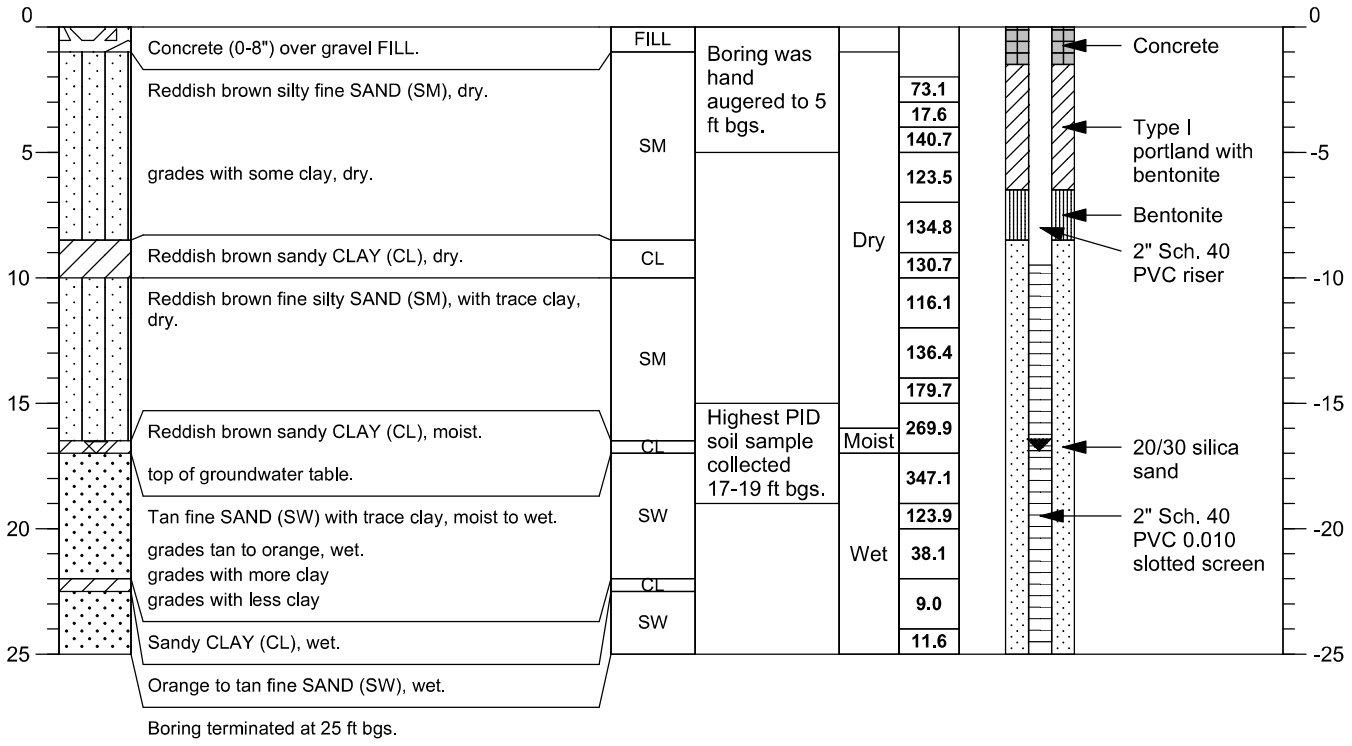
HS - head space
ppm - part per million
GSE - Ground Surface Elevation
DPT - direct push technology
HSA - hollow stem auger
HA - hand auger
TOC - top of casing

Not to be used separate from associated report

BORING LOG AND OBSERVATION WELL CONSTRUCTION DIAGRAM

BOREHOLE ID: OW-4	**CONTRACTOR: BETTS DRILLING**	**DRILLING RIG: Geoprobe 3230 DT #2218**
CLIENT: PERMA-FIX OF SOUTH GEORGIA	**DRILLER: JAMES TYLER**	**METHOD: DPT / HSA / HA**
PROJECT #: PERMA-023-0004	**GEOLOGIST: R. PELLE**	**SAMPLER: 2" X 5' ACETATE LINER**
LOCATION: VALDOSTA, GA	**DATE COMPLETED: 11/29/2023**	**TOTAL DEPTH (ft): 25**
EASTING (FEET): 2574712.042	**NORTHING (FEET): 291181.247**	**TOC/GSE (FT MSL): 190.08 / 190.38**

▽ DEPTH OF FIRST ENCOUNTERED WATER ▼ WATER LEVEL IN COMPLETED WELL (12/2/23)



Trihydro CORPORATION

NOTES:

ft bgs - feet below ground surface
ft msl - feet above mean sea level
PID - photoionization detector
GPS-est. Survey Horizontal NAD 83 (State Plane, Georgia West)

HS - head space
ppm - part per million
GSE - Ground Surface Elevation
DPT - direct push technology
HSA - hollow stem auger
HA - hand auger
TOC - top of casing

Not to be used separate from associated report

APPENDIX E

WELL DEVELOPMENT LOGS

MONITORING WELL DEVELOPMENT LOG

Trihydro CORPORATION

Sample ID N/A

WL ~~AP~~ Measurements taken from: ☒ Top of Casing ☐ Protective Casing ☐ Ground Level ☒ Field parameters through Flow Cell

Well Number AS I-2
Date 12/2/23
Time Start 1530
Client Perma-Fix
Project ~~Per~~ PFSG Pilot Test Wells
Job Number PERMA-023-0004-0002
Installation Date 12/1/23
Well Diameter 2"

Borehole Diameter 8"
Screen Length 2'
Measured Depth (pre-development) 40.15
Measured Depth (post-development) 40.20
Static Water Level (ft) 16.32
Standing Water Column (ft) 23.88
One Well Volume (gal) 3.82
One Annulus Volume (gal) 35.1

Qty of Drilling Fluid Lost 10-20 gals
Minimum Gallons to Purge
Development Method Pump/Surge
Purging Equipment Mini-Monsoon
Water Level Equipment Heron Dipper T S/N 110F2202083M
pH/EC Meter YSI 556 MPS S/N 14F101474
Turbidity Meter Geotech S/N 23064735
Other N/A

Time	Amount Purged	Field Parameters Measured ORP					~~SAL.~~	GPM	Water	Comments	Field Tech.
		EC	pH	Temp.	Turbidity	D.O.					
1545	15	90	4.54	22.70	47.6	7.16	-106.6	1.0	30.52	Sl. Cloudy	RCP
1600	30	84	4.45	22.71	8.69	6.75	-102.7	1.0	32.16	Clear	RCP
1610	40	75	4.39	22.70	9.30	6.67	98.9	1.0	30.06	Clear	RCP
1620	50	72	4.38	22.69	3.14	6.71	97.1	1.0	30.04	Clear	RCP
1630	60	70	4.37	22.75	3.02	6.69	97.4	1.0	30.01	Clear	RCP
1640	70	70	4.38	22.71	3.00	6.70	97.3	1.0	30.01	Clear	RCP
FINAL FIELD PARAMETER MEASUREMENTS											
1640	70	70	4.38	22.71	3.00	6.70	97.3	1.0	30.01	Clear	RCP

Trihydro CORPORATION

MONITORING WELL DEVELOPMENT LOG

Page 1 of 1

Sample ID N/A

WL ~~All~~ Measurements taken from: ☒ Top of Casing ☐ Protective Casing ☐ Ground Level

Well Number SVE-5
Date ~~Perma-Fix~~ RLP 12/2/23
Time Start 1440
Client Perma-Fix
Project PFSG Pilot Test Wells
Job Number PERMA-023-0004.0002
Installation Date 11/30/23
Well Diameter 4"

Borehole Diameter 10"
Screen Length 15'
Measured Depth (pre-development) 19.2'
Measured Depth (post-development) 19.7'
Static Water Level (ft) 16.38'
Standing Water Column (ft) 3.32
One Well Volume (gal) 2.2
One Annulus Volume (gal) 4.9

Qty of Drilling Fluid Lost 0
Minimum Gallons to Purge
Development Method Pump/Surge
Purging Equipment Mini-Monsoon Pump
Water Level Equipment Heron DipperT S/N 10F2202.023.M
pH/EC Meter YSI-556MPS S/N 14F101474
Turbidity Meter Geotech S/N 23064735
Other N/A

Time	Amount Purged	Field Parameters Measured ORP								Comments	Field Tech.
		EC	pH	Temp.	Turbidity	D.O.	~~ORP~~	GPM	Water		
1445	2.5	NM	NM	NM	NM	NM	NM	1.0	Dry	well pumped dry allow recharge	RLP
1500	2.75	NM	NM	NM	NM	NM	NM	1.0	Dry	Purge dry in about 10 seconds	RLP
1515	3.25	NM	NM	NM	NM	NM	NM	1.0	Dry	Same as above	RLP
	3.25	FINAL FIELD PARAMETER MEASUREMENTS									
1515	[redacted]	NM	NM	NM	NM	NM	NM	NM	Dry	As above	RLP

Note: well is for SVE. Does not produce sufficient water to thoroughly develop. Too silty to obtain field parameter stabilization measurements.

Trihydro CORPORATION

MONITORING WELL DEVELOPMENT LOG

Sample ID N/A

WL ~~All~~ Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level [X] Field Parameters through Flow Cell

Well Number OW-1
Date 12/2/23
Time Start 1220
Client Perma-Fix
Project PFS& Pilot Test Wells
Job Number PERMA-023-0001.0002
Installation Date 11/29/23
Well Diameter 2"

Borehole Diameter 8"
Screen Length 15'
Measured Depth (pre-development) 24.9'
Measured Depth (post-development) 25.4'
Static Water Level (ft) 16.41
Standing Water Column (ft) 8.99
One Well Volume (gal) 1.44
One Annulus Volume (gal) 13.2

Qty of Drilling Fluid Lost 0
Minimum Gallons to Purge
Development Method Pump & Surge
Purging Equipment Mini-Monsoon Pump
Water Level Equipment Heron Dipper-T S/N 110F2202083M
pH/EC Meter YSI 556 MPS S/N 14F101474
Turbidity Meter Geotech S/N 23064735
Other N/A

Time	Amount Purged	Field Parameters Measured ORP					~~SAL.~~	GPM	Water	Comments	Field Tech.
		EC	pH	Temp.	Turbidity	D.O.					
1240	30	594	5.72	23.37	55.7	4.4	-157.5	1.5	17.42	Sl. Cloudy	RCP
1245	35	589	5.77	23.40	17.8	3.3	-152.3	1.0	17.50	Sl. Cloudy	RCP
1255	45	589	5.78	23.40	7.14	2.8	-151.2	1.0	17.50	Sl. Cloudy	RCP
1305	55	586	5.77	23.40	6.72	2.7	-149.7	1.0	17.51	Sl. Cloudy	RCP
FINAL FIELD PARAMETER MEASUREMENTS											
1305	55	586	5.77	23.40	6.72	2.7	-149.7	1.0	17.51	Sl. Cloudy	RCP

MONITORING WELL DEVELOPMENT LOG

Trihydro CORPORATION

Page 1 of 1

Sample ID N/A

WL
~~All~~ Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level [X] Field parameters through Flow Cell

Well Number	DW-2	Borehole Diameter	8"	Qty of Drilling Fluid Lost	0
Date	12/2/23	Screen Length	15'	Minimum Gallons to Purge	
Time Start	1700	Measured Depth (pre-development)	24.2	Development Method	Pump/Surge
Client	Perma-Fix	Measured Depth (post-development)	24.5	Purging Equipment	Mini Monsoon Pump
Project	PFSG Pilot Test wells	Static Water Level (ft)	17.02	Water Level Equipment	Heron Dipper-T S/N 11DE220208BM
Job Number	PERMA-023-0004.0002	Standing Water Column (ft)	7.48	pH/EC Meter	YSI 556 MPS S/N 14F101474
Installation Date	12/1/23	One Well Volume (gal)	1.2	Turbidity Meter	Geotech S/N 23064735
Well Diameter	2"	One Annulus Volume (gal)	11.0	Other	N/A

Time	Amount Purged	Field Parameters Measured ORP								Comments	Field Tech.
		EC	pH	Temp.	Turbidity	D.O.	~~SAL.~~	GPM	Water		
1705	3.5	732	5.42	23.76	611	2.50	-114.9		Dry-17.5'	Purges dry ~40sec ~4.5mins to recover	RCP
1715	7.0	NM	NM	NM	>1100	NM	NM		Dry - 17.5	V. Silty-Orange	RCP
1720	10.5	NM	NM	NM	621	NM	NM		" "	" " "	RCP
1725	14.0	NM	NM	NM	409	NM	NM		" "	" " "	RCP
1730	17.5	NM	NM	NM	132	NM	NM		" "	" " "	RCP
1735	21.0	NM	NM	NM	176	NM	NM		" "	" " "	RCP
1740	24.5	NM	NM	NM	185	NM	NM		" "	" " "	RCP
1745	28.0	935	5.37	21.75	180		-153.5		" "	Clears some	RCP
1750	31.5	934	5.37	21.74	140	3.32	-153.6		" "	Ts, Silt	RCP
1755	35.0	930	5.38	21.75	136	3.30	-154.1		" "	" "	RCP
FINAL FIELD PARAMETER MEASUREMENTS											
1800	38.5	931	5.39	21.75	130	3.29	-154.2		" "	" "	RCP

Note: Well Purges dry in about 40 seconds. Allow to recover up to 17.5' bgs (about 4.5 minutes to recharge). Restart Pump & recharge cycle. First readings too silty to use YSI & Flow cell.

Trihydro CORPORATION

MONITORING WELL DEVELOPMENT LOG

Sample ID N/A

WL ~~All~~ Measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level [X] Field parameters using Flow Cell

Well Number OW-3
Date 12/2/23
Time Start 1315
Client Perma-Fix
Project PFSG Pilot Test Wells
Job Number PERMA-023-0001.0002
Installation Date 11/30/23
Well Diameter 2"

Borehole Diameter 8"
Screen Length 15'
Measured Depth (pre-development) 24.1
Measured Depth (post-development) 24.5
Static Water Level (ft) 16.08
Standing Water Column (ft) 8.42
One Well Volume (gal) 1.35
One Annulus Volume (gal) 12.4

Qty of Drilling Fluid Lost 0
Minimum Gallons to Purge
Development Method Pump/Surge
Purging Equipment Mini-Monsoon Pump
Water Level Equipment Heron Dipper T S/N 11DF220208M
pH/EC Meter YSI 556MPS S/N 14F101474
Turbidity Meter Geotech S/N 230604735
Other N/A

Time	Amount Purged	Field Parameters Measured ORP EC	pH	Temp.	Turbidity	D.O.	~~SAL.~~	GPM	Water	Comments	Field Tech.
1345	15	2783	5.58	23.60	560	5.59	-94.2	0.5	19.14	Silty/clay, Strong	RGP
1355	25	2682	5.65	23.60	192	1.78	-114.6	1.0	19.14	Silty, less	RGP
1405	35	2630	5.67	23.62	23.3	1.79	-115.0	1.0	19.19	Clear, tr. clay	RGP
1415	45	2599	5.69	23.63	16.8	1.80	-115.4	1.0	19.14	" " "	RGP
1425	55	2595	5.70	23.62	16.0	1.81	-115.0	1.0	19.15	" " "	RGP
FINAL FIELD PARAMETER MEASUREMENTS											
1425	55	2595	5.70	23.62	16.0	1.81	-115.0	1.0	19.15	Clear, tr. clay	RGP

MONITORING WELL DEVELOPMENT LOG

Trihydro CORPORATION

Sample ID N/A

WL
~~All~~ Measurements taken from: ☒ Top of Casing ☐ Protective Casing ☐ Ground Level ☑ Field Parameters - Flow Through Cell

Well Number OW-4
Date 12/2/23
Time Start 1100
Client Perma-Fix
Project PFSG Pilot Test Wells
Job Number PERMA-023-0004.0002
Installation Date 11/29/23
Well Diameter 2"

Borehole Diameter 8"
Screen Length 15'
Measured Depth (pre-development) 24.5
Measured Depth (post-development) 24.9
Static Water Level (ft) 16.89
Standing Water Column (ft) 8.01
One Well Volume (gal) 1.28
One Annulus Volume (gal) 11.8

Qty of Drilling Fluid Lost 0
Minimum Gallons to Purge
Development Method Pump/Surge
Purging Equipment Mini-Monsoon Pump
Water Level Equipment Heron Dipper-T S/N 110F2207 0831M
pH/EC Meter YSI 556 MPS S/N 14F101474
Turbidity Meter Geotech Portable S/N 23064735
Other N/A

Time	Amount Purged	Field Parameters Measured ORP					~~SAL.~~	GPM	Water	Comments	Field Tech.
		EC	pH	Temp.	Turbidity	D.O.					
1130	30.0	264	5.03	23.39	172	3.35	-94.0	1.0	18.13	Orange-brown Silt	RCP
1140	40	260	5.09	23.40	16.7	2.97	-111.5	1.0	18.08	Clearing for Silt	RCP
1150	50	250	5.08	23.39	8.32	2.97	-114.3	1.0	18.04	Clear	RCP
1200	60	243	5.07	23.40	6.47	3.00	-108.5	1.0	18.04	Clear	RCP
1210	70	245	5.07	23.40	6.45	3.01	-109.0	1.0	18.04	Clear	RCP
FINAL FIELD PARAMETER MEASUREMENTS											
1210	70	245	5.07	23.40	6.45	3.01	-109.0	1.0	18.07	Clear	RCP

APPENDIX F

IDW DISPOSAL DOCUMENTATION

VP

WASTE PROFILE

NS

*Perma-Fix Nuclear Services. DSSI * M&EC * Perma-Fix of Florida * Perma-Fix Northwest*

76892
Profile Number

Generator Information:

EPA ID#	GAD093380814 166632
Generator Name	PERMA-FIX OF SOUTH GEORGIA
Generator Address	1612 JAMES P RODGERS CIR
City/State/Zip	VALDOSTA, GA, 31601
Telephone/contact	(229) 244-0474
Fax	

Billing Information:

☑ Electronic users check here to copy Generator info, if same

Broker/Site	
Address	
City/St/Zip	
Telephone	
Fax	

Check all that apply

☐ Hazardous Waste - *LDR per 40 CFR 268*
- ☐ *Mercury >260 PPM*
- ☐ *Elemental Mercury*
- ☐ *Reactives - specify*
- ☐ *Benzene*
- ☐ *State ONLY Dangerous Waste*
- ☐ *Oxidizers*

☐ TSCA Regulated PCB
- ☐ *PCB Bulk Products*
- ☐ *PCB Remediation Waste*
- ☐ *PCB Articles*

☐ *Classified Matter*
- ☐ *Confidential*
- ☐ *Secret*

☐ *This is a CERCLA waste*

☐ Radioactive Waste *Per DOE Order 474.2, does the waste have a Attractiveness Level; specify level*

☐ NNSS Disposal Only

☑ Non-Hazardous Waste
- ☐ Universal Waste
- ☐ Used Oil Filter
- ☐ Used Oil - specify
  - ☐ off-spec used oil
  - ☐ on-spec used oil

Please provide a detailed description of the process that generated this waste Attach additional sheets if needed
Note for a line break, press alt-return

Monitoring Well purge water & soil (NON-HAZ)

FC: W301 Manu: H141 NO CODES

Characterization Method: *(check all that apply)* ☐ Laboratory Analysis ☐ SDS/MSDS ☑ Generator Knowledge

Physical Description: *(check all that apply)* ☑ Solid ☑ Liquid ☐ Sludge ☐ Debris ☐ Gas/Aerosol ☐ Other

Packaging Configuration: *(check all that apply)* ☐ Labpack ☐ Overpacked

Volume *(include units: 30 liters, 5 gal., etc)*	55 gal.	Gross Weight: *(include units. 75 lbs, 10 kg, etc.)*		Container Type	DM	Total Number of Containers	

US DOT Hazardous Material: ☐ Yes ☑ No

DOT Hazard Class: *primary* *subsidiary*

Proper Shipping Name: Non-RCRA/DOT Regulated Waste (Soil Cuttings)

PHYSICAL PROPERTIES AND COMPOSITION:

Percent Free Liquid: 0-5 % (None=0%, all=100%)

Percent Settled Solids: 95-100 % (None=0%, all=100%)

Viscosity: N/A Centistokes

pH Actual: N/A OR Range: to

Specific Gravity Actual: N/A OR Range: to

For Broker Use Only

I certify the following: The packages used to ship this material meet the requirements of 40 CFR 173 Subpart B (HazMat) This material will be inspected for consistency with the preapproved profile at the time of transportation.

Name | Date

CERTIFICATION

I certify that all hazards, known or suspected, have been disclosed on this profile Further I understand that a surcharge may be imposed for any material which is rejected or requires additional handling due to the material being inconsistent with the profile, improper or damaged containers, or improper shipping documents

1. Any sample submitted is representative as defined in 40 CFR 261-Appendix I or is obtained using an equivalent method.
2. I authorize Perma-Fix to obtain a sample from any waste shipment for purposes of verification.

Printed Name / Signature	Title	Date
VINCE PHILLIPS / Vince Phillips	CSM	12/13/2023

Perma-Fix Use Only

☑ Accepted ☐ Rejected

Comments:

Designated Facility:
- ☐ DSSI
- ☐ M&EC
- ☑ PF Florida
- ☐ PFNW

Perma-Fix has all of the necessary permits and licenses for the waste that has been characterized and identified by this approved profile and accepted by Perma-Fix

Printed Name / Signature	Title	Date
	Operations Manager	12/13/23

RECEIVED DEC 13 2023

NON-HAZARDOUS WASTE MANIFEST

1 Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
GAD093380814	1	800-533-3053	DF191274

5. Generator's Name and Mailing Address
PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GA 31601
Generator's Phone:

Generator's Site Address (if different than mailing address)
PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GA 31601

Printed 12/19/2023

6. Transporter 1 Company Name: PERMA-FIX OF FLORIDA, INC. — 800-365-6066 — U.S. EPA ID Number: FLD980711071

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
PERMA-FIX OF FLORIDA, INC.
1940 N.W. 67TH PLACE
GAINESVILLE, FL 32653
Facility's Phone: 800-365-6066

U.S. EPA ID Number: FLD980711071

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	Non-Regulated Material (Purge Water)	22	DM	1210	G	
	Non-Regulated Material (Soil Cuttings), .	12	DM	660	G	
	3.					
	4.					

13. Special Handling Instructions and Additional Information

9a.1: PF70004	8.34	1.ERG	Doc: DF191274 PO#
9a.2: PF76892	8.34	2.ERG	SO #: 71172376
9a.3:	8.34	3.ERG	SL: PER811 To The Generator: SO Notes:
9a.4:	8.34	4.ERG	LOAD: LF79640

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Travis Peacock | Signature | Month: 1 | Day: 4 | Year: 24

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jeremy Deas | Signature | Month: 1 | Day: 4 | Year: 24

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

169-BLC-O 6 10498 (Rev. 9/09)

DESIGNATED FACILITY TO GENERATOR

PermaFix®
environmental services
A Nuclear Services and Waste Management Company

CERTIFICATE OF MANAGEMENT

PERMA-FIX OF FLORIDA, INC (FLD980711071)
Florida Part B Permit No. : 17680-012-HO

ENVIRONMENTAL WASTE RECEIVED FROM

Generator	PERMA FIX OF SOUTH GEORGIA	Generator ID Number GAD093380814
	1612 James P. Rodgers Circle, Valdosta, GA 31601	
On Manifest	DF191274	Profile PF76892
Shipment ID	IF79640	Received On 1/4/2024

HAS BEEN DISPOSED OF IN FULL, IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

Lason Kirkland
Industrial Operations Mgr.
Generated 3/12/2024 by BW

APPENDIX G

PHOTOLOG

APPENDIX G PHOTO LOG
AS/SVE PILOT TEST
PERMA-FIX OF SOUTH GEORGIA FACILITY, VALDOSTA, GEORGIA

Photo 1. Pilot test equipment. AS and SVE wells connected.
View to north.

Photo 2. Pilot test work area.
View to south.

Photo 3. Pilot test observation well installation.
View to south.

APPENDIX H

FIELD FORMS

Soil Vapor Extraction Pilot Study Data (Phase One)

Site: PFSG Valdosta GA

Date: 12/12/23

'influent (no bleed)
off gas (post carbon)

TIME	TIME INTERV (Min.)	SYSTEM VACUUM (inWC)	SVE-5 WELLHEAD VACUUM (inWC)	Extracted GW Totalizer (gal)	OFF GAS TEMP. ~~°F~~ °F	OFF GAS VAPOR FLOW (scfm)	Off Gas OVA READING (ppm)	MONITORING DATA OW-1 Dist. 12 ft VACUUM (inWC)	OW-1 DTW (ft BTOC)	OW-2 Dist. 24 ft VACUUM (inWC)	OW-2 DTW (ft)	OW-3 Dist. 36 ft VACUUM (inWC)	OW-3 DTW (ft BTOC)	OW-4 Dist. 48 ft VACUUM (inWC)	OW-4 DTW (ft BTOC)	~~B113~~ MW-85 (55.2') Dist. 55 ft VACUUM (inWC)	MW-85 DTW (ft BTOC)
0830	0	Baseline							16.15		16.24		15.81		15.23		19.0
0915	45	26	25	0	53	4.1	257.0 / 7.9	-0.29	16.18	-0.11	16.23	-0.25	15.84	0.0	15.25	0.0	19.03
0930	60	52	50	0	55	6.8	195.2 / 12.6	-0.72	16.19	-0.35	16.27	-0.25	15.86	-0.04	15.29	"	"
0950	80	52	50	0	57	7.8	439.1 / 13.5	-0.71	16.18	-0.33	16.25	-0.32	15.84	-0.05	15.29	"	"
1015	105	78	75	0	58	10.6	102.2 / 19.1	-1.49	16.16	-0.51	16.23	-0.37	15.82	-0.05	15.27	"	"
1030	120	78	75	0	58	11.2	41.0 / 23.4	-1.85	16.19	-0.45	16.23	-0.61	15.81	-0.08	15.28	"	"
1045	135	110	100	0	60	11.5	109.0 / 26.7	-2.94	16.09	-0.50	16.24	-0.63	15.82	-0.10	15.29	"	"
1115	165	110	100	0	61	11.8	25.3 / 33.3	-2.60	16.08	-0.49	16.21	-0.62	15.82	-0.08	15.27	"	"

NOTES:

Step 1 - SVE @ 25 inWC
Step 2 - SVE @ 50 inWC
Step 3 - SVE @ 75 inWC
Step 4 - SVE @ 100 inWC
Plan to run each step for 30+ min (until dynamic equilibrium is observed)

psi = pound per square inch
inWC = inches water column vacuum
min = minutes
gal = gallons
scfm = standard cubic feet per minte

Air Sparge/SVE Pilot Study Data (Phase Two)

Site: PFSG Valdosta GA

Date: 12/12/23

influent (no bleed) / off gas (post carbon)

TIME	TIME INTERV (Min.)	ASI-2 AS WELL PRESSURE (psi)	ASI-2 AS WELL FLOW (scfm)	SYSTEM VACUUM (inWC)	SVE-5 HEAD VACUUM (inWC)	OFF GAS TEMP. (C°)	OFF GAS FLOW (scfm)	OFF GAS OVA (ppm)	Extracted GW Collected (gal)
1140 (start) Baseline		13	5	79	75				
1155	15	11	5	79	75	62	10.0	87 / 45	0
1225	45	10.0	5	79	75	64	10.7	14.2 / 39	0
1250	70	11	7.5	79	75	66	11.2	14.4 / 49.4	0
1315	95	10.5	7.5	79	75	67	10.5	8.0 / 49.1	0
1355	135	11	10	79	75	67	9.3	13.0 / 49.8	0

5 SCFM = Compressor Pres. 14 psi Manifold temp 75°F Manifold pres. 11 psi

MONITORING DATA

MW-8S (55.2')

OW-1 Dist. 12 ft					OW-2 Dist. 24 ft					OW-3 Dist. 36 ft					OW-4 Dist. 48 ft					B113 Dist. 55 ft				
VACUUM (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (y/n)	VACUUM (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (y/n)	VACUUM (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (y/n)	VACUUM (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (y/n)	VACUUM (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (y/n)
Baseline		3.61					3.41					3.11					3.81				19.03	3.22		
Post Phase One		0.36					0.23					0.24					0.30				11	0.38		N
2.6	15.09	0.37	7.4	N	-0.31	15.52	0.15	16.8	N	0.34	15.38	0.30	25.1	N	0	14.78	0.28	79.6	N	0	11	0.38	NM	N
1.32	14.74	1.54	1.8	N	-0.37	15.29	0.03	18.9	N	0.53	15.10	0.20	20.4	N	0	14.62	0.44	68	N	0	11	0.39	NM	N
0.53	13.73	4.26	2.3	Y	-0.32	14.68	0.23	2.0	N	0.35	14.55	0.29	7.9	Y	0	14.22	0.36	15.70	N	0	11	0.38	NM	N
0.70	13.18	5.45	114.6	Y	-0.32	14.38	0.06	3.5	N	1.51	13.98	1.64	168.1	Y	0	14.09	0.27	6.1	N	0	11	0.37	NM	N
9.50	13.14	6.18	96.1	Y	-0.29	13.78	3.07	7.9	Y	4.73	13.01	6.11	17.4	Y	0	13.82	0.45	70.4	N	0	11	0.39	NM	N

NOTES: Targeting AS 5-10 scfm @ ~ 5-10 psi (est. breakout pressure ~ 9-10 psi) & SVE @ 75-100 inWC)
Step 1 - ASI-2 5 scfm
Step 2 - ASI-2 7.5 scfm
Step 3 - ASI-2 10 scfm

psi = pound per square inch
inWC = inches water column vacuum
min = minutes
gal = gallons

• Breakout pressure = 13 psi

Air Sparge/SVE Pilot Study Data (Phase Three)

Site: PFSG Valdosta GA

Date: 12/12/23

influent (no bleed) / off gas (post carbon)

TIME	TIME INTERV (Min.)	ASI-2 AS WELL PRESSURE (psi)	ASI-2 AS WELL FLOW (scfm)	SYSTEM VACUUM (inWC)	SVE-5 HEAD VACUUM (inWC)	OFF GAS TEMP. (C°)	OFF GAS FLOW (scfm)	OFF GAS OVA (ppm)	Extracted GW Collected (gal)
Baseline									
1455	20	10.5	7.5	79	75	67	8.6	54 / 18	0
1515	40	10.5	7.5	79	75	65	9.2	6.7 / 51	0
1620	105	10.5	7.5	79	75	64	8.85	13.2 / 75	0
1655	140	10.5	7.5	79	75	63	8.81	14.1 / 81	0

MONITORING DATA

OW-1 Dist. 12 ft					OW-2 Dist. 24 ft					OW-3 Dist. 36 ft NM					OW-4 Dist. 48 ft					B113 Dist. 55 ft MW-85 NM				
VACUUM (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (y/n)	VACUUM (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (y/n)	VACUUM (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (y/n)	VACUUM (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (y/n)	VACUUM (inWC)	DTW (ft BTOC)	DO (mg/L)	OVA (ppm)	Bubbling (y/n)
10.89	11.85	6.28	79.5	Y	0.35	13.73	4.48	397	N						0	13.97	0.16	27	N					
22.59	11.70	7.09	118.2	Y	0.53	13.94	4.72	404	N						0	14.10	0.29	58.1	N					
30.57	11.65	6.70	161	Y	0.87	13.97	4.58	642.9	N						0	14.12	0.15	51.2	N					
28.74	11.60	6.72	182	Y	1.10	13.98	4.86	673.2	N						0.01	14.14	0.17	68.2	N					

NOTES: Targeting AS 5 scfm @ ~ 5-10 psi (est. breakout pressure ~ 9-10 psi) & SVE @ 75-100 inWC)
Collect Lab Air Sample 1 for TO-15 Analysis (Initial part of Phase)
Collect Lab Air Sample 2 for TO-15 Analysis (End of Phase)
Plan to run AS and SVE at optimized and constant rate

psi = pound per square inch
inWC = inches water column vacuum
min = minutes
gal = gallons

Notes
- OW-3 NM during Phase 3 due to surfacing during Phase 2.
- DTW when bubbling was observed is approximate.
- MW-8S NM due to no influence observed during Phase 1 or Phase 2.

APPENDIX I

PILOT TEST EQUIPMENT SPECIFICATIONS

REMEDIATION EQUIPMENT SERVICES, LLC

SYSTEM ID: RES-009

Air Sparge (AS) / Multi-Phase/Soil Vapor Extraction (MPE/SVE) System

AS (70 cfm/29 psi) / MPE/SVE (203 cfm/25" HG vac)

230 Volt, 3 Phase, 100 Amp

- 8' x 12' Tandem axle enclosed trailer
- UL listed control panel with PLC logic and cellular telemetry, hour meters, HOA switches, fault alarms and emergency stop

AIR SPARGING:

- **Rietschle DLR-100** 7.5 hp Rotary Claw compressor
- AKG heat exchanger
- Flow control and measurement with custom manifold configurations

SVE/MPE:

- **Rietschle VLR-301** 7.5 hp Rotary Claw vacuum blower
- American Industrial heat exchanger
- 140-gallon moisture separator with Moyno progressive cavity pump, auto pumpout and totalizer/flowmeter
- Flow control and measurement with custom manifold configurations

This system is available for long term, short term and episodic soil and groundwater remediation and pilot tests. Generator and carbon vapor emissions treatment available separately.

For more equipment rental information, please contact:

Remediation Equipment Services, LLC
290 Dempsey Road
Palm Harbor, Florida 34683
Phone (727) 458-6808 Fax (727) 683-9166 Email: ddennis@resflorida.com

Visit: www.resflorida.com for equipment information and resources

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C-DLR

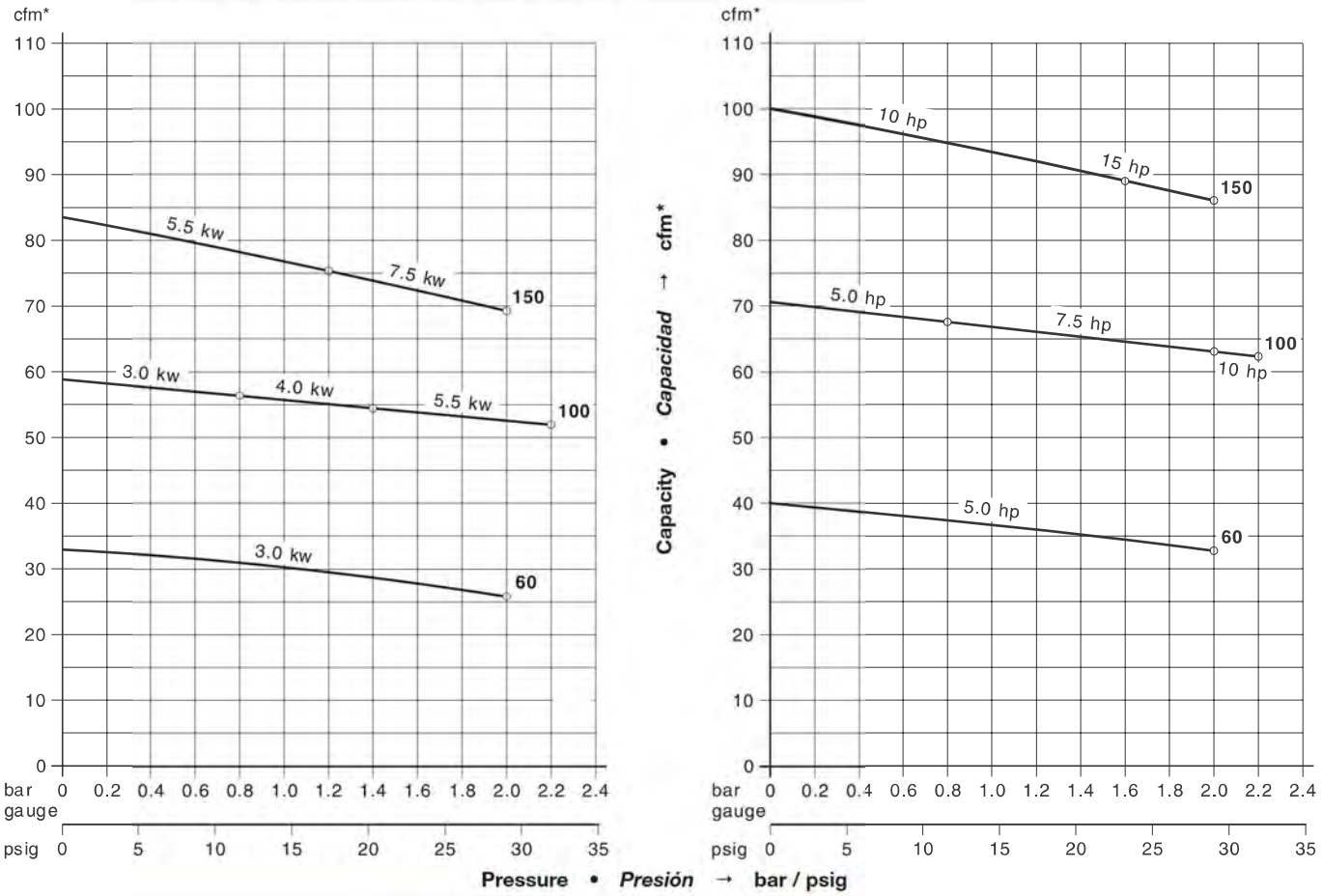
zephyr

C-DLR 60 | C-DLR 100 | C-DLR 150

High efficiency, dry and contactless compressor with NEMA Premium motor
Capacity ranging from 33 to 100 cfm.
Pressure for continuous operation up to 29.0 psig max.
Low maintenance. Air cooled.
Versatile design can be used in many applications.

Alta eficiencia, seco y sin contacto compresor con motor NEMA Premium
Capacidad de aspiración de 33 a 100 cfm.
La presión para funcionamiento continuo asciende a un máximo de 29.0 psig.
Bajo nivel de mantenimiento. Aire refrigerado.
Diseño versátil con numerosas posibilidades de uso.

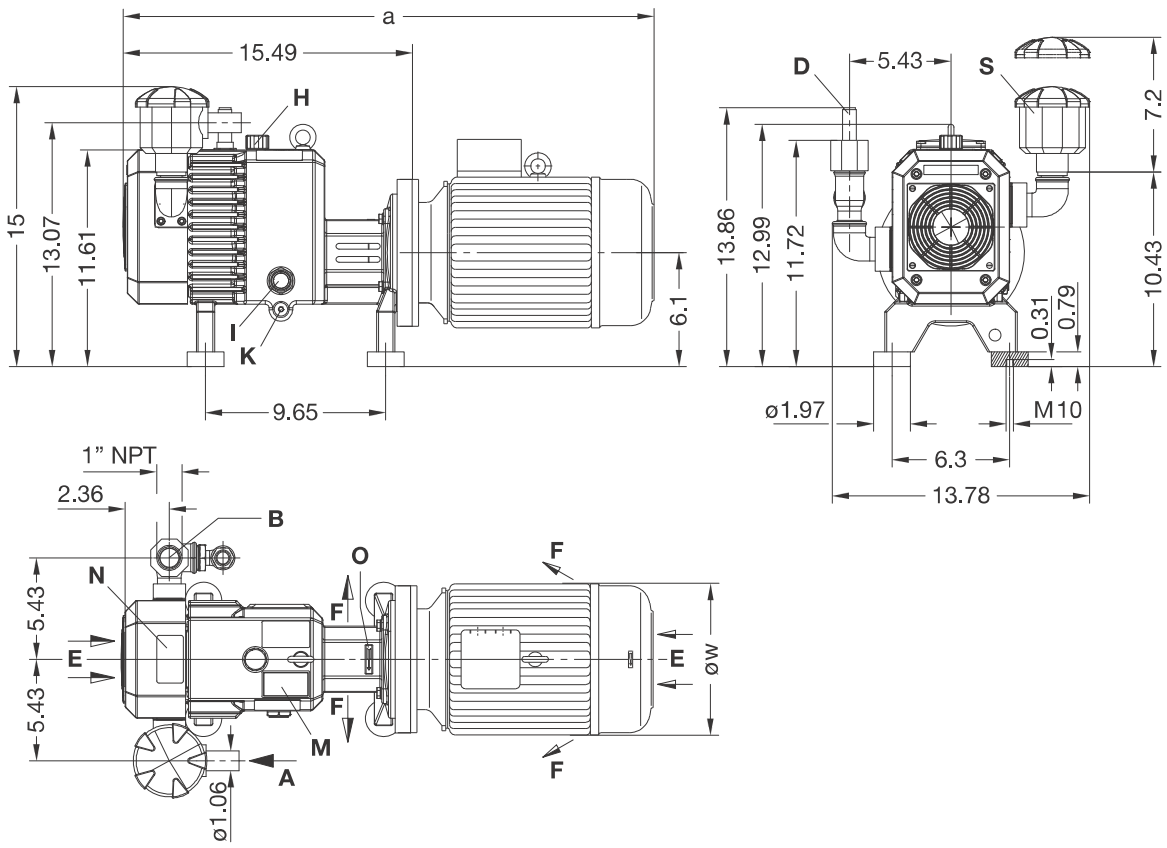
Performance curves • ***Curvas de desempeño*** **50 Hz** **60 Hz**



C-DLR			60		100		150	
Capacity *Capacidad*	cfm	50 Hz	33		58.9		83.6	
		60 Hz	40.0		70.6		100	
Pressure *Presión*	psig	50 Hz	29.0	11.6	23.1	31.9	17.4	29.0
		60 Hz	29.0	11.6	29.0	31.9	23.2	29.0
Rated voltage *Tensión asignada*	3~	50 Hz	230 / 400 V± 10 %			400 / 690 V ± 10 %		
		60 Hz	208 - 230 / 460 V ± 10 %					
Motor rating *Potencia requerida*	kw	50 Hz	3.0	3.0	4.0	5.5	5.5	7.5
	hp	60 Hz	5.0	5.0	7.5	10	10	15
Full load amperage *Amperaje a carga plena*	A	50 Hz	10,0 / 5,77	10,0 / 5,77	13,0 / 7,50	10,1 / 5,86	10,1 / 5,86	13,9 / 8,06
		60 Hz	13.3-12.1 / 6.03	12-11 / 5.5	19-18 / 9	25.7-23.2 / 11.6	25.7-23.2 / 11.6	37-34 / 17
Speed *Velocidad*	rpm	50 Hz	2900					
		60 Hz	3450					
Average noise level *Nivel promedio de ruido*	dB(A) EN ISO 3744	50 Hz	78	77	79		80	
		60 Hz	79	78	81		81	
Weight *Peso*	lbs	50 Hz	157	243	252	300	353	353
		60 Hz	161	261	286	328	385	464
Oil capacity (gear) *Capacidad de aceite (engranaje)*	qt		0.4		0.55		0.6	

Dimensions • *Dimensiones* [inches]

C-DLR 60



A	Suction • *Succión*
B	Pressure connection • *Conexión de presión*
D	Safety valve • *Válvula de seguridad*
E	Cooling air entry • *Entrada de aire refrigerante*
F	Cooling air exit • *Salida de aire refrigerante*
H	Oil fill port • *Punto de alimentación del aceite*

I	Oil sight glass • *Mirilla de aceite*
K	Oil drain port • *Punto de drenaje del aceite*
M	Oil type plate • *Placa de aceite*
N	Data plate • *Placa de la unidad*
O	Direction of rotation arrow • *Dirección de rotación*
S	Suction filter • *Filtro de aspiración*

C-DLR		**60**
a	50 Hz	27.91
	60 Hz	28.60
Øw	50 Hz	7.87
	60 Hz	8.74

Accessories • *Accesorios*

C-DLR			**60**	**100**		**150**	
Check valve • *Válvula retención*	**ZRZ**		#	40		40	
Pressure regulating valve • *Válvula reguladora de presión*	**ZDR**		#	40		40	
Pulsation dampener • *Amortiguador de pulsación*	**ZPD**		#	#		#	
Motor starter • *Arranque del motor*	**ZMS**	50 Hz	160 / 63	#	160 / 63	#	160 / 100
		60 Hz	#	#	#	#	#

cfm* Capacity refers to free air at 1 standard atmosphere and 20 °C (68 °F). • *La capacidad se refiere al aire libre a 1 atmosfera estandár de presión y a 20 °C (68 °F) de temperatura.*

Curves, table contents (tolerance ±10 %) refer to compressor at normal operating temperature. • *Las curvas, las tablas (tolerancia ±10 %) se refieren al compresor a una temperatura normal de operación.*

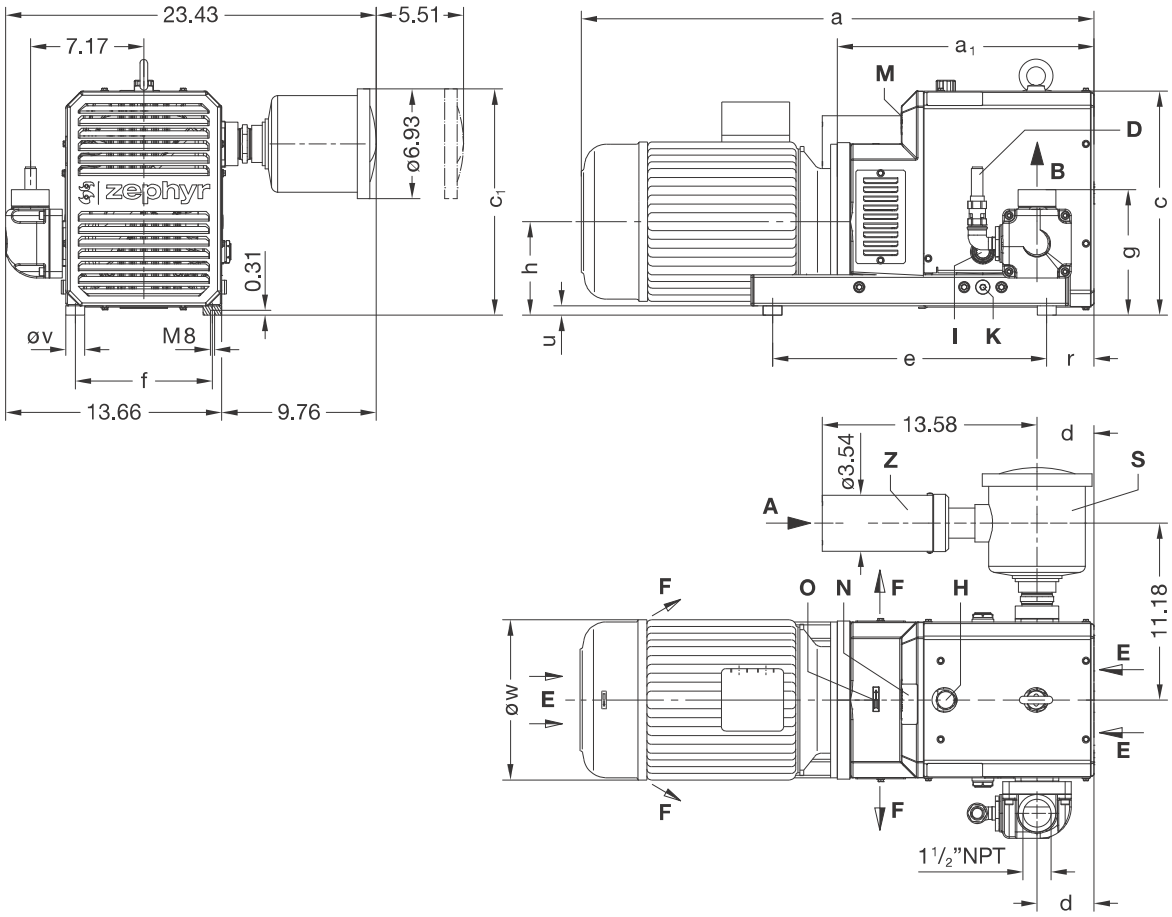
The motor dimensions as well as the full load amperage may vary due to different motor manufacturers. • *Las dimensiones de motor pueden variar para distintos fabricantes de motores.*

on request • # *on pedido*

Technical information is subject to change without notice! • *La información técnica está sujeta a cambios sin previo aviso!*

Dimensions • *Dimensiones* [inches]

C-DLR 100 / 150



A	Suction • *Succión*
B	Pressure connection • *Conexión de presión*
D	Safety valve • *Válvula de seguridad*
E	Cooling air entry • *Entrada de aire refrigerante*
F	Cooling air exit • *Salida de aire refrigerante*
H	Oil fill port • *Punto de alimentación del aceite*
I	Oil sight glass • *Mirilla de aceite*

K	Oil drain port • *Punto de drenaje del aceite*
M	Oil type plate • *Placa de aceite*
N	Data plate • *Placa de la unidad*
O	Direction of rotation arrow • *Dirección de rotación*
S	Suction filter • *Filtro de aspiración*
Z	Inlet silencer • *Silenciador de entrada*

C-DLR		100			150	
a	50 Hz	27.99	30.67	34.33	36.42	37.60
	60 Hz	33.07	33.15	34.02	37.99	41.42
a_1		17.64			21.61	
c		14.17			14.76	
c_1		14.29			15.08	
d		3.62			2.28	
e		17.32			15.04	
f		8.66			6.30	

C-DLR		100			150	
g		8.07			9.41	
h		5.91			6.50	
r		2.99			4.57	
u		0.59			1.18	
øv		1.18			1.97	
øw	50 Hz	7.87	8.66	10.63	10.63	10.63
	60 Hz	8.5	10.28	10.67	10.67	12.96

Gardner Denver, Inc.
1800 Gardner Expressway
Quincy, IL 62305 / USA
Phone (217) 222-5400
Fax (217) 221-8780

elmorietschle@gardnerdenver.com
www.gd-elmorietschle.com

Edition: 1.0 · 21.11.2018 D 881-16-NEMA-US

C-VLR

zephyr

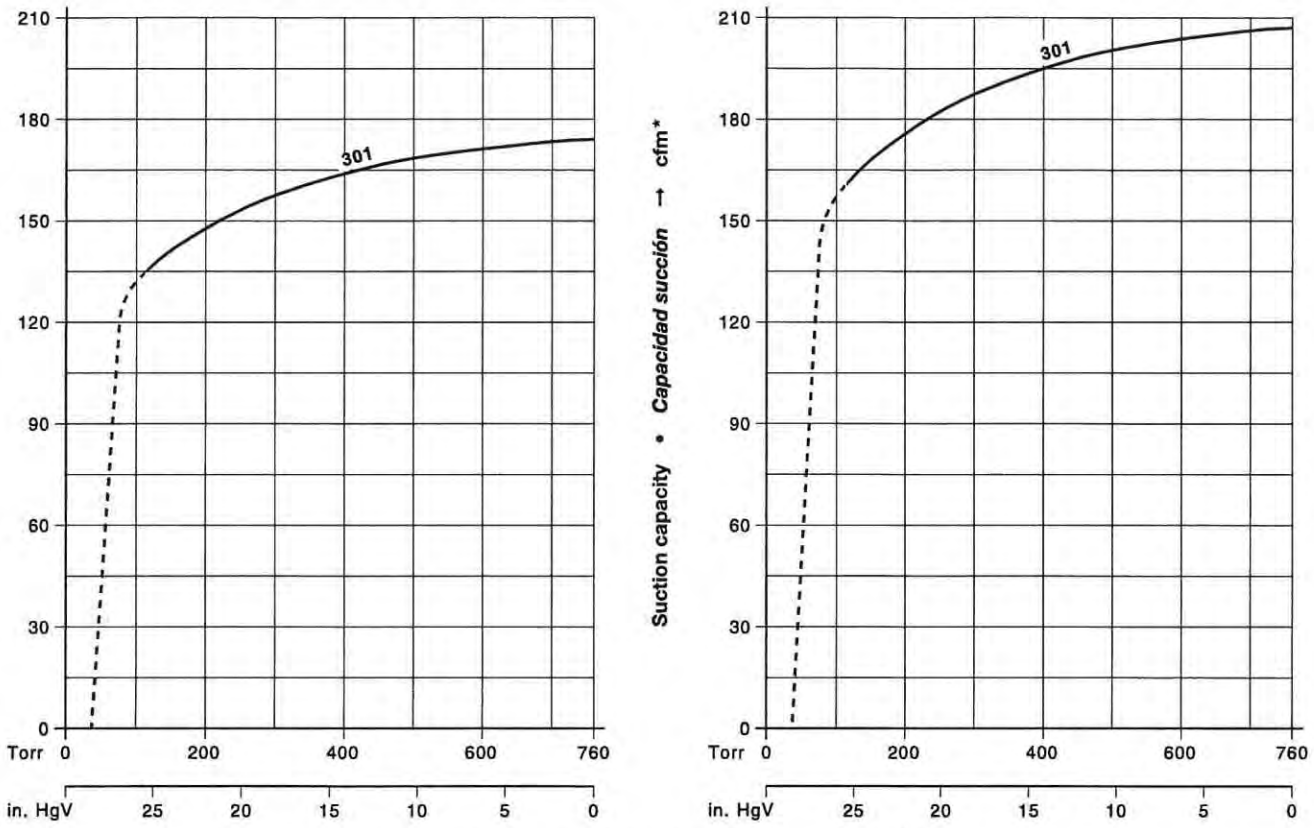
Elmo Rietschle

C-VLR 301

High efficiency, oil-free, contactless claw vacuum pump
Capacity ranging to 203 cfm.
Ultimate vacuum for continuous operation 25.5 in. HgV
Low maintenance, integrated forced air cooling eliminates the need for water cooling.
Versatile design can be used in many applications.

Bomba de vacío de mordaza, altamente eficiente, libre de aceite y sin contacto
Capacidad de aspiración de 203 cfm.
Vacío absoluto para funcionamiento continuo 25.5 in. HgV
Bajo nivel de mantenimiento, enfriamiento integrado por aire forzado y sin medios adicionales. Diseño versátil con numerosas posibilidades de uso.

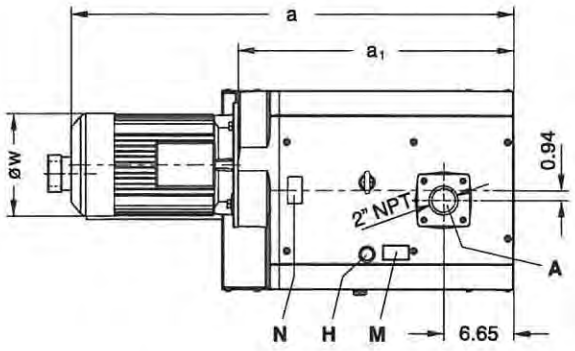
Selection diagram • *Diagrama de selección* **50 Hz** **60 Hz**

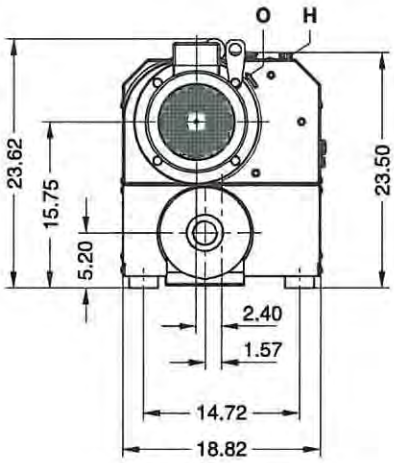


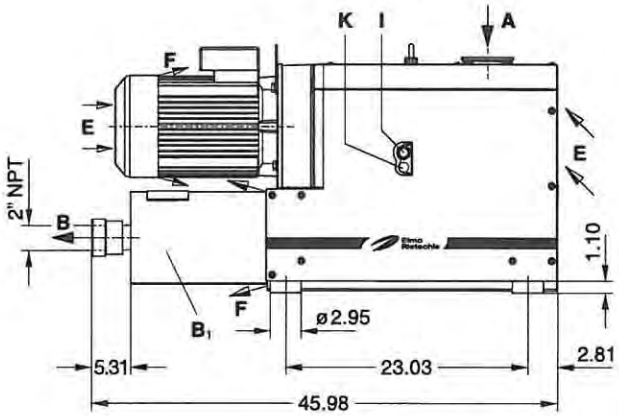
C-VLR			301
Suction capacity *Capacidad succión*	cfm	50 Hz 60 Hz	171 203
Ultimate vacuum continuous operation *Vacío final permanente*			113 Torr - 25.5 in. HgV
Rated voltage *Tensión asignada*	3~	50 Hz 60 Hz	400 / 690 V ±10% 208 - 230 / 460 V ±10%
Motor rating *Potencia requerida*	kw hp	50 Hz 60 Hz	5.5 7.5
Full load amperage *Amperaje a carga plena*	A	50 Hz 60 Hz	10.1 / 5.8 19 - 18 / 9.0
Speed *Velocidad*	rpm	50 Hz 60 Hz	2900 3500
Average noise level *Nivel promedio de ruido*	dB(A) EN ISO 3744	50 Hz 60 Hz	74 77
Weight *Peso*	lbs	50 Hz 60 Hz	595 618
Oil capacity (gear) *Capacidad de aceite (engranaje)*	qt		1.5

Dimensions • *Dimensiones* [inches]

C-VLR		301
a	50 Hz	42.15
	60 Hz	43.05
a_1	50 Hz	26.20
	60 Hz	27.53
øw	50 Hz	9.69
	60 Hz	10.62







A	Vacuum connection • *Conexión de vacío*	**I**	Oil sight glass • *Mirilla de aceite*
B	Exhaust • *Escape*	**K**	Oil drain port • *Punto de drenaje del aceite*
B_1	Exhaust silencer • *Silenciador de escape*	**M**	Oil type plate • *Placa de aceite*
E	Cooling air entry • *Entrada de aire refrigerante*	**N**	Data plate • *Placa de la unidad*
F	Cooling air exit • *Salida de aire refrigerante*	**O**	Direction of rotation arrow • *Dirección de rotación*
H	Oil fill port • *Punto de alimentación del aceite*		

Accessories • *Accesorios*

C-VLR		301
Vacuum tight suction filter *Filtro de succión estanco al vacío*	**ZVF**	50 (03)
Motor starter *Reóstato de arranque del motor*	**ZMS**	#

cfm* Relates to pump inlet conditions • *se refiere a las condiciones de entrada de la bomba*

Curves, table contents (tolerance ±10%) refer to compressor at normal operating temperature. • *Las curvas, las tablas (tolerancia ±10%) se refieren a la bomba de vacío a una temperatura normal de operación.*

The motor dimensions as well as the full load amperage may vary due to different motor manufacturers. • *Las dimensiones de motor pueden variar para distintos fabricantes de motores.*

on request • *# on pedido*

Technical information is subject to change without notice! • *La información técnica está sujeta a cambios sin previo aviso!*

Gardner Denver

Gardner Denver, Inc.
1800 Gardner Expressway
Quincy, IL 62305 / USA
Phone (217) 222-5400
Fax (217) 221-8780

elmorietschle@gardnerdenver.com
www.elmorietschle.com

Edition: 4.12.2012 · D 885-US

APPENDIX J

DO CALIBRATION LOG

FIELD ENVIRONMENTAL INSTRUMENTS, INC.

www.fieldenvironmental.com

301 Brushton Ave
Suite A
Pittsburgh, PA 152
Toll Free (800) 39
Local (412) 436-2
Fax (412) 436-26

Hanna 98198 ODO Meter Equipment Check Certificate

	Reading
DO mg/L	7.22
DO % Saturation	100
Temperature	°C 20.6

Model	Hanna 98198
S/N	0736012101
Order #	536623

Calibrated By Justin Leonard

Date of Calibration 12/8/2023

All calibrations performed by Field Environmental Instruments conform to manufacturer's specifications.
Any problems must be reported to Field Environmental within 24 hours of receiveing equipment.

APPENDIX K

ANALYTICAL REPORTS OF ANALYSES

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Trihydro Corp

PERMA-023-0004, Task 0003, Valdosta, GA

PERMA-023-0004 / WO#20230991

SGS Job Number: JD78929

Sampling Date: 12/12/23

Report to:

Trihydro Corporation
3740 St. Johns Bluff Road Suite 14
Jacksonville, FL 32224
bkelly@trihydro.com

ATTN: William Kelly

Total number of pages in report: 93

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

David Chastain
General Manager

Client Service contact: Victoria Pushkova 732-329-0200
Certifications: NJ(12129),NY(10983),CA,CO,CT,FL,HI,IL,IN,KY,LA (120428),MA,MD,ME,MN,NC,NH,NV, AK (UST-103),AZ (AZ0786),PA(68-00408),RI,SC,TX (T104704234),UT,VA,WA,WV

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Sections: 1 2 3 4 5

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SGS North America Inc.

Sample Summary

Trihydro Corp

Job No: JD78929

PERMA-023-0004, Task 0003, Valdosta, GA
Project No: PERMA-023-0004 / WO#20230991

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JD78929-1	12/12/23	16:53	CE	12/15/23	AIR	Air	AS-PHASE3-MID
JD78929-2	12/12/23	17:15	CE	12/15/23	AIR	Air	AS-PHASE3-END
JD78929-3	12/12/23	15:35	CE	12/15/23	AIR	Air	AS-PHASE3-BAG

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

Summary of Hits

Job Number: JD78929
Account: Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA
Collected: 12/12/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD78929-1	AS-PHASE3-MID					
Acetone (2-Propanone)		4130	2500	1800	ppbv	TO-15
Chloroform		1690 J	2500	460	ppbv	TO-15
1,1-Dichloroethane		12600	2500	710	ppbv	TO-15
1,1-Dichloroethylene		70700	2500	740	ppbv	TO-15
cis-1,2-Dichloroethylene		10400	2500	380	ppbv	TO-15
Freon 113		3210	2500	390	ppbv	TO-15
Heptane		4950	2500	560	ppbv	TO-15
Methylene chloride		344000	2500	700	ppbv	TO-15
Methyl ethyl ketone		1650 J	2500	1400	ppbv	TO-15
1,1,1-Trichloroethane		18700	2500	460	ppbv	TO-15
Toluene		3290	2500	710	ppbv	TO-15
Trichloroethylene		71100	500	240	ppbv	TO-15
Vinyl chloride		36900	2500	860	ppbv	TO-15
Acetone (2-Propanone)		9810	5900	4300	ug/m3	TO-15
Chloroform		8250 J	12000	2200	ug/m3	TO-15
1,1-Dichloroethane		51000	10000	2900	ug/m3	TO-15
1,1-Dichloroethylene		280000	9900	2900	ug/m3	TO-15
cis-1,2-Dichloroethylene		41200	9900	1500	ug/m3	TO-15
Freon 113		24600	19000	3000	ug/m3	TO-15
Heptane		20300	10000	2300	ug/m3	TO-15
Methylene chloride		1200000	8700	2400	ug/m3	TO-15
Methyl ethyl ketone		4870 J	7400	4100	ug/m3	TO-15
1,1,1-Trichloroethane		102000	14000	2500	ug/m3	TO-15
Toluene		12400	9400	2700	ug/m3	TO-15
Trichloroethylene		382000	2700	1300	ug/m3	TO-15
Vinyl chloride		94300	6400	2200	ug/m3	TO-15
JD78929-2	AS-PHASE3-END					
Acetone (2-Propanone)		6540	3700	2700	ppbv	TO-15
Benzene		5410	3700	2700	ppbv	TO-15
Chloroform		4070	3700	680	ppbv	TO-15
Cyclohexane		2260 J	3700	830	ppbv	TO-15
1,1-Dichloroethane		23300	3700	1000	ppbv	TO-15
1,1-Dichloroethylene		110000	3700	1100	ppbv	TO-15
cis-1,2-Dichloroethylene		24400	3700	550	ppbv	TO-15
Freon 113		4570	3700	570	ppbv	TO-15
Heptane		29600	3700	830	ppbv	TO-15
Hexane		1770 J	3700	960	ppbv	TO-15
Methylene chloride		599000	3700	1000	ppbv	TO-15
Methyl ethyl ketone		4980	3700	2000	ppbv	TO-15
1,1,1-Trichloroethane		44800	3700	680	ppbv	TO-15
Tetrachloroethylene		8830	740	260	ppbv	TO-15

Summary of Hits

Job Number: JD78929
Account: Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA
Collected: 12/12/23

Lab Sample ID / Client Sample ID / Analyte	Result/ Qual	RL	MDL	Units	Method
Toluene	70000	3700	1000	ppbv	TO-15
Trichloroethylene	451000	740	350	ppbv	TO-15
Vinyl chloride	47400	3700	1300	ppbv	TO-15
m,p-Xylene	2900 J	3700	2600	ppbv	TO-15
Xylenes (total)	2900 J	3700	1400	ppbv	TO-15
Acetone (2-Propanone)	15500	8800	6400	ug/m3	TO-15
Benzene	17300	12000	8600	ug/m3	TO-15
Chloroform	19900	18000	3300	ug/m3	TO-15
Cyclohexane	7780 J	13000	2900	ug/m3	TO-15
1,1-Dichloroethane	94300	15000	4000	ug/m3	TO-15
1,1-Dichloroethylene	436000	15000	4400	ug/m3	TO-15
cis-1,2-Dichloroethylene	96700	15000	2200	ug/m3	TO-15
Freon 113	35000	28000	4400	ug/m3	TO-15
Heptane	121000	15000	3400	ug/m3	TO-15
Hexane	6240 J	13000	3400	ug/m3	TO-15
Methylene chloride	2080000	13000	3500	ug/m3	TO-15
Methyl ethyl ketone	14700	11000	5900	ug/m3	TO-15
1,1,1-Trichloroethane	244000	20000	3700	ug/m3	TO-15
Tetrachloroethylene	59900	5000	1800	ug/m3	TO-15
Toluene	264000	14000	3800	ug/m3	TO-15
Trichloroethylene	2420000	4000	1900	ug/m3	TO-15
Vinyl chloride	121000	9500	3300	ug/m3	TO-15
m,p-Xylene	12600 J	16000	11000	ug/m3	TO-15
Xylenes (total)	12600 J	16000	6100	ug/m3	TO-15
JD78929-3 AS-PHASE3-BAG					
Acetone (2-Propanone) [a]	99.7	16	12	ppbv	TO-15
Benzene [a]	285	16	12	ppbv	TO-15
Chloroform [a]	30.6	16	3.0	ppbv	TO-15
Carbon tetrachloride [a]	7.9 J	16	3.2	ppbv	TO-15
Cyclohexane [a]	74.2	16	3.6	ppbv	TO-15
1,1-Dichloroethane [a]	40.7	16	4.6	ppbv	TO-15
1,1-Dichloroethylene [a]	127	16	4.7	ppbv	TO-15
cis-1,2-Dichloroethylene [a]	74.9	16	2.4	ppbv	TO-15
Ethanol [a]	40.6	40	32	ppbv	TO-15
Ethylbenzene [a]	151	16	4.9	ppbv	TO-15
4-Ethyltoluene [a]	10.9 J	16	7.6	ppbv	TO-15
Heptane [a]	199	16	3.6	ppbv	TO-15
Hexane [a]	150	16	4.2	ppbv	TO-15
Isopropyl Alcohol [a]	18.9	16	11	ppbv	TO-15
Methylene chloride [a]	1080	16	4.5	ppbv	TO-15
Methyl ethyl ketone [a]	87.7	16	8.8	ppbv	TO-15
Methyl Isobutyl Ketone [a]	8.4 J	16	5.8	ppbv	TO-15
1,1,1-Trichloroethane [a]	79.6	16	3.0	ppbv	TO-15

Summary of Hits

Job Number: JD78929
Account: Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA
Collected: 12/12/23

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
1,2,4-Trimethylbenzene [a]	20.9	16	7.0	ppbv	TO-15
1,3,5-Trimethylbenzene [a]	9.6 J	16	6.4	ppbv	TO-15
2,2,4-Trimethylpentane [a]	420	16	3.2	ppbv	TO-15
Tertiary Butyl Alcohol [a]	87.5	16	7.4	ppbv	TO-15
Tetrachloroethylene [a]	172	3.2	1.1	ppbv	TO-15
Tetrahydrofuran [a]	106	16	7.2	ppbv	TO-15
Toluene [a]	695	16	4.6	ppbv	TO-15
Trichloroethylene [a]	2480	3.2	1.5	ppbv	TO-15
Vinyl chloride [a]	27.4	16	5.5	ppbv	TO-15
m,p-Xylene [a]	237	16	11	ppbv	TO-15
o-Xylene [a]	38.1	16	6.2	ppbv	TO-15
Xylenes (total) [a]	275	16	6.2	ppbv	TO-15
Acetone (2-Propanone) [a]	237	38	29	ug/m3	TO-15
Benzene [a]	910	51	38	ug/m3	TO-15
Chloroform [a]	149	78	15	ug/m3	TO-15
Carbon tetrachloride [a]	50 J	100	20	ug/m3	TO-15
Cyclohexane [a]	255	55	12	ug/m3	TO-15
1,1-Dichloroethane [a]	165	65	19	ug/m3	TO-15
1,1-Dichloroethylene [a]	504	63	19	ug/m3	TO-15
cis-1,2-Dichloroethylene [a]	297	63	9.5	ug/m3	TO-15
Ethanol [a]	76.5	75	60	ug/m3	TO-15
Ethylbenzene [a]	656	69	21	ug/m3	TO-15
4-Ethyltoluene [a]	53.6 J	79	37	ug/m3	TO-15
Heptane [a]	816	66	15	ug/m3	TO-15
Hexane [a]	529	56	15	ug/m3	TO-15
Isopropyl Alcohol [a]	46.5	39	27	ug/m3	TO-15
Methylene chloride [a]	3750	56	16	ug/m3	TO-15
Methyl ethyl ketone [a]	259	47	26	ug/m3	TO-15
Methyl Isobutyl Ketone [a]	34 J	66	24	ug/m3	TO-15
1,1,1-Trichloroethane [a]	434	87	16	ug/m3	TO-15
1,2,4-Trimethylbenzene [a]	103	79	34	ug/m3	TO-15
1,3,5-Trimethylbenzene [a]	47 J	79	31	ug/m3	TO-15
2,2,4-Trimethylpentane [a]	1960	75	15	ug/m3	TO-15
Tertiary Butyl Alcohol [a]	265	49	22	ug/m3	TO-15
Tetrachloroethylene [a]	1170	22	7.5	ug/m3	TO-15
Tetrahydrofuran [a]	313	47	21	ug/m3	TO-15
Toluene [a]	2620	60	17	ug/m3	TO-15
Trichloroethylene [a]	13300	17	8.1	ug/m3	TO-15
Vinyl chloride [a]	70.0	41	14	ug/m3	TO-15
m,p-Xylene [a]	1030	69	48	ug/m3	TO-15
o-Xylene [a]	165	69	27	ug/m3	TO-15
Xylenes (total) [a]	1190	69	27	ug/m3	TO-15

(a) Sample analyzed by modified Method TO-15 - Tedlar bag sample containers substituted for passivated stainless steel canisters.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	AS-PHASE3-MID		
Lab Sample ID:	JD78929-1	Date Sampled:	12/12/23
Matrix:	AIR - Air Summa ID: A1923,A841	Date Received:	12/15/23
Method:	TO-15	Percent Solids:	n/a
Project:	PERMA-023-0004, Task 0003, Valdosta, GA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3W83925.D	1250	12/28/23 00:27	TCH	n/a	n/a	V3W3305
Run #2							

	Initial Volume
Run #1	40.0 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	4130	2500	1800	ppbv		9810	5900	4300	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	2500	1100	ppbv		ND	5500	2400	ug/m3
71-43-2	78.11	Benzene	ND	2500	1800	ppbv		ND	8000	5800	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	2500	380	ppbv		ND	17000	2500	ug/m3
75-25-2	252.8	Bromoform	ND	2500	890	ppbv		ND	26000	9200	ug/m3
74-83-9	94.94	Bromomethane	ND	2500	860	ppbv		ND	9700	3300	ug/m3
593-60-2	106.9	Bromoethene	ND	2500	760	ppbv		ND	11000	3300	ug/m3
100-44-7	126	Benzyl Chloride	ND	2500	1600	ppbv		ND	13000	8200	ug/m3
75-15-0	76.14	Carbon disulfide	ND	2500	560	ppbv		ND	7800	1700	ug/m3
108-90-7	112.6	Chlorobenzene	ND	2500	930	ppbv		ND	12000	4300	ug/m3
75-00-3	64.52	Chloroethane	ND	2500	850	ppbv		ND	6600	2200	ug/m3
67-66-3	119.4	Chloroform	1690	2500	460	ppbv	J	8250	12000	2200	ug/m3
74-87-3	50.49	Chloromethane	ND	2500	1100	ppbv		ND	5200	2300	ug/m3
107-05-1	76.53	3-Chloropropene	ND	2500	1000	ppbv		ND	7800	3100	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	2500	900	ppbv		ND	13000	4700	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	2500	500	ppbv		ND	16000	3100	ug/m3
110-82-7	84.16	Cyclohexane	ND	2500	560	ppbv		ND	8600	1900	ug/m3
75-34-3	98.96	1,1-Dichloroethane	12600	2500	710	ppbv		51000	10000	2900	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	70700	2500	740	ppbv		280000	9900	2900	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	2500	380	ppbv		ND	19000	2900	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	2500	880	ppbv		ND	10000	3600	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	2500	780	ppbv		ND	12000	3600	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	2500	1500	ppbv		ND	9000	5400	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	ND	2500	1300	ppbv		ND	12000	6400	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	2500	650	ppbv		ND	21000	5500	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	ND	2500	350	ppbv		ND	9900	1400	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	10400	2500	380	ppbv		41200	9900	1500	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	2500	780	ppbv		ND	11000	3500	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	2500	500	ppbv		ND	15000	3000	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	2500	860	ppbv		ND	15000	5200	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	2500	990	ppbv		ND	15000	6000	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	2500	1300	ppbv		ND	11000	5900	ug/m3

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AS-PHASE3-MID		
Lab Sample ID:	JD78929-1	Date Sampled:	12/12/23
Matrix:	AIR - Air Summa ID: A1923,A841	Date Received:	12/15/23
Method:	TO-15	Percent Solids:	n/a
Project:	PERMA-023-0004, Task 0003, Valdosta, GA		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	ND	6300	4900	ppbv		ND	12000	9200	ug/m3
100-41-4	106.2	Ethylbenzene	ND	2500	760	ppbv		ND	11000	3300	ug/m3
141-78-6	88	Ethyl Acetate	ND	2500	1300	ppbv		ND	9000	4700	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	2500	1200	ppbv		ND	12000	5900	ug/m3
76-13-1	187.4	Freon 113	3210	2500	390	ppbv		24600	19000	3000	ug/m3
76-14-2	170.9	Freon 114	ND	2500	630	ppbv		ND	17000	4400	ug/m3
142-82-5	100.2	Heptane	4950	2500	560	ppbv		20300	10000	2300	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	2500	780	ppbv		ND	27000	8300	ug/m3
110-54-3	86.18	Hexane	ND	2500	650	ppbv		ND	8800	2300	ug/m3
591-78-6	100	2-Hexanone	ND	2500	1800	ppbv		ND	10000	7400	ug/m3
67-63-0	60.1	Isopropyl Alcohol	ND	2500	1800	ppbv		ND	6100	4400	ug/m3
75-09-2	84.94	Methylene chloride	344000	2500	700	ppbv		1200000	8700	2400	ug/m3
78-93-3	72.11	Methyl ethyl ketone	1650	2500	1400	ppbv	J	4870	7400	4100	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	2500	910	ppbv		ND	10000	3700	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	2500	1000	ppbv		ND	9000	3600	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	2500	880	ppbv		ND	10000	3600	ug/m3
115-07-1	42	Propylene	ND	6300	1800	ppbv		ND	11000	3100	ug/m3
100-42-5	104.1	Styrene	ND	2500	660	ppbv		ND	11000	2800	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	18700	2500	460	ppbv		102000	14000	2500	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	2500	600	ppbv		ND	17000	4100	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	2500	480	ppbv		ND	14000	2600	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	2500	1500	ppbv		ND	19000	11000	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	2500	1100	ppbv		ND	12000	5400	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	2500	1000	ppbv		ND	12000	4900	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	2500	500	ppbv		ND	12000	2300	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	ND	2500	1200	ppbv		ND	7600	3600	ug/m3
127-18-4	165.8	Tetrachloroethylene	ND	500	180	ppbv		ND	3400	1200	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	2500	1100	ppbv		ND	7400	3200	ug/m3
108-88-3	92.14	Toluene	3290	2500	710	ppbv		12400	9400	2700	ug/m3
79-01-6	131.4	Trichloroethylene	71100	500	240	ppbv		382000	2700	1300	ug/m3
75-69-4	137.4	Trichlorofluoromethane	ND	2500	1900	ppbv		ND	14000	11000	ug/m3
75-01-4	62.5	Vinyl chloride	36900	2500	860	ppbv		94300	6400	2200	ug/m3
108-05-4	86	Vinyl Acetate	ND	2500	1400	ppbv		ND	8800	4900	ug/m3
	106.2	m,p-Xylene	ND	2500	1700	ppbv		ND	11000	7400	ug/m3
95-47-6	106.2	o-Xylene	ND	2500	960	ppbv		ND	11000	4200	ug/m3
1330-20-7	106.2	Xylenes (total)	ND	2500	960	ppbv		ND	11000	4200	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	69%		65-128%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AS-PHASE3-END		
Lab Sample ID:	JD78929-2	Date Sampled:	12/12/23
Matrix:	AIR - Air Summa ID: A2210,A1357	Date Received:	12/15/23
Method:	TO-15	Percent Solids:	n/a
Project:	PERMA-023-0004, Task 0003, Valdosta, GA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3W83942.D	2300	12/28/23 19:06	TCH	n/a	n/a	V3W3306
Run #2							

	Initial Volume
Run #1	50.0 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	6540	3700	2700	ppbv		15500	8800	6400	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	3700	1500	ppbv		ND	8200	3300	ug/m3
71-43-2	78.11	Benzene	5410	3700	2700	ppbv		17300	12000	8600	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	3700	550	ppbv		ND	25000	3700	ug/m3
75-25-2	252.8	Bromoform	ND	3700	1300	ppbv		ND	38000	13000	ug/m3
74-83-9	94.94	Bromomethane	ND	3700	1300	ppbv		ND	14000	5000	ug/m3
593-60-2	106.9	Bromoethene	ND	3700	1100	ppbv		ND	16000	4800	ug/m3
100-44-7	126	Benzyl Chloride	ND	3700	2300	ppbv		ND	19000	12000	ug/m3
75-15-0	76.14	Carbon disulfide	ND	3700	830	ppbv		ND	12000	2600	ug/m3
108-90-7	112.6	Chlorobenzene	ND	3700	1400	ppbv		ND	17000	6400	ug/m3
75-00-3	64.52	Chloroethane	ND	3700	1300	ppbv		ND	9800	3400	ug/m3
67-66-3	119.4	Chloroform	4070	3700	680	ppbv		19900	18000	3300	ug/m3
74-87-3	50.49	Chloromethane	ND	3700	1700	ppbv		ND	7600	3500	ug/m3
107-05-1	76.53	3-Chloropropene	ND	3700	1500	ppbv		ND	12000	4700	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	3700	1300	ppbv		ND	19000	6700	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	3700	740	ppbv		ND	23000	4700	ug/m3
110-82-7	84.16	Cyclohexane	2260	3700	830	ppbv	J	7780	13000	2900	ug/m3
75-34-3	98.96	1,1-Dichloroethane	23300	3700	1000	ppbv		94300	15000	4000	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	110000	3700	1100	ppbv		436000	15000	4400	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	3700	550	ppbv		ND	28000	4200	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	3700	1300	ppbv		ND	15000	5300	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	3700	1100	ppbv		ND	17000	5100	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	3700	2200	ppbv		ND	13000	7900	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	ND	3700	1900	ppbv		ND	18000	9400	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	3700	960	ppbv		ND	32000	8200	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	ND	3700	520	ppbv		ND	15000	2100	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	24400	3700	550	ppbv		96700	15000	2200	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	3700	1100	ppbv		ND	17000	5000	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	3700	740	ppbv		ND	22000	4400	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	3700	1300	ppbv		ND	22000	7800	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	3700	1500	ppbv		ND	22000	9000	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	3700	1900	ppbv		ND	17000	8600	ug/m3

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AS-PHASE3-END		
Lab Sample ID:	JD78929-2	Date Sampled:	12/12/23
Matrix:	AIR - Air Summa ID: A2210,A1357	Date Received:	12/15/23
Method:	TO-15	Percent Solids:	n/a
Project:	PERMA-023-0004, Task 0003, Valdosta, GA		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	ND	9200	7200	ppbv		ND	17000	14000	ug/m3
100-41-4	106.2	Ethylbenzene	ND	3700	1100	ppbv		ND	16000	4800	ug/m3
141-78-6	88	Ethyl Acetate	ND	3700	1900	ppbv		ND	13000	6800	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	3700	1700	ppbv		ND	18000	8400	ug/m3
76-13-1	187.4	Freon 113	4570	3700	570	ppbv		35000	28000	4400	ug/m3
76-14-2	170.9	Freon 114	ND	3700	920	ppbv		ND	26000	6400	ug/m3
142-82-5	100.2	Heptane	29600	3700	830	ppbv		121000	15000	3400	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	3700	1100	ppbv		ND	39000	12000	ug/m3
110-54-3	86.18	Hexane	1770	3700	960	ppbv	J	6240	13000	3400	ug/m3
591-78-6	100	2-Hexanone	ND	3700	2700	ppbv		ND	15000	11000	ug/m3
67-63-0	60.1	Isopropyl Alcohol	ND	3700	2600	ppbv		ND	9100	6400	ug/m3
75-09-2	84.94	Methylene chloride	599000	3700	1000	ppbv		2080000	13000	3500	ug/m3
78-93-3	72.11	Methyl ethyl ketone	4980	3700	2000	ppbv		14700	11000	5900	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	3700	1300	ppbv		ND	15000	5300	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	3700	1500	ppbv		ND	13000	5400	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	3700	1300	ppbv		ND	15000	5300	ug/m3
115-07-1	42	Propylene	ND	9200	2600	ppbv		ND	16000	4500	ug/m3
100-42-5	104.1	Styrene	ND	3700	980	ppbv		ND	16000	4200	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	44800	3700	680	ppbv		244000	20000	3700	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	3700	880	ppbv		ND	25000	6000	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	3700	700	ppbv		ND	20000	3800	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	3700	2200	ppbv		ND	27000	16000	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	3700	1600	ppbv		ND	18000	7900	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	3700	1500	ppbv		ND	18000	7400	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	3700	740	ppbv		ND	17000	3500	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	ND	3700	1700	ppbv		ND	11000	5200	ug/m3
127-18-4	165.8	Tetrachloroethylene	8830	740	260	ppbv		59900	5000	1800	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	3700	1700	ppbv		ND	11000	5000	ug/m3
108-88-3	92.14	Toluene	70000	3700	1000	ppbv		264000	14000	3800	ug/m3
79-01-6	131.4	Trichloroethylene	451000	740	350	ppbv		2420000	4000	1900	ug/m3
75-69-4	137.4	Trichlorofluoromethane	ND	3700	2800	ppbv		ND	21000	16000	ug/m3
75-01-4	62.5	Vinyl chloride	47400	3700	1300	ppbv		121000	9500	3300	ug/m3
108-05-4	86	Vinyl Acetate	ND	3700	2100	ppbv		ND	13000	7400	ug/m3
	106.2	m,p-Xylene	2900	3700	2600	ppbv	J	12600	16000	11000	ug/m3
95-47-6	106.2	o-Xylene	ND	3700	1400	ppbv		ND	16000	6100	ug/m3
1330-20-7	106.2	Xylenes (total)	2900	3700	1400	ppbv	J	12600	16000	6100	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	69%		65-128%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AS-PHASE3-BAG		
Lab Sample ID:	JD78929-3	Date Sampled:	12/12/23
Matrix:	AIR - Air Summa ID: TBAG	Date Received:	12/15/23
Method:	TO-15	Percent Solids:	n/a
Project:	PERMA-023-0004, Task 0003, Valdosta, GA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	3W83807.D	1	12/21/23 01:34	TCH	n/a	n/a	V3W3300
Run #2							

	Initial Volume
Run #1	5.0 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	99.7	16	12	ppbv		237	38	29	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	16	6.7	ppbv		ND	35	15	ug/m3
71-43-2	78.11	Benzene	285	16	12	ppbv		910	51	38	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	16	2.4	ppbv		ND	110	16	ug/m3
75-25-2	252.8	Bromoform	ND	16	5.7	ppbv		ND	170	59	ug/m3
74-83-9	94.94	Bromomethane	ND	16	5.5	ppbv		ND	62	21	ug/m3
593-60-2	106.9	Bromoethene	ND	16	4.9	ppbv		ND	70	21	ug/m3
100-44-7	126	Benzyl Chloride	ND	16	10	ppbv		ND	82	52	ug/m3
75-15-0	76.14	Carbon disulfide	ND	16	3.6	ppbv		ND	50	11	ug/m3
108-90-7	112.6	Chlorobenzene	ND	16	5.9	ppbv		ND	74	27	ug/m3
75-00-3	64.52	Chloroethane	ND	16	5.4	ppbv		ND	42	14	ug/m3
67-66-3	119.4	Chloroform	30.6	16	3.0	ppbv		149	78	15	ug/m3
74-87-3	50.49	Chloromethane	ND	16	7.2	ppbv		ND	33	15	ug/m3
107-05-1	76.53	3-Chloropropene	ND	16	6.6	ppbv		ND	50	21	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	16	5.8	ppbv		ND	83	30	ug/m3
56-23-5	153.8	Carbon tetrachloride	7.9	16	3.2	ppbv	J	50	100	20	ug/m3
110-82-7	84.16	Cyclohexane	74.2	16	3.6	ppbv		255	55	12	ug/m3
75-34-3	98.96	1,1-Dichloroethane	40.7	16	4.6	ppbv		165	65	19	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	127	16	4.7	ppbv		504	63	19	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	16	2.4	ppbv		ND	120	18	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	16	5.6	ppbv		ND	65	23	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	16	5.0	ppbv		ND	74	23	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	16	9.4	ppbv		ND	58	34	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	ND	16	8.3	ppbv		ND	79	41	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	16	4.2	ppbv		ND	140	36	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	ND	16	2.2	ppbv		ND	63	8.7	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	74.9	16	2.4	ppbv		297	63	9.5	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	16	5.0	ppbv		ND	73	23	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	16	3.2	ppbv		ND	96	19	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	16	5.5	ppbv		ND	96	33	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	16	6.3	ppbv		ND	96	38	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	16	8.1	ppbv		ND	73	37	ug/m3

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AS-PHASE3-BAG		
Lab Sample ID:	JD78929-3	Date Sampled:	12/12/23
Matrix:	AIR - Air Summa ID: TBAG	Date Received:	12/15/23
Method:	TO-15	Percent Solids:	n/a
Project:	PERMA-023-0004, Task 0003, Valdosta, GA		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	40.6	40	32	ppbv		76.5	75	60	ug/m3
100-41-4	106.2	Ethylbenzene	151	16	4.9	ppbv		656	69	21	ug/m3
141-78-6	88	Ethyl Acetate	ND	16	8.3	ppbv		ND	58	30	ug/m3
622-96-8	120.19	4-Ethyltoluene	10.9	16	7.6	ppbv	J	53.6	79	37	ug/m3
76-13-1	187.4	Freon 113	ND	16	2.5	ppbv		ND	120	19	ug/m3
76-14-2	170.9	Freon 114	ND	16	4.0	ppbv		ND	110	28	ug/m3
142-82-5	100.2	Heptane	199	16	3.6	ppbv		816	66	15	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	16	5.0	ppbv		ND	170	53	ug/m3
110-54-3	86.18	Hexane	150	16	4.2	ppbv		529	56	15	ug/m3
591-78-6	100	2-Hexanone	ND	16	12	ppbv		ND	65	49	ug/m3
67-63-0	60.1	Isopropyl Alcohol	18.9	16	11	ppbv		46.5	39	27	ug/m3
75-09-2	84.94	Methylene chloride	1080	16	4.5	ppbv		3750	56	16	ug/m3
78-93-3	72.11	Methyl ethyl ketone	87.7	16	8.8	ppbv		259	47	26	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	8.4	16	5.8	ppbv	J	34	66	24	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	16	6.4	ppbv		ND	58	23	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	16	5.6	ppbv		ND	66	23	ug/m3
115-07-1	42	Propylene	ND	40	11	ppbv		ND	69	19	ug/m3
100-42-5	104.1	Styrene	ND	16	4.2	ppbv		ND	68	18	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	79.6	16	3.0	ppbv		434	87	16	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	16	3.8	ppbv		ND	110	26	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	16	3.0	ppbv		ND	87	16	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	16	9.7	ppbv		ND	120	72	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	20.9	16	7.0	ppbv		103	79	34	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	9.6	16	6.4	ppbv	J	47	79	31	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	420	16	3.2	ppbv		1960	75	15	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	87.5	16	7.4	ppbv		265	49	22	ug/m3
127-18-4	165.8	Tetrachloroethylene	172	3.2	1.1	ppbv		1170	22	7.5	ug/m3
109-99-9	72.11	Tetrahydrofuran	106	16	7.2	ppbv		313	47	21	ug/m3
108-88-3	92.14	Toluene	695	16	4.6	ppbv		2620	60	17	ug/m3
79-01-6	131.4	Trichloroethylene	2480	3.2	1.5	ppbv		13300	17	8.1	ug/m3
75-69-4	137.4	Trichlorofluoromethane	ND	16	12	ppbv		ND	90	67	ug/m3
75-01-4	62.5	Vinyl chloride	27.4	16	5.5	ppbv		70.0	41	14	ug/m3
108-05-4	86	Vinyl Acetate	ND	16	9.0	ppbv		ND	56	32	ug/m3
	106.2	m,p-Xylene	237	16	11	ppbv		1030	69	48	ug/m3
95-47-6	106.2	o-Xylene	38.1	16	6.2	ppbv		165	69	27	ug/m3
1330-20-7	106.2	Xylenes (total)	275	16	6.2	ppbv		1190	69	27	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	83%		65-128%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AS-PHASE3-BAG		
Lab Sample ID:	JD78929-3	Date Sampled:	12/12/23
Matrix:	AIR - Air Summa ID: TBAG	Date Received:	12/15/23
Method:	TO-15	Percent Solids:	n/a
Project:	PERMA-023-0004, Task 0003, Valdosta, GA		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units

(a) Sample analyzed by modified Method TO-15 - Tedlar bag sample containers substituted for passivated stainless steel canisters.

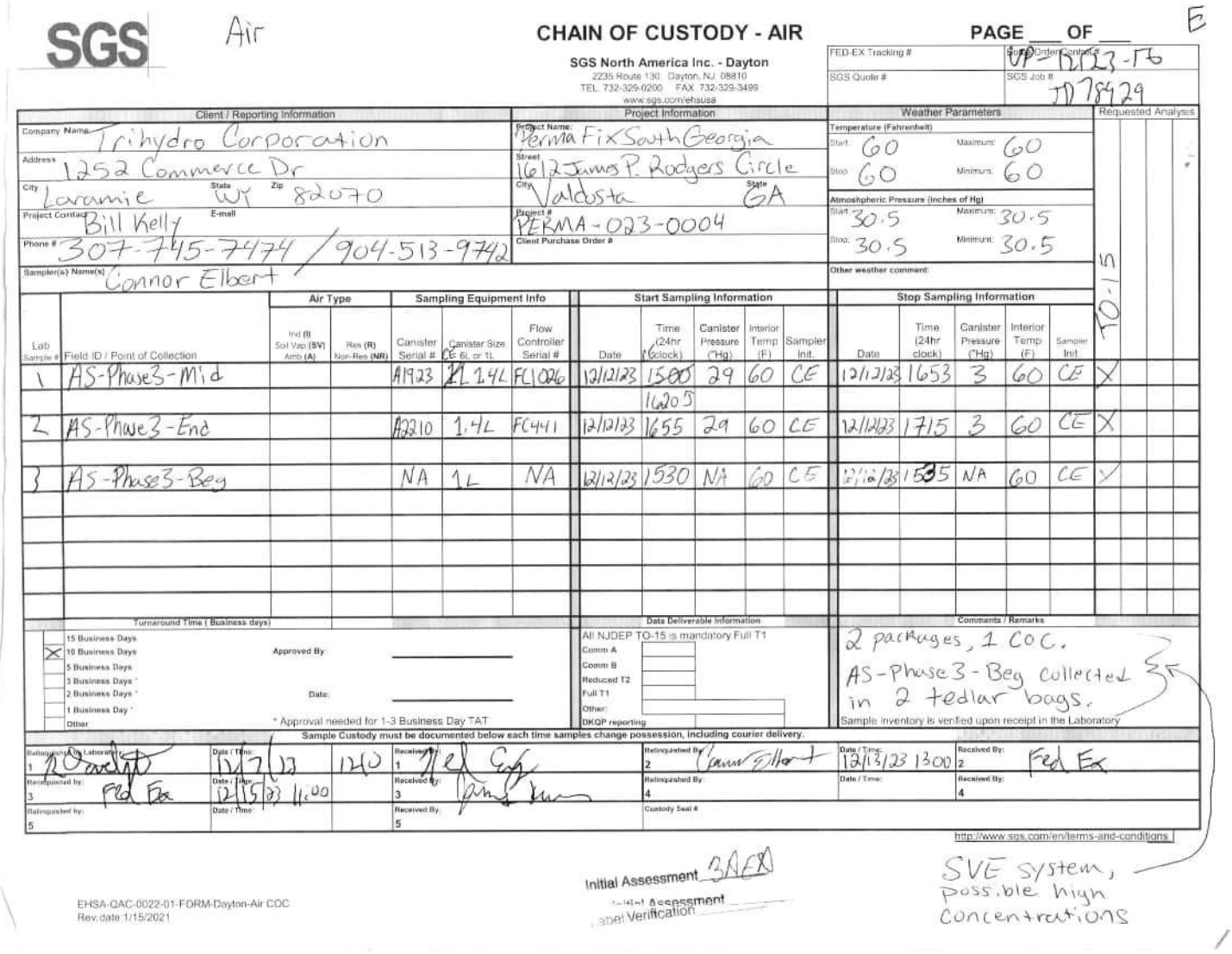
ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Summa Canister and Flow Controller Log



SGS Air

CHAIN OF CUSTODY - AIR

PAGE ___ OF ___ E

SGS North America Inc. - Dayton
2235 Route 130 Dayton, NJ 08810
TEL 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

FED-EX Tracking #
Sub Order Control # UP-12123-16
SGS Quote #
SGS Job # JD78929

Client / Reporting Information	Project Information	Weather Parameters
Company Name: Trihydro Corporation	Project Name: Perma Fix South Georgia	Temperature (Fahrenheit) Start: 60 Maximum: 60 Stop: 60 Minimum: 60
Address: 1252 Commerce Dr	Street: 1612 James P. Rodgers Circle	Atmosphheric Pressure (Inches of Hg) Start: 30.5 Maximum: 30.5 Stop: 30.5 Minimum: 30.5
City: Laramie State: WY Zip: 82070	City: Valdosta State: GA	Other weather comment:
Project Contact: Bill Kelly E-mail:	Project #: PERMA-023-0004	
Phone #: 307-745-7474 / 904-513-9742	Client Purchase Order #:	
Sampler(s) Name(s): Connor Elbert		

Requested Analysis: TO-15

Lab Sample #	Field ID / Point of Collection	Air Type: Ind (I) Soil Vap (SV) Amb (A)	Air Type: Res (R) Non-Res (NR)	Sampling Equipment Info: Canister Serial #	Canister Size CE 6L or 1L	Flow Controller Serial #	Start Sampling Information: Date	Time (24hr clock)	Canister Pressure ("Hg)	Interior Temp (F)	Sampler Init.	Stop Sampling Information: Date	Time (24hr clock)	Canister Pressure ("Hg)	Interior Temp (F)	Sampler Init.	TO-15
1	AS-Phase3-Mid			A1923	~~1L~~ 1.4L	FC1026	12/12/23	~~1500~~ 1620	29	60	CE	12/12/23	1653	3	60	CE	X
2	AS-Phase3-End			A2210	1.4L	FC441	12/12/23	1655	29	60	CE	12/12/23	1715	3	60	CE	X
3	AS-Phase3-Beg			NA	1L	NA	12/12/23	1530	NA	60	CE	12/12/23	1535	NA	60	CE	X

Turnaround Time (Business days)
- 15 Business Days
- X 10 Business Days
- 5 Business Days
- 3 Business Days *
- 2 Business Days *
- 1 Business Day *
- Other

Approved By: _____
Date: _____
* Approval needed for 1-3 Business Day TAT

Data Deliverable Information
All NJDEP TO-15 is mandatory Full T1
Comm A
Comm B
Reduced T2
Full T1
Other:
DKQP reporting

Comments / Remarks
2 packages, 1 COC.
AS-Phase3-Beg collected in 2 tedlar bags.
Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Laboratory	Date / Time	Received By	Relinquished By	Date / Time	Received By
1 [signature]	12/7/23 1210	1 [signature]	2 Connor Elbert	12/13/23 1300	2 Fed Ex
3 Fed Ex	12/15/23 11:00	3 [signature]	4		4
5		5	Custody Seal #		

http://www.sgs.com/en/terms-and-conditions

Initial Assessment 3AEX
Initial Assessment
Label Verification

SVE system, possible high concentrations

EHSA-QAC-0022-01-FORM-Dayton-Air COC
Rev.date 1/15/2021

4.1 4

JD78929: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JD78929 **Client:** TRIHYDRO CORP **Project:** WORK ORDER 20230991

Date / Time Received: 12/15/2023 11:00:00 AM **Delivery Method:** FED EX **Airbill #'s:**

Cooler Temps (Raw Measured) °C:

Cooler Temps (Corrected) °C:

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☐		☐
2. Cooler temp verification:	N/A		
3. Cooler media:	N/A		
4. No. Coolers:	N/A		

Quality Control Preservatio	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

Summa Canister and Flow Controller Log

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA
Received: 12/15/23

SUMMA CANISTERS

Shipping							Receiving						
Summa ID	L	Vac " Hg	Date Out	By	SCC Batch	SCC FileID	Sample Number	Date In	By	Vac " Hg	Pres psig	Final psig	Dil Fact
A1923	1.4	30	12/06/23	ML	CP12526	8W03081.D	JD78929-1	12/20/23	TCH	3			1
A2210	1.4	30	12/06/23	ML	CP12369	7W02714.D	JD78929-2	12/20/23	TCH	0			1

FLOW CONTROLLERS / OTHER

Shipping					Receiving				
Flow Crtl ID	Date Out	By	cc/ min	Time hrs.	Date In	By	cc/ min	Flow RPD	Equipment Type
FC441	12/06/23	ML	36	.5	12/18/23	DG	34	5.7	Flow Controller
FC1026	12/06/23	ML	36	.5	12/19/23	DG	32.6	9.9	Flow Controller

SGS Bottle Order(s):
VP-12523-56

Prep Date	Room Temp(F)	Bar Pres "Hg
12/06/23	70	29.92

MS Volatiles

5

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3300-MB	3W83792.D	1	12/20/23	TCH	n/a	n/a	V3W3300

The QC reported here applies to the following samples: Method: TO-15

JD78929-3

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3300-MB	3W83792.D	1	12/20/23	TCH	n/a	n/a	V3W3300

The QC reported here applies to the following samples: Method: TO-15

JD78929-3

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3300-MB	3W83792.D	1	12/20/23	TCH	n/a	n/a	V3W3300

The QC reported here applies to the following samples: Method: TO-15

JD78929-3

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	79%	65-128%

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3305-MB	3W83913.D	1	12/27/23	TCH	n/a	n/a	V3W3305

The QC reported here applies to the following samples: Method: TO-15

JD78929-1

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3305-MB	3W83913.D	1	12/27/23	TCH	n/a	n/a	V3W3305

The QC reported here applies to the following samples: Method: TO-15

JD78929-1

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3305-MB	3W83913.D	1	12/27/23	TCH	n/a	n/a	V3W3305

The QC reported here applies to the following samples: Method: TO-15

JD78929-1

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	73%	65-128%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	4.02	11	ppbv	J
	Total TIC, Volatile		0	ppbv	

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3306-MB	3W83934.D	1	12/28/23	TCH	n/a	n/a	V3W3306

The QC reported here applies to the following samples: Method: TO-15

JD78929-2

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3306-MB	3W83934.D	1	12/28/23	TCH	n/a	n/a	V3W3306

The QC reported here applies to the following samples: Method: TO-15

JD78929-2

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3306-MB	3W83934.D	1	12/28/23	TCH	n/a	n/a	V3W3306

The QC reported here applies to the following samples: Method: TO-15

JD78929-2

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	75%	65-128%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	4.02	6.2	ppbv	J
	Total TIC, Volatile		0	ppbv	

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W112-MB	7W02711.D	1	08/08/23	TCH	n/a	n/a	V7W112

The QC reported here applies to the following samples: Method: TO-15

V7W112-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W112-MB	7W02711.D	1	08/08/23	TCH	n/a	n/a	V7W112

The QC reported here applies to the following samples: Method: TO-15

V7W112-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W112-MB	7W02711.D	1	08/08/23	TCH	n/a	n/a	V7W112

The QC reported here applies to the following samples: Method: TO-15

V7W112-SCC

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	95%	65-128%

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W116-MB	8W02892.D	1	11/10/23	TS	n/a	n/a	V8W116

The QC reported here applies to the following samples: Method: TO-15

V8W116-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W116-MB	8W02892.D	1	11/10/23	TS	n/a	n/a	V8W116

The QC reported here applies to the following samples: Method: TO-15

V8W116-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W116-MB	8W02892.D	1	11/10/23	TS	n/a	n/a	V8W116

The QC reported here applies to the following samples: Method: TO-15

V8W116-SCC

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	97%	65-128%

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3272-MB	3W83127.D	1	11/16/23	WC	n/a	n/a	V3W3272

The QC reported here applies to the following samples: Method: TO-15

V3W3272-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3272-MB	3W83127.D	1	11/16/23	WC	n/a	n/a	V3W3272

The QC reported here applies to the following samples: Method: TO-15

V3W3272-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3272-MB	3W83127.D	1	11/16/23	WC	n/a	n/a	V3W3272

The QC reported here applies to the following samples: Method: TO-15

V3W3272-SCC

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	93%	65-128%

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W123-MB	8W03063.D	1	11/27/23	WC	n/a	n/a	V8W123

The QC reported here applies to the following samples: Method: TO-15

V8W123-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W123-MB	8W03063.D	1	11/27/23	WC	n/a	n/a	V8W123

The QC reported here applies to the following samples: Method: TO-15

V8W123-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W123-MB	8W03063.D	1	11/27/23	WC	n/a	n/a	V8W123

The QC reported here applies to the following samples: Method: TO-15

V8W123-SCC

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	100%	65-128%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3300-BS	3W83789.D	1	12/20/23	TCH	n/a	n/a	V3W3300
V3W3300-BSD	3W83790.D	1	12/20/23	TCH	n/a	n/a	V3W3300

The QC reported here applies to the following samples: Method: TO-15

JD78929-3

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	9.1	91	9.1	91	0	70-130/30
106-99-0	1,3-Butadiene	10	9.6	96	9.4	94	2	70-130/30
71-43-2	Benzene	10	11.1	111	11.3	113	2	70-130/30
75-27-4	Bromodichloromethane	10	12.2	122	12.3	123	1	70-130/30
75-25-2	Bromoform	10	12.0	120	12.1	121	1	70-130/30
74-83-9	Bromomethane	10	9.8	98	9.8	98	0	70-130/30
593-60-2	Bromoethene	10	9.9	99	10.0	100	1	70-130/30
100-44-7	Benzyl Chloride	10	9.5	95	9.5	95	0	70-130/30
75-15-0	Carbon disulfide	10	11.6	116	11.7	117	1	70-130/30
108-90-7	Chlorobenzene	10	9.0	90	9.1	91	1	70-130/30
75-00-3	Chloroethane	10	10.1	101	10.0	100	1	70-130/30
67-66-3	Chloroform	10	12.0	120	12.2	122	2	70-130/30
74-87-3	Chloromethane	10	9.9	99	9.8	98	1	70-130/30
107-05-1	3-Chloropropene	10	11.4	114	11.5	115	1	70-130/30
95-49-8	2-Chlorotoluene	10	8.5	85	8.5	85	0	70-130/30
56-23-5	Carbon tetrachloride	10	10.7	107	10.8	108	1	70-130/30
110-82-7	Cyclohexane	10	10.7	107	10.9	109	2	70-130/30
75-34-3	1,1-Dichloroethane	10	11.5	115	11.5	115	0	70-130/30
75-35-4	1,1-Dichloroethylene	10	10.9	109	11.0	110	1	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	9.6	96	9.7	97	1	70-130/30
107-06-2	1,2-Dichloroethane	10	12.2	122	12.2	122	0	70-130/30
78-87-5	1,2-Dichloropropane	10	11.3	113	11.4	114	1	70-130/30
123-91-1	1,4-Dioxane	10	11.2	112	11.4	114	2	70-130/30
75-71-8	Dichlorodifluoromethane	10	11.5	115	11.7	117	2	70-130/30
124-48-1	Dibromochloromethane	10	9.7	97	9.7	97	0	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	11.2	112	11.4	114	2	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	11.2	112	11.2	112	0	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	12.0	120	12.2	122	2	70-130/30
541-73-1	m-Dichlorobenzene	10	9.3	93	9.2	92	1	70-130/30
95-50-1	o-Dichlorobenzene	10	8.9	89	8.9	89	0	70-130/30
106-46-7	p-Dichlorobenzene	10	9.0	90	9.0	90	0	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	12.1	121	12.4	124	2	70-130/30
64-17-5	Ethanol	10	8.2	82	8.0	80	2	70-130/30
100-41-4	Ethylbenzene	10	10	100	10.1	101	1	70-130/30
141-78-6	Ethyl Acetate	10	12.3	123	12.4	124	1	70-130/30
622-96-8	4-Ethyltoluene	10	9.6	96	9.7	97	1	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3300-BS	3W83789.D	1	12/20/23	TCH	n/a	n/a	V3W3300
V3W3300-BSD	3W83790.D	1	12/20/23	TCH	n/a	n/a	V3W3300

The QC reported here applies to the following samples: Method: TO-15

JD78929-3

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	10.4	104	10.6	106	2	70-130/30
76-14-2	Freon 114	10	11.1	111	11.0	110	1	70-130/30
142-82-5	Heptane	10	10.7	107	10.6	106	1	70-130/30
87-68-3	Hexachlorobutadiene	10	10.2	102	10.1	101	1	70-130/30
110-54-3	Hexane	10	11.2	112	11.2	112	0	70-130/30
591-78-6	2-Hexanone	10	10.6	106	10.6	106	0	70-130/30
67-63-0	Isopropyl Alcohol	10	10.3	103	10.2	102	1	70-130/30
75-09-2	Methylene chloride	10	11.1	111	11.2	112	1	70-130/30
78-93-3	Methyl ethyl ketone	10	12.5	125	12.6	126	1	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	11.7	117	11.7	117	0	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	12.0	120	12.1	121	1	70-130/30
80-62-6	Methylmethacrylate	10	12.1	121	12.3	123	2	70-130/30
115-07-1	Propylene	10	10.0	100	10.0	100	0	70-130/30
100-42-5	Styrene	10	9.3	93	9.3	93	0	70-130/30
71-55-6	1,1,1-Trichloroethane	10	11.6	116	11.7	117	1	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	10.2	102	10.3	103	1	70-130/30
79-00-5	1,1,2-Trichloroethane	10	11.7	117	11.8	118	1	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	8.3	83	8.2	82	1	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	9.7	97	9.8	98	1	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	9.4	94	9.5	95	1	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	11.2	112	11.2	112	0	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	10.9	109	11.0	110	1	70-130/30
127-18-4	Tetrachloroethylene	10	9.2	92	9.3	93	1	70-130/30
109-99-9	Tetrahydrofuran	10	12.6	126	12.8	128	2	70-130/30
108-88-3	Toluene	10	11.1	111	11.2	112	1	70-130/30
79-01-6	Trichloroethylene	10	11.4	114	11.5	115	1	70-130/30
75-69-4	Trichlorofluoromethane	10	10.9	109	11.0	110	1	70-130/30
75-01-4	Vinyl chloride	10	10.1	101	10.1	101	0	70-130/30
108-05-4	Vinyl Acetate	10	11.5	115	11.7	117	2	70-130/30
	m,p-Xylene	20	18.9	95	19.0	95	1	70-130/30
95-47-6	o-Xylene	10	9.5	95	9.6	96	1	70-130/30
1330-20-7	Xylenes (total)	30	28.4	95	28.6	95	1	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3300-BS	3W83789.D	1	12/20/23	TCH	n/a	n/a	V3W3300
V3W3300-BSD	3W83790.D	1	12/20/23	TCH	n/a	n/a	V3W3300

The QC reported here applies to the following samples: Method: TO-15

JD78929-3

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	93%	93%	65-128%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3305-BS	3W83909.D	1	12/27/23	TCH	n/a	n/a	V3W3305
V3W3305-BSD	3W83910.D	1	12/27/23	TCH	n/a	n/a	V3W3305

The QC reported here applies to the following samples: Method: TO-15

JD78929-1

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	9.2	92	9.3	93	1	70-130/30
106-99-0	1,3-Butadiene	10	9.9	99	10.2	102	3	70-130/30
71-43-2	Benzene	10	10.6	106	10.6	106	0	70-130/30
75-27-4	Bromodichloromethane	10	11.7	117	11.6	116	1	70-130/30
75-25-2	Bromoform	10	11.7	117	11.7	117	0	70-130/30
74-83-9	Bromomethane	10	9.6	96	9.8	98	2	70-130/30
593-60-2	Bromoethene	10	9.9	99	10.0	100	1	70-130/30
100-44-7	Benzyl Chloride	10	9.5	95	9.3	93	2	70-130/30
75-15-0	Carbon disulfide	10	11.1	111	11.1	111	0	70-130/30
108-90-7	Chlorobenzene	10	8.9	89	8.8	88	1	70-130/30
75-00-3	Chloroethane	10	10.2	102	10.5	105	3	70-130/30
67-66-3	Chloroform	10	11.4	114	11.2	112	2	70-130/30
74-87-3	Chloromethane	10	10.2	102	10.8	108	6	70-130/30
107-05-1	3-Chloropropene	10	11.1	111	11.0	110	1	70-130/30
95-49-8	2-Chlorotoluene	10	8.4	84	8.4	84	0	70-130/30
56-23-5	Carbon tetrachloride	10	10.3	103	10.1	101	2	70-130/30
110-82-7	Cyclohexane	10	10.2	102	10.3	103	1	70-130/30
75-34-3	1,1-Dichloroethane	10	11.1	111	11.0	110	1	70-130/30
75-35-4	1,1-Dichloroethylene	10	10.2	102	10.4	104	2	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	9.3	93	9.5	95	2	70-130/30
107-06-2	1,2-Dichloroethane	10	11.7	117	11.4	114	3	70-130/30
78-87-5	1,2-Dichloropropane	10	11.1	111	10.9	109	2	70-130/30
123-91-1	1,4-Dioxane	10	10.5	105	10.3	103	2	70-130/30
75-71-8	Dichlorodifluoromethane	10	11.4	114	12.2	122	7	70-130/30
124-48-1	Dibromochloromethane	10	9.4	94	9.7	97	3	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	10.5	105	10.6	106	1	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	10.5	105	10.4	104	1	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	11.7	117	11.5	115	2	70-130/30
541-73-1	m-Dichlorobenzene	10	9.0	90	8.8	88	2	70-130/30
95-50-1	o-Dichlorobenzene	10	8.6	86	8.5	85	1	70-130/30
106-46-7	p-Dichlorobenzene	10	8.6	86	8.5	85	1	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	11.7	117	11.4	114	3	70-130/30
64-17-5	Ethanol	10	8.7	87	8.5	85	2	70-130/30
100-41-4	Ethylbenzene	10	9.5	95	9.5	95	0	70-130/30
141-78-6	Ethyl Acetate	10	11.9	119	11.3	113	5	70-130/30
622-96-8	4-Ethyltoluene	10	9.5	95	9.5	95	0	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3305-BS	3W83909.D	1	12/27/23	TCH	n/a	n/a	V3W3305
V3W3305-BSD	3W83910.D	1	12/27/23	TCH	n/a	n/a	V3W3305

The QC reported here applies to the following samples: Method: TO-15

JD78929-1

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	9.9	99	10.1	101	2	70-130/30
76-14-2	Freon 114	10	11.0	110	11.5	115	4	70-130/30
142-82-5	Heptane	10	10.9	109	10.5	105	4	70-130/30
87-68-3	Hexachlorobutadiene	10	9.6	96	9.3	93	3	70-130/30
110-54-3	Hexane	10	11.1	111	10.8	108	3	70-130/30
591-78-6	2-Hexanone	10	10.2	102	10.3	103	1	70-130/30
67-63-0	Isopropyl Alcohol	10	10.3	103	10.3	103	0	70-130/30
75-09-2	Methylene chloride	10	10.5	105	10.6	106	1	70-130/30
78-93-3	Methyl ethyl ketone	10	11.6	116	11.8	118	2	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	11.5	115	11.1	111	4	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	11.4	114	11.3	113	1	70-130/30
80-62-6	Methylmethacrylate	10	12.0	120	11.4	114	5	70-130/30
115-07-1	Propylene	10	10.5	105	11.2	112	6	70-130/30
100-42-5	Styrene	10	9.3	93	9.2	92	1	70-130/30
71-55-6	1,1,1-Trichloroethane	10	10.8	108	10.6	106	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	10.0	100	10	100	0	70-130/30
79-00-5	1,1,2-Trichloroethane	10	11.3	113	11.1	111	2	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	7.6	76	7.0	70	8	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	9.7	97	9.6	96	1	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	9.3	93	9.4	94	1	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	11.0	110	10.8	108	2	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	10.7	107	10.8	108	1	70-130/30
127-18-4	Tetrachloroethylene	10	8.7	87	8.9	89	2	70-130/30
109-99-9	Tetrahydrofuran	10	11.9	119	11.7	117	2	70-130/30
108-88-3	Toluene	10	10.6	106	10.4	104	2	70-130/30
79-01-6	Trichloroethylene	10	10.8	108	10.7	107	1	70-130/30
75-69-4	Trichlorofluoromethane	10	10.8	108	11.0	110	2	70-130/30
75-01-4	Vinyl chloride	10	10.5	105	10.8	108	3	70-130/30
108-05-4	Vinyl Acetate	10	10.6	106	11.0	110	4	70-130/30
	m,p-Xylene	20	18.7	94	18.7	94	0	70-130/30
95-47-6	o-Xylene	10	9.6	96	9.5	95	1	70-130/30
1330-20-7	Xylenes (total)	30	28.3	94	28.1	94	1	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3305-BS	3W83909.D	1	12/27/23	TCH	n/a	n/a	V3W3305
V3W3305-BSD	3W83910.D	1	12/27/23	TCH	n/a	n/a	V3W3305

The QC reported here applies to the following samples: Method: TO-15

JD78929-1

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	92%	91%	65-128%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3306-BS	3W83930.D	1	12/28/23	TCH	n/a	n/a	V3W3306
V3W3306-BSD	3W83932.D	1	12/28/23	TCH	n/a	n/a	V3W3306

The QC reported here applies to the following samples: Method: TO-15

JD78929-2

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	9.8	98	9.4	94	4	70-130/30
106-99-0	1,3-Butadiene	10	11.2	112	10.1	101	10	70-130/30
71-43-2	Benzene	10	11.0	110	11.1	111	1	70-130/30
75-27-4	Bromodichloromethane	10	12.0	120	12.0	120	0	70-130/30
75-25-2	Bromoform	10	12.0	120	12.3	123	2	70-130/30
74-83-9	Bromomethane	10	10.5	105	9.6	96	9	70-130/30
593-60-2	Bromoethene	10	10.8	108	10.1	101	7	70-130/30
100-44-7	Benzyl Chloride	10	9.9	99	9.7	97	2	70-130/30
75-15-0	Carbon disulfide	10	11.4	114	11.5	115	1	70-130/30
108-90-7	Chlorobenzene	10	9.1	91	9.3	93	2	70-130/30
75-00-3	Chloroethane	10	11.4	114	10.5	105	8	70-130/30
67-66-3	Chloroform	10	11.7	117	11.8	118	1	70-130/30
74-87-3	Chloromethane	10	11.4	114	10.3	103	10	70-130/30
107-05-1	3-Chloropropene	10	11.4	114	11.6	116	2	70-130/30
95-49-8	2-Chlorotoluene	10	8.7	87	8.8	88	1	70-130/30
56-23-5	Carbon tetrachloride	10	10.5	105	10.6	106	1	70-130/30
110-82-7	Cyclohexane	10	10.6	106	10.7	107	1	70-130/30
75-34-3	1,1-Dichloroethane	10	11.5	115	11.5	115	0	70-130/30
75-35-4	1,1-Dichloroethylene	10	10.6	106	10.8	108	2	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	9.6	96	9.9	99	3	70-130/30
107-06-2	1,2-Dichloroethane	10	12.2	122	12.1	121	1	70-130/30
78-87-5	1,2-Dichloropropane	10	11.6	116	11.5	115	1	70-130/30
123-91-1	1,4-Dioxane	10	10.8	108	10.9	109	1	70-130/30
75-71-8	Dichlorodifluoromethane	10	12.0	120	11.5	115	4	70-130/30
124-48-1	Dibromochloromethane	10	9.8	98	9.9	99	1	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	10.8	108	11.1	111	3	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	10.9	109	11.1	111	2	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	12.0	120	12.0	120	0	70-130/30
541-73-1	m-Dichlorobenzene	10	9.2	92	9.1	91	1	70-130/30
95-50-1	o-Dichlorobenzene	10	8.9	89	8.9	89	0	70-130/30
106-46-7	p-Dichlorobenzene	10	8.8	88	8.9	89	1	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	12.0	120	11.9	119	1	70-130/30
64-17-5	Ethanol	10	9.8	98	8.6	86	13	70-130/30
100-41-4	Ethylbenzene	10	9.8	98	10	100	2	70-130/30
141-78-6	Ethyl Acetate	10	12.2	122	12.3	123	1	70-130/30
622-96-8	4-Ethyltoluene	10	9.8	98	9.9	99	1	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3306-BS	3W83930.D	1	12/28/23	TCH	n/a	n/a	V3W3306
V3W3306-BSD	3W83932.D	1	12/28/23	TCH	n/a	n/a	V3W3306

The QC reported here applies to the following samples: Method: TO-15

JD78929-2

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	10.1	101	10.4	104	3	70-130/30
76-14-2	Freon 114	10	12.0	120	11.0	110	9	70-130/30
142-82-5	Heptane	10	11.5	115	11.0	110	4	70-130/30
87-68-3	Hexachlorobutadiene	10	10.1	101	9.6	96	5	70-130/30
110-54-3	Hexane	10	11.5	115	11.4	114	1	70-130/30
591-78-6	2-Hexanone	10	10.8	108	10.8	108	0	70-130/30
67-63-0	Isopropyl Alcohol	10	10.9	109	10.3	103	6	70-130/30
75-09-2	Methylene chloride	10	10.9	109	11.0	110	1	70-130/30
78-93-3	Methyl ethyl ketone	10	12.1	121	12.5	125	3	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	11.7	117	11.6	116	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	11.6	116	11.8	118	2	70-130/30
80-62-6	Methylmethacrylate	10	12.1	121	12.5	125	3	70-130/30
115-07-1	Propylene	10	11.4	114	10.5	105	8	70-130/30
100-42-5	Styrene	10	9.5	95	9.8	98	3	70-130/30
71-55-6	1,1,1-Trichloroethane	10	11.0	110	11.2	112	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	10.3	103	10.4	104	1	70-130/30
79-00-5	1,1,2-Trichloroethane	10	11.5	115	11.6	116	1	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	8.0	80	7.7	77	4	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	10.1	101	10	100	1	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	9.6	96	9.7	97	1	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	11.5	115	11.2	112	3	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	11.1	111	11.0	110	1	70-130/30
127-18-4	Tetrachloroethylene	10	8.9	89	9.3	93	4	70-130/30
109-99-9	Tetrahydrofuran	10	12.2	122	12.5	125	2	70-130/30
108-88-3	Toluene	10	10.8	108	11.0	110	2	70-130/30
79-01-6	Trichloroethylene	10	11.1	111	11.1	111	0	70-130/30
75-69-4	Trichlorofluoromethane	10	11.3	113	11.1	111	2	70-130/30
75-01-4	Vinyl chloride	10	11.5	115	10.5	105	9	70-130/30
108-05-4	Vinyl Acetate	10	11.1	111	11.3	113	2	70-130/30
	m,p-Xylene	20	19.1	96	19.7	99	3	70-130/30
95-47-6	o-Xylene	10	9.8	98	9.9	99	1	70-130/30
1330-20-7	Xylenes (total)	30	28.9	96	29.6	99	2	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3306-BS	3W83930.D	1	12/28/23	TCH	n/a	n/a	V3W3306
V3W3306-BSD	3W83932.D	1	12/28/23	TCH	n/a	n/a	V3W3306

The QC reported here applies to the following samples: Method: TO-15

JD78929-2

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	91%	92%	65-128%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W112-BS	7W02708.D	1	08/08/23	TCH	n/a	n/a	V7W112
V7W112-BSD	7W02709.D	1	08/08/23	TCH	n/a	n/a	V7W112

The QC reported here applies to the following samples: Method: TO-15

V7W112-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	7.8	78	7.9	79	1	70-130/30
106-99-0	1,3-Butadiene	10	9.1	91	8.9	89	2	70-130/30
71-43-2	Benzene	10	10.0	100	9.7	97	3	70-130/30
75-27-4	Bromodichloromethane	10	10.9	109	10.5	105	4	70-130/30
75-25-2	Bromoform	10	12.1	121	11.8	118	3	70-130/30
74-83-9	Bromomethane	10	9.3	93	8.9	89	4	70-130/30
593-60-2	Bromoethene	10	9.7	97	9.8	98	1	70-130/30
100-44-7	Benzyl Chloride	10	11.6	116	11.2	112	4	70-130/30
75-15-0	Carbon disulfide	10	9.0	90	8.9	89	1	70-130/30
108-90-7	Chlorobenzene	10	10.7	107	10.4	104	3	70-130/30
75-00-3	Chloroethane	10	8.9	89	8.6	86	3	70-130/30
67-66-3	Chloroform	10	10.4	104	10.1	101	3	70-130/30
74-87-3	Chloromethane	10	8.9	89	8.7	87	2	70-130/30
107-05-1	3-Chloropropene	10	9.0	90	8.6	86	5	70-130/30
95-49-8	2-Chlorotoluene	10	10.9	109	10.4	104	5	70-130/30
56-23-5	Carbon tetrachloride	10	11.8	118	11.5	115	3	70-130/30
110-82-7	Cyclohexane	10	10.2	102	9.9	99	3	70-130/30
75-34-3	1,1-Dichloroethane	10	10	100	9.9	99	1	70-130/30
75-35-4	1,1-Dichloroethylene	10	9.3	93	9.2	92	1	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	11.3	113	11.1	111	2	70-130/30
107-06-2	1,2-Dichloroethane	10	10.5	105	10.2	102	3	70-130/30
78-87-5	1,2-Dichloropropane	10	10.3	103	10	100	3	70-130/30
123-91-1	1,4-Dioxane	10	10.2	102	9.8	98	4	70-130/30
75-71-8	Dichlorodifluoromethane	10	10.2	102	10	100	2	70-130/30
124-48-1	Dibromochloromethane	10	12.2	122	11.8	118	3	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	10.3	103	9.9	99	4	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	10.4	104	10.1	101	3	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	11.3	113	11.0	110	3	70-130/30
541-73-1	m-Dichlorobenzene	10	11.7	117	11.3	113	3	70-130/30
95-50-1	o-Dichlorobenzene	10	11.4	114	11.0	110	4	70-130/30
106-46-7	p-Dichlorobenzene	10	12.0	120	11.6	116	3	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	11.3	113	11.1	111	2	70-130/30
64-17-5	Ethanol	10	8.3	83	8.3	83	0	70-130/30
100-41-4	Ethylbenzene	10	10.6	106	10.2	102	4	70-130/30
141-78-6	Ethyl Acetate	10	10.4	104	10.3	103	1	70-130/30
622-96-8	4-Ethyltoluene	10	11.6	116	11.4	114	2	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W112-BS	7W02708.D	1	08/08/23	TCH	n/a	n/a	V7W112
V7W112-BSD	7W02709.D	1	08/08/23	TCH	n/a	n/a	V7W112

The QC reported here applies to the following samples: Method: TO-15

V7W112-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	9.8	98	9.7	97	1	70-130/30
76-14-2	Freon 114	10	9.5	95	9.3	93	2	70-130/30
142-82-5	Heptane	10	10.1	101	9.9	99	2	70-130/30
87-68-3	Hexachlorobutadiene	10	10.9	109	10.6	106	3	70-130/30
110-54-3	Hexane	10	9.7	97	9.4	94	3	70-130/30
591-78-6	2-Hexanone	10	10.0	100	9.7	97	3	70-130/30
67-63-0	Isopropyl Alcohol	10	9.2	92	9.0	90	2	70-130/30
75-09-2	Methylene chloride	10	9.0	90	9.1	91	1	70-130/30
78-93-3	Methyl ethyl ketone	10	10.1	101	9.7	97	4	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	9.7	97	9.5	95	2	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	10.2	102	10	100	2	70-130/30
80-62-6	Methylmethacrylate	10	10.7	107	10.5	105	2	70-130/30
115-07-1	Propylene	10	9.4	94	9.2	92	2	70-130/30
100-42-5	Styrene	10	11.4	114	10.9	109	4	70-130/30
71-55-6	1,1,1-Trichloroethane	10	11.1	111	10.9	109	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	10.6	106	10.3	103	3	70-130/30
79-00-5	1,1,2-Trichloroethane	10	10.4	104	10	100	4	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	12.0	120	11.1	111	8	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	11.2	112	10.9	109	3	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	11.1	111	10.8	108	3	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	10	100	9.7	97	3	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	9.9	99	9.7	97	2	70-130/30
127-18-4	Tetrachloroethylene	10	11.5	115	11.1	111	4	70-130/30
109-99-9	Tetrahydrofuran	10	10	100	9.5	95	5	70-130/30
108-88-3	Toluene	10	10.4	104	10.1	101	3	70-130/30
79-01-6	Trichloroethylene	10	10.8	108	10.4	104	4	70-130/30
75-69-4	Trichlorofluoromethane	10	10.6	106	10.4	104	2	70-130/30
75-01-4	Vinyl chloride	10	9.0	90	8.8	88	2	70-130/30
108-05-4	Vinyl Acetate	10	11.4	114	11.3	113	1	70-130/30
	m,p-Xylene	20	20.5	103	19.9	100	3	70-130/30
95-47-6	o-Xylene	10	10.6	106	10.3	103	3	70-130/30
1330-20-7	Xylenes (total)	30	31.1	104	30.2	101	3	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W112-BS	7W02708.D	1	08/08/23	TCH	n/a	n/a	V7W112
V7W112-BSD	7W02709.D	1	08/08/23	TCH	n/a	n/a	V7W112

The QC reported here applies to the following samples: Method: TO-15

V7W112-SCC

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	100%	98%	65-128%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W116-BS	8W02889.D	1	11/10/23	TS	n/a	n/a	V8W116
V8W116-BSD	8W02890.D	1	11/10/23	TS	n/a	n/a	V8W116

The QC reported here applies to the following samples: Method: TO-15

V8W116-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	7.4	74	7.5	75	1	70-130/30
106-99-0	1,3-Butadiene	10	7.9	79	8.5	85	7	70-130/30
71-43-2	Benzene	10	10.6	106	10.8	108	2	70-130/30
75-27-4	Bromodichloromethane	10	11.3	113	11.3	113	0	70-130/30
75-25-2	Bromoform	10	11.9	119	12.0	120	1	70-130/30
74-83-9	Bromomethane	10	8.0	80	8.6	86	7	70-130/30
593-60-2	Bromoethene	10	8.3	83	8.7	87	5	70-130/30
100-44-7	Benzyl Chloride	10	10.1	101	10.3	103	2	70-130/30
75-15-0	Carbon disulfide	10	9.0	90	9.2	92	2	70-130/30
108-90-7	Chlorobenzene	10	10.7	107	10.9	109	2	70-130/30
75-00-3	Chloroethane	10	7.5	75	8.1	81	8	70-130/30
67-66-3	Chloroform	10	10.3	103	10.3	103	0	70-130/30
74-87-3	Chloromethane	10	8.0	80	8.5	85	6	70-130/30
107-05-1	3-Chloropropene	10	8.1	81	8.4	84	4	70-130/30
95-49-8	2-Chlorotoluene	10	11.7	117	11.9	119	2	70-130/30
56-23-5	Carbon tetrachloride	10	11.4	114	12.0	120	5	70-130/30
110-82-7	Cyclohexane	10	11.5	115	11.6	116	1	70-130/30
75-34-3	1,1-Dichloroethane	10	10.5	105	10.4	104	1	70-130/30
75-35-4	1,1-Dichloroethylene	10	8.1	81	8.2	82	1	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	11.4	114	11.6	116	2	70-130/30
107-06-2	1,2-Dichloroethane	10	9.8	98	9.9	99	1	70-130/30
78-87-5	1,2-Dichloropropane	10	10.5	105	10.7	107	2	70-130/30
123-91-1	1,4-Dioxane	10	10.8	108	10.7	107	1	70-130/30
75-71-8	Dichlorodifluoromethane	10	9.7	97	10.1	101	4	70-130/30
124-48-1	Dibromochloromethane	10	12.4	124	12.5	125	1	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	10.5	105	10.9	109	4	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	11.0	110	11.1	111	1	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	11.6	116	11.8	118	2	70-130/30
541-73-1	m-Dichlorobenzene	10	11.2	112	11.3	113	1	70-130/30
95-50-1	o-Dichlorobenzene	10	11.3	113	11.4	114	1	70-130/30
106-46-7	p-Dichlorobenzene	10	11.4	114	11.5	115	1	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	12.1	121	12.2	122	1	70-130/30
64-17-5	Ethanol	10	7.5	75	7.9	79	5	70-130/30
100-41-4	Ethylbenzene	10	11.5	115	11.6	116	1	70-130/30
141-78-6	Ethyl Acetate	10	10.9	109	10.4	104	5	70-130/30
622-96-8	4-Ethyltoluene	10	11.4	114	11.5	115	1	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W116-BS	8W02889.D	1	11/10/23	TS	n/a	n/a	V8W116
V8W116-BSD	8W02890.D	1	11/10/23	TS	n/a	n/a	V8W116

The QC reported here applies to the following samples: Method: TO-15

V8W116-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	8.9	89	9.2	92	3	70-130/30
76-14-2	Freon 114	10	8.8	88	9.2	92	4	70-130/30
142-82-5	Heptane	10	10.7	107	10.8	108	1	70-130/30
87-68-3	Hexachlorobutadiene	10	11.2	112	11.4	114	2	70-130/30
110-54-3	Hexane	10	10.9	109	10.4	104	5	70-130/30
591-78-6	2-Hexanone	10	11.5	115	11.5	115	0	70-130/30
67-63-0	Isopropyl Alcohol	10	7.3	73	7.4	74	1	70-130/30
75-09-2	Methylene chloride	10	7.7	77	7.8	78	1	70-130/30
78-93-3	Methyl ethyl ketone	10	11.1	111	11.0	110	1	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	10.9	109	11.0	110	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	10.9	109	11.0	110	1	70-130/30
80-62-6	Methylmethacrylate	10	11.9	119	11.9	119	0	70-130/30
115-07-1	Propylene	10	11.0	110	11.6	116	5	70-130/30
100-42-5	Styrene	10	12.2	122	12.4	124	2	70-130/30
71-55-6	1,1,1-Trichloroethane	10	11.0	110	11.4	114	4	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	10.6	106	10.8	108	2	70-130/30
79-00-5	1,1,2-Trichloroethane	10	10.8	108	11.0	110	2	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	11.5	115	11.6	116	1	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	11.0	110	11.0	110	0	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	11.8	118	11.9	119	1	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	10.8	108	10.8	108	0	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	8.7	87	9.0	90	3	70-130/30
127-18-4	Tetrachloroethylene	10	11.3	113	11.5	115	2	70-130/30
109-99-9	Tetrahydrofuran	10	11.6	116	11.5	115	1	70-130/30
108-88-3	Toluene	10	11.5	115	11.6	116	1	70-130/30
79-01-6	Trichloroethylene	10	10.8	108	10.9	109	1	70-130/30
75-69-4	Trichlorofluoromethane	10	9.0	90	9.2	92	2	70-130/30
75-01-4	Vinyl chloride	10	8.4	84	8.8	88	5	70-130/30
108-05-4	Vinyl Acetate	10	11.5	115	11.7	117	2	70-130/30
	m,p-Xylene	20	23.0	115	23.3	117	1	70-130/30
95-47-6	o-Xylene	10	11.4	114	11.6	116	2	70-130/30
1330-20-7	Xylenes (total)	30	34.4	115	34.9	116	1	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W116-BS	8W02889.D	1	11/10/23	TS	n/a	n/a	V8W116
V8W116-BSD	8W02890.D	1	11/10/23	TS	n/a	n/a	V8W116

The QC reported here applies to the following samples: Method: TO-15

V8W116-SCC

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	98%	98%	65-128%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3272-BS	3W83124.D	1	11/16/23	WC	n/a	n/a	V3W3272
V3W3272-BSD	3W83125.D	1	11/16/23	WC	n/a	n/a	V3W3272

The QC reported here applies to the following samples: Method: TO-15

V3W3272-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	8.3	83	8.2	82	1	70-130/30
106-99-0	1,3-Butadiene	10	9.9	99	10	100	1	70-130/30
71-43-2	Benzene	10	9.3	93	9.4	94	1	70-130/30
75-27-4	Bromodichloromethane	10	10.1	101	10.1	101	0	70-130/30
75-25-2	Bromoform	10	14.6	146* [a]	14.3	143* [b]	2	70-130/30
74-83-9	Bromomethane	10	9.1	91	9.1	91	0	70-130/30
593-60-2	Bromoethene	10	9.8	98	9.7	97	1	70-130/30
100-44-7	Benzyl Chloride	10	11.7	117	11.6	116	1	70-130/30
75-15-0	Carbon disulfide	10	9.4	94	9.5	95	1	70-130/30
108-90-7	Chlorobenzene	10	10.8	108	10.7	107	1	70-130/30
75-00-3	Chloroethane	10	9.4	94	9.4	94	0	70-130/30
67-66-3	Chloroform	10	9.4	94	9.5	95	1	70-130/30
74-87-3	Chloromethane	10	9.9	99	10	100	1	70-130/30
107-05-1	3-Chloropropene	10	9.4	94	9.4	94	0	70-130/30
95-49-8	2-Chlorotoluene	10	11.1	111	11.0	110	1	70-130/30
56-23-5	Carbon tetrachloride	10	9.5	95	9.6	96	1	70-130/30
110-82-7	Cyclohexane	10	9.3	93	9.3	93	0	70-130/30
75-34-3	1,1-Dichloroethane	10	9.3	93	9.4	94	1	70-130/30
75-35-4	1,1-Dichloroethylene	10	9.8	98	9.8	98	0	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	11.2	112	11.2	112	0	70-130/30
107-06-2	1,2-Dichloroethane	10	9.3	93	9.4	94	1	70-130/30
78-87-5	1,2-Dichloropropane	10	9.6	96	9.7	97	1	70-130/30
123-91-1	1,4-Dioxane	10	9.8	98	9.8	98	0	70-130/30
75-71-8	Dichlorodifluoromethane	10	9.3	93	9.4	94	1	70-130/30
124-48-1	Dibromochloromethane	10	12.0	120	11.8	118	2	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	10.0	100	10.0	100	0	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	9.9	99	9.9	99	0	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	9.9	99	9.9	99	0	70-130/30
541-73-1	m-Dichlorobenzene	10	11.8	118	11.6	116	2	70-130/30
95-50-1	o-Dichlorobenzene	10	11.4	114	11.2	112	2	70-130/30
106-46-7	p-Dichlorobenzene	10	11.6	116	11.5	115	1	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	9.9	99	10.0	100	1	70-130/30
64-17-5	Ethanol	10	8.7	87	8.8	88	1	70-130/30
100-41-4	Ethylbenzene	10	10.7	107	10.7	107	0	70-130/30
141-78-6	Ethyl Acetate	10	9.8	98	10.1	101	3	70-130/30
622-96-8	4-Ethyltoluene	10	11.4	114	11.3	113	1	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3272-BS	3W83124.D	1	11/16/23	WC	n/a	n/a	V3W3272
V3W3272-BSD	3W83125.D	1	11/16/23	WC	n/a	n/a	V3W3272

The QC reported here applies to the following samples: Method: TO-15

V3W3272-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	10.4	104	10.3	103	1	70-130/30
76-14-2	Freon 114	10	9.7	97	9.7	97	0	70-130/30
142-82-5	Heptane	10	9.9	99	10	100	1	70-130/30
87-68-3	Hexachlorobutadiene	10	10.9	109	10.8	108	1	70-130/30
110-54-3	Hexane	10	9.4	94	9.5	95	1	70-130/30
591-78-6	2-Hexanone	10	11.0	110	11.0	110	0	70-130/30
67-63-0	Isopropyl Alcohol	10	9.6	96	9.6	96	0	70-130/30
75-09-2	Methylene chloride	10	9.4	94	9.4	94	0	70-130/30
78-93-3	Methyl ethyl ketone	10	9.5	95	9.6	96	1	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	10	100	10.1	101	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	8.9	89	8.9	89	0	70-130/30
80-62-6	Methylmethacrylate	10	9.8	98	10.2	102	4	70-130/30
115-07-1	Propylene	10	9.4	94	9.5	95	1	70-130/30
100-42-5	Styrene	10	11.2	112	11.2	112	0	70-130/30
71-55-6	1,1,1-Trichloroethane	10	9.4	94	9.6	96	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	10.9	109	10.8	108	1	70-130/30
79-00-5	1,1,2-Trichloroethane	10	10.1	101	10.1	101	0	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	10.4	104	10.3	103	1	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	11.3	113	11.2	112	1	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	11.1	111	11.0	110	1	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	10	100	10	100	0	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	9.4	94	9.4	94	0	70-130/30
127-18-4	Tetrachloroethylene	10	11.2	112	11.0	110	2	70-130/30
109-99-9	Tetrahydrofuran	10	9.4	94	9.6	96	2	70-130/30
108-88-3	Toluene	10	10	100	10	100	0	70-130/30
79-01-6	Trichloroethylene	10	10.1	101	10.1	101	0	70-130/30
75-69-4	Trichlorofluoromethane	10	9.7	97	9.7	97	0	70-130/30
75-01-4	Vinyl chloride	10	9.5	95	9.5	95	0	70-130/30
108-05-4	Vinyl Acetate	10	9.1	91	9.3	93	2	70-130/30
	m,p-Xylene	20	22.1	111	22.1	111	0	70-130/30
95-47-6	o-Xylene	10	11.2	112	11.1	111	1	70-130/30
1330-20-7	Xylenes (total)	30	33.3	111	33.2	111	0	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3272-BS	3W83124.D	1	11/16/23	WC	n/a	n/a	V3W3272
V3W3272-BSD	3W83125.D	1	11/16/23	WC	n/a	n/a	V3W3272

The QC reported here applies to the following samples: Method: TO-15

V3W3272-SCC

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	104%	104%	65-128%

(a) High percent recoveries and no associated positive found in the QC batch.
(b) High percent recovery and no associated positive reported in the QC batch.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W123-BS	8W03059.D	1	11/27/23	WC	n/a	n/a	V8W123
V8W123-BSD	8W03060.D	1	11/27/23	WC	n/a	n/a	V8W123

The QC reported here applies to the following samples: Method: TO-15

V8W123-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	9.8	98	9.8	98	0	70-130/30
106-99-0	1,3-Butadiene	10	10.1	101	10.2	102	1	70-130/30
71-43-2	Benzene	10	11.1	111	11.3	113	2	70-130/30
75-27-4	Bromodichloromethane	10	12.1	121	12.2	122	1	70-130/30
75-25-2	Bromoform	10	12.1	121	12.5	125	3	70-130/30
74-83-9	Bromomethane	10	8.4	84	8.7	87	4	70-130/30
593-60-2	Bromoethene	10	8.7	87	8.8	88	1	70-130/30
100-44-7	Benzyl Chloride	10	11.6	116	11.6	116	0	70-130/30
75-15-0	Carbon disulfide	10	10.6	106	10.6	106	0	70-130/30
108-90-7	Chlorobenzene	10	10.4	104	10.7	107	3	70-130/30
75-00-3	Chloroethane	10	8.8	88	8.9	89	1	70-130/30
67-66-3	Chloroform	10	11.4	114	11.5	115	1	70-130/30
74-87-3	Chloromethane	10	9.9	99	9.9	99	0	70-130/30
107-05-1	3-Chloropropene	10	9.2	92	9.3	93	1	70-130/30
95-49-8	2-Chlorotoluene	10	11.4	114	11.7	117	3	70-130/30
56-23-5	Carbon tetrachloride	10	12.9	129	13.0	130	1	70-130/30
110-82-7	Cyclohexane	10	11.4	114	11.7	117	3	70-130/30
75-34-3	1,1-Dichloroethane	10	12.5	125	12.7	127	2	70-130/30
75-35-4	1,1-Dichloroethylene	10	8.9	89	8.9	89	0	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	11.6	116	11.8	118	2	70-130/30
107-06-2	1,2-Dichloroethane	10	12.3	123	12.4	124	1	70-130/30
78-87-5	1,2-Dichloropropane	10	11.6	116	11.9	119	3	70-130/30
123-91-1	1,4-Dioxane	10	11.0	110	11.2	112	2	70-130/30
75-71-8	Dichlorodifluoromethane	10	10.5	105	10.6	106	1	70-130/30
124-48-1	Dibromochloromethane	10	12.7	127	12.8	128	1	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	11.2	112	11.8	118	5	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	11.7	117	11.8	118	1	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	12.2	122	12.4	124	2	70-130/30
541-73-1	m-Dichlorobenzene	10	10.5	105	10.8	108	3	70-130/30
95-50-1	o-Dichlorobenzene	10	10.3	103	10.6	106	3	70-130/30
106-46-7	p-Dichlorobenzene	10	10.6	106	10.9	109	3	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	13.2	132* [a]	13.3	133* [a]	1	70-130/30
64-17-5	Ethanol	10	9.6	96	9.9	99	3	70-130/30
100-41-4	Ethylbenzene	10	11.8	118	12.1	121	3	70-130/30
141-78-6	Ethyl Acetate	10	12.5	125	12.7	127	2	70-130/30
622-96-8	4-Ethyltoluene	10	11.4	114	11.6	116	2	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W123-BS	8W03059.D	1	11/27/23	WC	n/a	n/a	V8W123
V8W123-BSD	8W03060.D	1	11/27/23	WC	n/a	n/a	V8W123

The QC reported here applies to the following samples: Method: TO-15

V8W123-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	9.4	94	9.5	95	1	70-130/30
76-14-2	Freon 114	10	9.6	96	9.6	96	0	70-130/30
142-82-5	Heptane	10	12.9	129	13.0	130	1	70-130/30
87-68-3	Hexachlorobutadiene	10	10.2	102	10.7	107	5	70-130/30
110-54-3	Hexane	10	13.4	134* [a]	13.5	135* [a]	1	70-130/30
591-78-6	2-Hexanone	10	13.8	138* [a]	14.0	140* [a]	1	70-130/30
67-63-0	Isopropyl Alcohol	10	9.6	96	9.6	96	0	70-130/30
75-09-2	Methylene chloride	10	8.6	86	8.7	87	1	70-130/30
78-93-3	Methyl ethyl ketone	10	11.7	117	11.9	119	2	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	13.1	131* [a]	13.3	133* [a]	2	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	12.3	123	12.4	124	1	70-130/30
80-62-6	Methylmethacrylate	10	12.0	120	12.3	123	2	70-130/30
115-07-1	Propylene	10	14.0	140* [a]	14.1	141* [a]	1	70-130/30
100-42-5	Styrene	10	12.1	121	12.5	125	3	70-130/30
71-55-6	1,1,1-Trichloroethane	10	12.7	127	12.9	129	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	10.7	107	10.9	109	2	70-130/30
79-00-5	1,1,2-Trichloroethane	10	11.0	110	11.2	112	2	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	10.5	105	10.9	109	4	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	10.8	108	11.0	110	2	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	11.9	119	12.1	121	2	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	13.0	130	13.1	131* [a]	1	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	11.9	119	12.0	120	1	70-130/30
127-18-4	Tetrachloroethylene	10	10.9	109	11.1	111	2	70-130/30
109-99-9	Tetrahydrofuran	10	12.1	121	12.3	123	2	70-130/30
108-88-3	Toluene	10	11.4	114	11.7	117	3	70-130/30
79-01-6	Trichloroethylene	10	11.1	111	11.4	114	3	70-130/30
75-69-4	Trichlorofluoromethane	10	10.4	104	10.4	104	0	70-130/30
75-01-4	Vinyl chloride	10	9.9	99	10.1	101	2	70-130/30
108-05-4	Vinyl Acetate	10	12.5	125	12.7	127	2	70-130/30
	m,p-Xylene	20	23.8	119	24.4	122	2	70-130/30
95-47-6	o-Xylene	10	11.7	117	12.0	120	3	70-130/30
1330-20-7	Xylenes (total)	30	35.5	118	36.4	121	3	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W123-BS	8W03059.D	1	11/27/23	WC	n/a	n/a	V8W123
V8W123-BSD	8W03060.D	1	11/27/23	WC	n/a	n/a	V8W123

The QC reported here applies to the following samples: Method: TO-15

V8W123-SCC

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	102%	103%	65-128%

(a) High percent recovery and no associated positive reported in the QC batch.

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD78965-1DUP	3W83799.D	1	12/20/23	TCH	n/a	n/a	V3W3300
JD78965-1	3W83798.D	1	12/20/23	TCH	n/a	n/a	V3W3300

The QC reported here applies to the following samples: Method: TO-15

JD78929-3

CAS No.	Compound	JD78965-1 ppbv	Q	DUP ppbv	Q	RPD	Limits
67-64-1	Acetone (2-Propanone)	68.2		70.5		3	25
106-99-0	1,3-Butadiene	30.8		31.6		3	25
71-43-2	Benzene	12.3		12.7		3	25
75-27-4	Bromodichloromethane	ND		ND		nc	25
75-25-2	Bromoform	ND		ND		nc	25
74-83-9	Bromomethane	ND		ND		nc	25
593-60-2	Bromoethene	ND		ND		nc	25
100-44-7	Benzyl Chloride	ND		ND		nc	25
75-15-0	Carbon disulfide	1.2		1.2		0	25
108-90-7	Chlorobenzene	ND		ND		nc	25
75-00-3	Chloroethane	ND		ND		nc	25
67-66-3	Chloroform	ND		ND		nc	25
74-87-3	Chloromethane	ND		ND		nc	25
107-05-1	3-Chloropropene	ND		ND		nc	25
95-49-8	2-Chlorotoluene	ND		ND		nc	25
56-23-5	Carbon tetrachloride	ND		ND		nc	25
110-82-7	Cyclohexane	1.5		1.5		0	25
75-34-3	1,1-Dichloroethane	ND		ND		nc	25
75-35-4	1,1-Dichloroethylene	ND		ND		nc	25
106-93-4	1,2-Dibromoethane (EDB)	ND		ND		nc	25
107-06-2	1,2-Dichloroethane	ND		ND		nc	25
78-87-5	1,2-Dichloropropane	ND		ND		nc	25
123-91-1	1,4-Dioxane	ND		ND		nc	25
75-71-8	Dichlorodifluoromethane	ND		ND		nc	25
124-48-1	Dibromochloromethane	ND		ND		nc	25
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	25
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	25
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	25
541-73-1	m-Dichlorobenzene	ND		ND		nc	25
95-50-1	o-Dichlorobenzene	ND		ND		nc	25
106-46-7	p-Dichlorobenzene	ND		ND		nc	25
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	25
64-17-5	Ethanol	4.4		5.2		17	25
100-41-4	Ethylbenzene	1.0		1.1		10	25
141-78-6	Ethyl Acetate	66.0		67.1		2	25
622-96-8	4-Ethyltoluene	ND		ND		nc	25

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD78965-1DUP	3W83799.D	1	12/20/23	TCH	n/a	n/a	V3W3300
JD78965-1	3W83798.D	1	12/20/23	TCH	n/a	n/a	V3W3300

The QC reported here applies to the following samples: Method: TO-15

JD78929-3

CAS No.	Compound	JD78965-1 ppbv	Q	DUP ppbv	Q	RPD	Limits
76-13-1	Freon 113	ND		ND		nc	25
76-14-2	Freon 114	ND		ND		nc	25
142-82-5	Heptane	6.3		6.5		3	25
87-68-3	Hexachlorobutadiene	ND		ND		nc	25
110-54-3	Hexane	12.4		12.8		3	25
591-78-6	2-Hexanone	ND		ND		nc	25
67-63-0	Isopropyl Alcohol	3.8		4.0		5	25
75-09-2	Methylene chloride	0.49	J	0.55	J	12	25
78-93-3	Methyl ethyl ketone	12.9		13.4		4	25
108-10-1	Methyl Isobutyl Ketone	ND		ND		nc	25
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	25
80-62-6	Methylmethacrylate	ND		ND		nc	25
115-07-1	Propylene	239	E	246	E	3	25
100-42-5	Styrene	0.44	J	0.45	J	2	25
71-55-6	1,1,1-Trichloroethane	ND		ND		nc	25
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	25
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	25
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	25
95-63-6	1,2,4-Trimethylbenzene	0.64	J	0.65	J	2	25
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	25
540-84-1	2,2,4-Trimethylpentane	ND		ND		nc	25
75-65-0	Tertiary Butyl Alcohol	ND		ND		nc	25
127-18-4	Tetrachloroethylene	ND		ND		nc	25
109-99-9	Tetrahydrofuran	ND		ND		nc	25
108-88-3	Toluene	8.5		8.8		3	25
79-01-6	Trichloroethylene	ND		ND		nc	25
75-69-4	Trichlorofluoromethane	ND		ND		nc	25
75-01-4	Vinyl chloride	ND		ND		nc	25
108-05-4	Vinyl Acetate	ND		ND		nc	25
	m,p-Xylene	1.8		1.9		5	25
95-47-6	o-Xylene	0.81		0.81		0	25
1330-20-7	Xylenes (total)	2.6		2.7		4	25

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD78965-1DUP	3W83799.D	1	12/20/23	TCH	n/a	n/a	V3W3300
JD78965-1	3W83798.D	1	12/20/23	TCH	n/a	n/a	V3W3300

The QC reported here applies to the following samples: Method: TO-15

JD78929-3

CAS No.	Surrogate Recoveries	DUP	JD78965-1	Limits
460-00-4	4-Bromofluorobenzene	91%	92%	65-128%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD79525-3DUP	3W83922.D	1	12/27/23	TCH	n/a	n/a	V3W3305
JD79525-3	3W83921.D	1	12/27/23	TCH	n/a	n/a	V3W3305

The QC reported here applies to the following samples: Method: TO-15

JD78929-1

CAS No.	Compound	JD79525-3 ppbv	Q	DUP ppbv	Q	RPD	Limits
67-64-1	Acetone (2-Propanone)	30.6		31.3		2	25
106-99-0	1,3-Butadiene	2.9		2.9		0	25
71-43-2	Benzene	0.91		0.92		1	25
75-27-4	Bromodichloromethane	ND		ND		nc	25
75-25-2	Bromoform	ND		ND		nc	25
74-83-9	Bromomethane	ND		ND		nc	25
593-60-2	Bromoethene	ND		ND		nc	25
100-44-7	Benzyl Chloride	ND		ND		nc	25
75-15-0	Carbon disulfide	0.68	J	0.69	J	1	25
108-90-7	Chlorobenzene	ND		ND		nc	25
75-00-3	Chloroethane	ND		ND		nc	25
67-66-3	Chloroform	0.49	J	0.52	J	6	25
74-87-3	Chloromethane	ND		ND		nc	25
107-05-1	3-Chloropropene	ND		ND		nc	25
95-49-8	2-Chlorotoluene	ND		ND		nc	25
56-23-5	Carbon tetrachloride	ND		ND		nc	25
110-82-7	Cyclohexane	ND		ND		nc	25
75-34-3	1,1-Dichloroethane	ND		ND		nc	25
75-35-4	1,1-Dichloroethylene	ND		ND		nc	25
106-93-4	1,2-Dibromoethane (EDB)	ND		ND		nc	25
107-06-2	1,2-Dichloroethane	ND		ND		nc	25
78-87-5	1,2-Dichloropropane	ND		ND		nc	25
123-91-1	1,4-Dioxane	ND		ND		nc	25
75-71-8	Dichlorodifluoromethane	0.47	J	0.47	J	0	25
124-48-1	Dibromochloromethane	ND		ND		nc	25
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	25
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	25
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	25
541-73-1	m-Dichlorobenzene	ND		ND		nc	25
95-50-1	o-Dichlorobenzene	ND		ND		nc	25
106-46-7	p-Dichlorobenzene	ND		ND		nc	25
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	25
64-17-5	Ethanol	5.7		6.1		7	25
100-41-4	Ethylbenzene	ND		ND		nc	25
141-78-6	Ethyl Acetate	6.9		7.2		4	25
622-96-8	4-Ethyltoluene	ND		ND		nc	25

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD79525-3DUP	3W83922.D	1	12/27/23	TCH	n/a	n/a	V3W3305
JD79525-3	3W83921.D	1	12/27/23	TCH	n/a	n/a	V3W3305

The QC reported here applies to the following samples: Method: TO-15

JD78929-1

CAS No.	Compound	JD79525-3 ppbv	Q	DUP ppbv	Q	RPD	Limits
76-13-1	Freon 113	ND		ND		nc	25
76-14-2	Freon 114	ND		ND		nc	25
142-82-5	Heptane	1.2		1.3		8	25
87-68-3	Hexachlorobutadiene	ND		ND		nc	25
110-54-3	Hexane	6.6		6.7		2	25
591-78-6	2-Hexanone	ND		ND		nc	25
67-63-0	Isopropyl Alcohol	1.5		1.7		13	25
75-09-2	Methylene chloride	ND		ND		nc	25
78-93-3	Methyl ethyl ketone	6.0		6.0		0	25
108-10-1	Methyl Isobutyl Ketone	0.79	J	0.86		8	25
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	25
80-62-6	Methylmethacrylate	ND		ND		nc	25
115-07-1	Propylene	20.2		20.4		1	25
100-42-5	Styrene	ND		ND		nc	25
71-55-6	1,1,1-Trichloroethane	ND		ND		nc	25
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	25
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	25
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	25
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	25
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	25
540-84-1	2,2,4-Trimethylpentane	0.52	J	0.52	J	0	25
75-65-0	Tertiary Butyl Alcohol	4.0		4.1		2	25
127-18-4	Tetrachloroethylene	ND		ND		nc	25
109-99-9	Tetrahydrofuran	ND		ND		nc	25
108-88-3	Toluene	1.6		1.6		0	25
79-01-6	Trichloroethylene	ND		ND		nc	25
75-69-4	Trichlorofluoromethane	ND		ND		nc	25
75-01-4	Vinyl chloride	ND		ND		nc	25
108-05-4	Vinyl Acetate	ND		ND		nc	25
	m,p-Xylene	ND		ND		nc	25
95-47-6	o-Xylene	ND		ND		nc	25
1330-20-7	Xylenes (total)	ND		ND		nc	25

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD79525-3DUP	3W83922.D	1	12/27/23	TCH	n/a	n/a	V3W3305
JD79525-3	3W83921.D	1	12/27/23	TCH	n/a	n/a	V3W3305

The QC reported here applies to the following samples: Method: TO-15

JD78929-1

CAS No.	Surrogate Recoveries	DUP	JD79525-3	Limits
460-00-4	4-Bromofluorobenzene	87%	87%	65-128%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD79520-9DUP	3W83941.D	2.05	12/28/23	TCH	n/a	n/a	V3W3306
JD79520-9 [a]	3W83940.D	2.05	12/28/23	TCH	n/a	n/a	V3W3306

The QC reported here applies to the following samples: Method: TO-15

JD78929-2

CAS No.	Compound	JD79520-9 ppbv	Q	DUP ppbv	Q	RPD	Limits
67-64-1	Acetone (2-Propanone)	4.7		4.8		2	25
106-99-0	1,3-Butadiene	ND		ND		nc	25
71-43-2	Benzene	ND		ND		nc	25
75-27-4	Bromodichloromethane	ND		ND		nc	25
75-25-2	Bromoform	ND		ND		nc	25
74-83-9	Bromomethane	ND		ND		nc	25
593-60-2	Bromoethene	ND		ND		nc	25
100-44-7	Benzyl Chloride	ND		ND		nc	25
75-15-0	Carbon disulfide	ND		ND		nc	25
108-90-7	Chlorobenzene	ND		ND		nc	25
75-00-3	Chloroethane	ND		ND		nc	25
67-66-3	Chloroform	ND		ND		nc	25
74-87-3	Chloromethane	ND		ND		nc	25
107-05-1	3-Chloropropene	ND		ND		nc	25
95-49-8	2-Chlorotoluene	ND		ND		nc	25
56-23-5	Carbon tetrachloride	ND		ND		nc	25
110-82-7	Cyclohexane	ND		ND		nc	25
75-34-3	1,1-Dichloroethane	ND		ND		nc	25
75-35-4	1,1-Dichloroethylene	ND		ND		nc	25
106-93-4	1,2-Dibromoethane (EDB)	ND		ND		nc	25
107-06-2	1,2-Dichloroethane	ND		ND		nc	25
78-87-5	1,2-Dichloropropane	ND		ND		nc	25
123-91-1	1,4-Dioxane	ND		ND		nc	25
75-71-8	Dichlorodifluoromethane	ND		ND		nc	25
124-48-1	Dibromochloromethane	ND		ND		nc	25
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	25
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	25
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	25
541-73-1	m-Dichlorobenzene	ND		ND		nc	25
95-50-1	o-Dichlorobenzene	ND		ND		nc	25
106-46-7	p-Dichlorobenzene	ND		ND		nc	25
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	25
64-17-5	Ethanol	1.8	J	1.9	J	5	25
100-41-4	Ethylbenzene	ND		ND		nc	25
141-78-6	Ethyl Acetate	ND		ND		nc	25
622-96-8	4-Ethyltoluene	ND		ND		nc	25

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD79520-9DUP	3W83941.D	2.05	12/28/23	TCH	n/a	n/a	V3W3306
JD79520-9 [a]	3W83940.D	2.05	12/28/23	TCH	n/a	n/a	V3W3306

The QC reported here applies to the following samples: Method: TO-15

JD78929-2

CAS No.	Compound	JD79520-9 ppbv	Q	DUP ppbv	Q	RPD	Limits
76-13-1	Freon 113	ND		ND		nc	25
76-14-2	Freon 114	ND		ND		nc	25
142-82-5	Heptane	ND		ND		nc	25
87-68-3	Hexachlorobutadiene	ND		ND		nc	25
110-54-3	Hexane	0.67	J	0.73	J	9	25
591-78-6	2-Hexanone	ND		ND		nc	25
67-63-0	Isopropyl Alcohol	ND		ND		nc	25
75-09-2	Methylene chloride	1.8		1.8		0	25
78-93-3	Methyl ethyl ketone	ND		ND		nc	25
108-10-1	Methyl Isobutyl Ketone	ND		ND		nc	25
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	25
80-62-6	Methylmethacrylate	ND		ND		nc	25
115-07-1	Propylene	ND		ND		nc	25
100-42-5	Styrene	ND		ND		nc	25
71-55-6	1,1,1-Trichloroethane	ND		ND		nc	25
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	25
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	25
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	25
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	25
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	25
540-84-1	2,2,4-Trimethylpentane	ND		ND		nc	25
75-65-0	Tertiary Butyl Alcohol	ND		ND		nc	25
127-18-4	Tetrachloroethylene	1.7		1.7		0	25
109-99-9	Tetrahydrofuran	ND		ND		nc	25
108-88-3	Toluene	ND		ND		nc	25
79-01-6	Trichloroethylene	0.71		0.73		3	25
75-69-4	Trichlorofluoromethane	ND		ND		nc	25
75-01-4	Vinyl chloride	ND		ND		nc	25
108-05-4	Vinyl Acetate	ND		ND		nc	25
	m,p-Xylene	ND		ND		nc	25
95-47-6	o-Xylene	ND		ND		nc	25
1330-20-7	Xylenes (total)	ND		ND		nc	25

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD79520-9DUP	3W83941.D	2.05	12/28/23	TCH	n/a	n/a	V3W3306
JD79520-9 [a]	3W83940.D	2.05	12/28/23	TCH	n/a	n/a	V3W3306

The QC reported here applies to the following samples: Method: TO-15

JD78929-2

CAS No.	Surrogate Recoveries	DUP	JD79520-9	Limits
460-00-4	4-Bromofluorobenzene	86%	87%	65-128%

(a) Preliminary Data.

* = Outside of Control Limits.

Summa Cleaning Certification

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W112-SCC	7W02712.D	1	08/08/23	TCH	n/a	n/a	V7W112

The QC reported here (Summa A2290) applies to the following samples: Method: TO-15

Batch CP12369 cleaned 08/01/23: JD78929-2(A2210)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Summa Cleaning Certification

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W112-SCC	7W02712.D	1	08/08/23	TCH	n/a	n/a	V7W112

The QC reported here (Summa A2290) applies to the following samples: Method: TO-15

Batch CP12369 cleaned 08/01/23: JD78929-2(A2210)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Summa Cleaning Certification

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W112-SCC	7W02712.D	1	08/08/23	TCH	n/a	n/a	V7W112

The QC reported here (Summa A2290) applies to the following samples: Method: TO-15

Batch CP12369 cleaned 08/01/23: JD78929-2(A2210)

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	95%	65-128%

Summa Cleaning Certification

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W116-SCC	8W02906.D	1	11/10/23	TS	n/a	n/a	V8W116

The QC reported here (Summa A1714) applies to the following samples: Method: TO-15

Batch CP12507 cleaned 11/07/23: JD78929-1(A841)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Summa Cleaning Certification

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W116-SCC	8W02906.D	1	11/10/23	TS	n/a	n/a	V8W116

The QC reported here (Summa A1714) applies to the following samples: Method: TO-15

Batch CP12507 cleaned 11/07/23: JD78929-1(A841)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Summa Cleaning Certification

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W116-SCC	8W02906.D	1	11/10/23	TS	n/a	n/a	V8W116

The QC reported here (Summa A1714) applies to the following samples: Method: TO-15

Batch CP12507 cleaned 11/07/23: JD78929-1(A841)

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	99%	65-128%

Summa Cleaning Certification

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3272-SCC	3W83147.D	1	11/17/23	WC	n/a	n/a	V3W3272

The QC reported here (Summa A1160) applies to the following samples: Method: TO-15

Batch CP12513 cleaned 11/09/23: JD78929-2(A1357)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Summa Cleaning Certification

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3272-SCC	3W83147.D	1	11/17/23	WC	n/a	n/a	V3W3272

The QC reported here (Summa A1160) applies to the following samples: Method: TO-15

Batch CP12513 cleaned 11/09/23: JD78929-2(A1357)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Summa Cleaning Certification

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3W3272-SCC	3W83147.D	1	11/17/23	WC	n/a	n/a	V3W3272

The QC reported here (Summa A1160) applies to the following samples: Method: TO-15

Batch CP12513 cleaned 11/09/23: JD78929-2(A1357)

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	93%	65-128%

Summa Cleaning Certification

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W123-SCC	8W03080.D	1	11/28/23	WC	n/a	n/a	V8W123

The QC reported here (Summa A2270) applies to the following samples: Method: TO-15

Batch CP12526 cleaned 11/17/23: JD78929-1(A1923)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Summa Cleaning Certification

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W123-SCC	8W03080.D	1	11/28/23	WC	n/a	n/a	V8W123

The QC reported here (Summa A2270) applies to the following samples: Method: TO-15

Batch CP12526 cleaned 11/17/23: JD78929-1(A1923)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Summa Cleaning Certification

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V8W123-SCC	8W03080.D	1	11/28/23	WC	n/a	n/a	V8W123

The QC reported here (Summa A2270) applies to the following samples: Method: TO-15

Batch CP12526 cleaned 11/17/23: JD78929-1(A1923)

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	101%	65-128%

Instrument Performance Check (BFB)

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample:	V3W3236-BFB	Injection Date:	09/29/23
Lab File ID:	3W82140.D	Injection Time:	22:25
Instrument ID:	GCMS3W		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	39109	23.3		Pass
75	30.0 - 66.0% of mass 95	78699	46.9		Pass
95	Base peak, 100% relative abundance	167744	100.0		Pass
96	5.0 - 9.0% of mass 95	10910	6.50		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	138421	82.5		Pass
175	4.0 - 9.01% of mass 174	10480	6.25	(7.57) [a]	Pass
176	93.0 - 101.0% of mass 174	136784	81.5	(98.8) [a]	Pass
177	5.0 - 9.0% of mass 176	8860	5.28	(6.48) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3W3236-IC3236	3W82141.D	09/29/23	23:04	00:39	Initial cal 0.04
V3W3236-IC3236	3W82142.D	09/29/23	23:44	01:19	Initial cal 0.1
V3W3236-IC3236	3W82143.D	09/30/23	00:25	02:00	Initial cal 0.2
V3W3236-IC3236	3W82144.D	09/30/23	01:07	02:42	Initial cal 0.5
V3W3236-IC3236	3W82146.D	09/30/23	02:27	04:02	Initial cal 5
V3W3236-ICC3236	3W82147.D	09/30/23	03:08	04:43	Initial cal 10
V3W3236-IC3236	3W82148.D	09/30/23	03:50	05:25	Initial cal 20
V3W3236-IC3236	3W82149.D	09/30/23	04:36	06:11	Initial cal 40
V3W3236-IC3236	3W82150.D	09/30/23	05:24	06:59	Initial cal 50
V3W3236-ICV3236	3W82153.D	09/30/23	07:31	09:06	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample:	V3W3272-BFB	Injection Date:	11/16/23
Lab File ID:	3W83122.D	Injection Time:	08:47
Instrument ID:	GCMS3W		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	37944	23.2		Pass
75	30.0 - 66.0% of mass 95	76984	47.1		Pass
95	Base peak, 100% relative abundance	163392	100.0		Pass
96	5.0 - 9.0% of mass 95	11525	7.05		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	157163	96.2		Pass
175	4.0 - 9.01% of mass 174	11879	7.27	(7.56) [a]	Pass
176	93.0 - 101.0% of mass 174	153835	94.2	(97.9) [a]	Pass
177	5.0 - 9.0% of mass 176	10435	6.39	(6.78) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3W3272-CC3236	3W83123.D	11/16/23	09:28	00:41	Continuing cal 10
V3W3272-BS	3W83124.D	11/16/23	10:18	01:31	Blank Spike
V3W3272-BSD	3W83125.D	11/16/23	10:59	02:12	Blank Spike Duplicate
V3W3272-MB	3W83127.D	11/16/23	12:29	03:42	Method Blank
ZZZZZZ	3W83128.D	11/16/23	13:26	04:39	(unrelated sample)
ZZZZZZ	3W83129.D	11/16/23	14:12	05:25	(unrelated sample)
JD76981-1	3W83131.D	11/16/23	15:32	06:45	(used for QC only; not part of job JD78929)
JD76981-1DUP	3W83132.D	11/16/23	16:13	07:26	Duplicate
ZZZZZZ	3W83133.D	11/16/23	16:56	08:09	(unrelated sample)
ZZZZZZ	3W83134.D	11/16/23	17:37	08:50	(unrelated sample)
ZZZZZZ	3W83135.D	11/16/23	18:18	09:31	(unrelated sample)
ZZZZZZ	3W83138.D	11/16/23	20:21	11:34	(unrelated sample)
ZZZZZZ	3W83139.D	11/16/23	21:03	12:16	(unrelated sample)
ZZZZZZ	3W83140.D	11/16/23	21:43	12:56	(unrelated sample)
ZZZZZZ	3W83141.D	11/16/23	22:25	13:38	(unrelated sample)
ZZZZZZ	3W83142.D	11/16/23	23:07	14:20	(unrelated sample)
ZZZZZZ	3W83143.D	11/16/23	23:49	15:02	(unrelated sample)
ZZZZZZ	3W83144.D	11/17/23	00:30	15:43	(unrelated sample)
ZZZZZZ	3W83145.D	11/17/23	01:16	16:29	(unrelated sample)
ZZZZZZ	3W83146.D	11/17/23	02:02	17:15	(unrelated sample)
V3W3272-SCC	3W83147.D	11/17/23	02:48	18:01	Summa Cleaning Certification
V3W3272-SCC	3W83148.D	11/17/23	03:34	18:47	Summa Cleaning Certification

Instrument Performance Check (BFB)

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample:	V3W3300-BFB	Injection Date:	12/20/23
Lab File ID:	3W83787.D	Injection Time:	08:54
Instrument ID:	GCMS3W		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	35571	24.3		Pass
75	30.0 - 66.0% of mass 95	77309	52.8		Pass
95	Base peak, 100% relative abundance	146475	100.0		Pass
96	5.0 - 9.0% of mass 95	9809	6.70		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	122491	83.6		Pass
175	4.0 - 9.01% of mass 174	9612	6.56	(7.85) [a]	Pass
176	93.0 - 101.0% of mass 174	122373	83.5	(99.9) [a]	Pass
177	5.0 - 9.0% of mass 176	8140	5.56	(6.65) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3W3300-CC3236	3W83788.D	12/20/23	09:35	00:41	Continuing cal 10
V3W3300-BS	3W83789.D	12/20/23	10:28	01:34	Blank Spike
V3W3300-BSD	3W83790.D	12/20/23	11:38	02:44	Blank Spike Duplicate
V3W3300-MB	3W83792.D	12/20/23	13:20	04:26	Method Blank
ZZZZZZ	3W83793.D	12/20/23	15:33	06:39	(unrelated sample)
ZZZZZZ	3W83794.D	12/20/23	16:23	07:29	(unrelated sample)
ZZZZZZ	3W83795.D	12/20/23	17:09	08:15	(unrelated sample)
ZZZZZZ	3W83796.D	12/20/23	17:56	09:02	(unrelated sample)
ZZZZZZ	3W83797.D	12/20/23	18:42	09:48	(unrelated sample)
JD78965-1	3W83798.D	12/20/23	19:23	10:29	(used for QC only; not part of job JD78929)
JD78965-1DUP	3W83799.D	12/20/23	20:05	11:11	Duplicate
ZZZZZZ	3W83800.D	12/20/23	20:47	11:53	(unrelated sample)
ZZZZZZ	3W83801.D	12/20/23	21:28	12:34	(unrelated sample)
ZZZZZZ	3W83802.D	12/20/23	22:10	13:16	(unrelated sample)
ZZZZZZ	3W83803.D	12/20/23	22:52	13:58	(unrelated sample)
ZZZZZZ	3W83804.D	12/20/23	23:33	14:39	(unrelated sample)
ZZZZZZ	3W83805.D	12/21/23	00:14	15:20	(unrelated sample)
ZZZZZZ	3W83806.D	12/21/23	00:55	16:01	(unrelated sample)
JD78929-3	3W83807.D	12/21/23	01:34	16:40	AS-PHASE3-BAG

Instrument Performance Check (BFB)

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample:	V3W3305-BFB	Injection Date:	12/27/23
Lab File ID:	3W83906.D	Injection Time:	09:42
Instrument ID:	GCMS3W		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	48360	26.6		Pass
75	30.0 - 66.0% of mass 95	97995	54.0		Pass
95	Base peak, 100% relative abundance	181632	100.0		Pass
96	5.0 - 9.0% of mass 95	12268	6.75		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	149461	82.3		Pass
175	4.0 - 9.01% of mass 174	11745	6.47	(7.86) [a]	Pass
176	93.0 - 101.0% of mass 174	148949	82.0	(99.7) [a]	Pass
177	5.0 - 9.0% of mass 176	9833	5.41	(6.60) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3W3305-CC3236	3W83908.D	12/27/23	11:18	01:36	Continuing cal 10
V3W3305-BS	3W83909.D	12/27/23	12:11	02:29	Blank Spike
V3W3305-BSD	3W83910.D	12/27/23	12:52	03:10	Blank Spike Duplicate
V3W3305-MB	3W83913.D	12/27/23	15:06	05:24	Method Blank
ZZZZZZ	3W83917.D	12/27/23	18:48	09:06	(unrelated sample)
ZZZZZZ	3W83918.D	12/27/23	19:29	09:47	(unrelated sample)
ZZZZZZ	3W83919.D	12/27/23	20:10	10:28	(unrelated sample)
ZZZZZZ	3W83920.D	12/27/23	20:52	11:10	(unrelated sample)
JD79525-3	3W83921.D	12/27/23	21:33	11:51	(used for QC only; not part of job JD78929)
JD79525-3DUP	3W83922.D	12/27/23	22:14	12:32	Duplicate
ZZZZZZ	3W83923.D	12/27/23	23:01	13:19	(unrelated sample)
ZZZZZZ	3W83924.D	12/27/23	23:47	14:05	(unrelated sample)
JD78929-1	3W83925.D	12/28/23	00:27	14:45	AS-PHASE3-MID
ZZZZZZ	3W83927.D	12/28/23	01:48	16:06	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample:	V3W3306-BFB	Injection Date:	12/28/23
Lab File ID:	3W83928.D	Injection Time:	08:25
Instrument ID:	GCMS3W		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	49789	26.8		Pass
75	30.0 - 66.0% of mass 95	101349	54.6		Pass
95	Base peak, 100% relative abundance	185664	100.0		Pass
96	5.0 - 9.0% of mass 95	12703	6.84		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	151120	81.4		Pass
175	4.0 - 9.01% of mass 174	12229	6.59	(8.09) [a]	Pass
176	93.0 - 101.0% of mass 174	150445	81.0	(99.6) [a]	Pass
177	5.0 - 9.0% of mass 176	9917	5.34	(6.59) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3W3306-CC3236	3W83929.D	12/28/23	09:07	00:42	Continuing cal 10
V3W3306-BS	3W83930.D	12/28/23	09:54	01:29	Blank Spike
V3W3306-BSD	3W83932.D	12/28/23	11:30	03:05	Blank Spike Duplicate
V3W3306-MB	3W83934.D	12/28/23	12:57	04:32	Method Blank
ZZZZZZ	3W83935.D	12/28/23	13:50	05:25	(unrelated sample)
ZZZZZZ	3W83936.D	12/28/23	14:55	06:30	(unrelated sample)
ZZZZZZ	3W83937.D	12/28/23	15:36	07:11	(unrelated sample)
ZZZZZZ	3W83938.D	12/28/23	16:18	07:53	(unrelated sample)
JD79520-9	3W83940.D	12/28/23	17:43	09:18	(used for QC only; not part of job JD78929)
JD79520-9DUP	3W83941.D	12/28/23	18:26	10:01	Duplicate
JD78929-2	3W83942.D	12/28/23	19:06	10:41	AS-PHASE3-END
ZZZZZZ	3W83943.D	12/28/23	19:57	11:32	(unrelated sample)
ZZZZZZ	3W83944.D	12/28/23	20:49	12:24	(unrelated sample)
ZZZZZZ	3W83946.D	12/28/23	22:27	14:02	(unrelated sample)
ZZZZZZ	3W83947.D	12/28/23	23:13	14:48	(unrelated sample)
ZZZZZZ	3W83948.D	12/28/23	23:53	15:28	(unrelated sample)
ZZZZZZ	3W83949.D	12/29/23	00:35	16:10	(unrelated sample)
ZZZZZZ	3W83950.D	12/29/23	01:22	16:57	(unrelated sample)
ZZZZZZ	3W83951.D	12/29/23	02:08	17:43	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample:	V7W109-BFB	Injection Date:	08/03/23
Lab File ID:	7W02634.D	Injection Time:	17:45
Instrument ID:	GCMS7W		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	15954	33.2		Pass
75	30.0 - 66.0% of mass 95	24597	51.2		Pass
95	Base peak, 100% relative abundance	48064	100.0		Pass
96	5.0 - 9.0% of mass 95	3134	6.52		Pass
173	Less than 2.0% of mass 174	381	0.79	(1.11) [a]	Pass
174	50.0 - 120.0% of mass 95	34285	71.3		Pass
175	4.0 - 9.01% of mass 174	2465	5.13	(7.19) [a]	Pass
176	93.0 - 101.0% of mass 174	33696	70.1	(98.3) [a]	Pass
177	5.0 - 9.0% of mass 176	2104	4.38	(6.24) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V7W109-IC0109	7W02635.D	08/03/23	18:19	00:34	Initial cal 0.04
V7W109-IC0109	7W02636.D	08/03/23	18:50	01:05	Initial cal 0.1
V7W109-IC0109	7W02637.D	08/03/23	19:25	01:40	Initial cal 0.2
V7W109-IC0109	7W02638.D	08/03/23	20:02	02:17	Initial cal 0.5
V7W109-IC0109	7W02640.D	08/03/23	21:09	03:24	Initial cal 5
V7W109-ICC0109	7W02641.D	08/03/23	21:44	03:59	Initial cal 10
V7W109-IC0109	7W02642.D	08/03/23	22:21	04:36	Initial cal 20
V7W109-IC0109	7W02643.D	08/03/23	23:00	05:15	Initial cal 40
V7W109-IC0109	7W02644.D	08/03/23	23:42	05:57	Initial cal 50
V7W109-ICV0109	7W02647.D	08/04/23	01:26	07:41	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample:	V7W112-BFB	Injection Date:	08/08/23
Lab File ID:	7W02705.D	Injection Time:	12:18
Instrument ID:	GCMS7W		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	15353	33.0		Pass
75	30.0 - 66.0% of mass 95	24373	52.5		Pass
95	Base peak, 100% relative abundance	46464	100.0		Pass
96	5.0 - 9.0% of mass 95	3087	6.64		Pass
173	Less than 2.0% of mass 174	428	0.92	(1.28) [a]	Pass
174	50.0 - 120.0% of mass 95	33477	72.0		Pass
175	4.0 - 9.01% of mass 174	2466	5.31	(7.37) [a]	Pass
176	93.0 - 101.0% of mass 174	33755	72.6	(100.8) [a]	Pass
177	5.0 - 9.0% of mass 176	2295	4.94	(6.80) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V7W112-CC0109	7W02707.D	08/08/23	14:22	02:04	Continuing cal 10
V7W112-BS	7W02708.D	08/08/23	14:56	02:38	Blank Spike
V7W112-BSD	7W02709.D	08/08/23	15:30	03:12	Blank Spike Duplicate
V7W112-MB	7W02711.D	08/08/23	16:45	04:27	Method Blank
V7W112-SCC	7W02712.D	08/08/23	17:19	05:01	Summa Cleaning Certification
V7W112-SCC	7W02713.D	08/08/23	17:54	05:36	Summa Cleaning Certification
V7W112-SCC	7W02714.D	08/08/23	18:28	06:10	Summa Cleaning Certification
V7W112-SCC	7W02718.D	08/08/23	21:06	08:48	Summa Cleaning Certification
V7W112-SCC	7W02719.D	08/08/23	21:46	09:28	Summa Cleaning Certification
V7W112-SCC	7W02721.D	08/08/23	23:06	10:48	Summa Cleaning Certification
V7W112-SCC	7W02722.D	08/08/23	23:46	11:28	Summa Cleaning Certification
V7W112-SCC	7W02723.D	08/09/23	00:25	12:07	Summa Cleaning Certification
V7W112-SCC	7W02725.D	08/09/23	01:45	13:27	Summa Cleaning Certification
V7W112-SCC	7W02726.D	08/09/23	02:24	14:06	Summa Cleaning Certification
V7W112-SCC	7W02728.D	08/09/23	06:53	18:35	Summa Cleaning Certification
V7W112-SCC	7W02729.D	08/09/23	07:26	19:08	Summa Cleaning Certification
JD69410-1R	7W02730.D	08/09/23	08:01	19:43	(used for QC only; not part of job JD78929)
JD69410-1RDUP	7W02731.D	08/09/23	08:37	20:19	Duplicate

Instrument Performance Check (BFB)

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample:	V8W114-BFB	Injection Date:	11/07/23
Lab File ID:	8W02851.D	Injection Time:	18:47
Instrument ID:	GCMS8W		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	44155	17.7		Pass
75	30.0 - 66.0% of mass 95	122984	49.4		Pass
95	Base peak, 100% relative abundance	249024	100.0		Pass
96	5.0 - 9.0% of mass 95	16739	6.72		Pass
173	Less than 2.0% of mass 174	1163	0.47	(0.57) [a]	Pass
174	50.0 - 120.0% of mass 95	205717	82.6		Pass
175	4.0 - 9.01% of mass 174	14795	5.94	(7.19) [a]	Pass
176	93.0 - 101.0% of mass 174	199232	80.0	(96.8) [a]	Pass
177	5.0 - 9.0% of mass 176	12834	5.15	(6.44) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V8W114-IC0114	8W02852.D	11/07/23	19:21	00:34	Initial cal 0.04
V8W114-IC0114	8W02853.D	11/07/23	19:55	01:08	Initial cal 0.10
V8W114-IC0114	8W02854.D	11/07/23	20:29	01:42	Initial cal 0.20
V8W114-IC0114	8W02855.D	11/07/23	21:06	02:19	Initial cal 0.50
V8W114-IC0114	8W02858.D	11/08/23	10:33	15:46	Initial cal 5
V8W114-ICC0114	8W02859.D	11/08/23	11:08	16:21	Initial cal 10
V8W114-IC0114	8W02860.D	11/08/23	11:46	16:59	Initial cal 20
V8W114-IC0114	8W02861.D	11/08/23	12:25	17:38	Initial cal 40
V8W114-IC0114	8W02862.D	11/08/23	13:07	18:20	Initial cal 50
V8W114-ICV0114	8W02866.D	11/08/23	15:46	20:59	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample:	V8W116-BFB	Injection Date:	11/10/23
Lab File ID:	8W02887.D	Injection Time:	10:50
Instrument ID:	GCMS8W		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	33691	15.7		Pass
75	30.0 - 66.0% of mass 95	100333	46.7		Pass
95	Base peak, 100% relative abundance	214827	100.0		Pass
96	5.0 - 9.0% of mass 95	14582	6.79		Pass
173	Less than 2.0% of mass 174	1065	0.50	(0.58) [a]	Pass
174	50.0 - 120.0% of mass 95	184192	85.7		Pass
175	4.0 - 9.01% of mass 174	12916	6.01	(7.01) [a]	Pass
176	93.0 - 101.0% of mass 174	177941	82.8	(96.6) [a]	Pass
177	5.0 - 9.0% of mass 176	11640	5.42	(6.54) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V8W116-CC114	8W02888.D	11/10/23	11:48	00:58	Continuing cal 10
V8W116-BS	8W02889.D	11/10/23	12:32	01:42	Blank Spike
V8W116-BSD	8W02890.D	11/10/23	13:06	02:16	Blank Spike Duplicate
V8W116-MB	8W02892.D	11/10/23	14:43	03:53	Method Blank
JD76377-1	8W02893.D	11/10/23	15:28	04:38	(used for QC only; not part of job JD78929)
JD76377-1DUP	8W02895.D	11/10/23	16:37	05:47	Duplicate
JD76377-1	8W02897.D	11/10/23	17:45	06:55	(used for QC only; not part of job JD78929)
ZZZZZZ	8W02899.D	11/10/23	18:56	08:06	(unrelated sample)
ZZZZZZ	8W02901.D	11/10/23	20:06	09:16	(unrelated sample)
V8W116-SCC	8W02903.D	11/10/23	21:15	10:25	Summa Cleaning Certification
V8W116-SCC	8W02905.D	11/10/23	22:25	11:35	Summa Cleaning Certification
V8W116-SCC	8W02906.D	11/10/23	23:06	12:16	Summa Cleaning Certification
V8W116-SCC	8W02907.D	11/10/23	23:46	12:56	Summa Cleaning Certification
V8W116-SCC	8W02908.D	11/11/23	00:27	13:37	Summa Cleaning Certification
V8W116-SCC	8W02909.D	11/11/23	01:07	14:17	Summa Cleaning Certification
V8W116-SCC	8W02910.D	11/11/23	01:48	14:58	Summa Cleaning Certification
V8W116-SCC	8W02911.D	11/11/23	02:29	15:39	Summa Cleaning Certification
V8W116-SCC	8W02912.D	11/11/23	03:09	16:19	Summa Cleaning Certification
V8W116-SCC	8W02914.D	11/11/23	04:29	17:39	Summa Cleaning Certification

Instrument Performance Check (BFB)

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Sample:	V8W123-BFB	Injection Date:	11/27/23
Lab File ID:	8W03056.D	Injection Time:	10:15
Instrument ID:	GCMS8W		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	67715	19.3		Pass
75	30.0 - 66.0% of mass 95	171797	49.1		Pass
95	Base peak, 100% relative abundance	350101	100.0		Pass
96	5.0 - 9.0% of mass 95	23336	6.67		Pass
173	Less than 2.0% of mass 174	1629	0.47	(0.60) [a]	Pass
174	50.0 - 120.0% of mass 95	272128	77.7		Pass
175	4.0 - 9.01% of mass 174	19627	5.61	(7.21) [a]	Pass
176	93.0 - 101.0% of mass 174	264064	75.4	(97.0) [a]	Pass
177	5.0 - 9.0% of mass 176	17240	4.92	(6.53) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V8W123-CC114	8W03057.D	11/27/23	10:52	00:37	Continuing cal 10
V8W123-BS	8W03059.D	11/27/23	13:22	03:07	Blank Spike
V8W123-BSD	8W03060.D	11/27/23	14:22	04:07	Blank Spike Duplicate
V8W123-MB	8W03063.D	11/27/23	16:42	06:27	Method Blank
JD77499-1	8W03064.D	11/27/23	17:39	07:24	(used for QC only; not part of job JD78929)
JD77499-1DUP	8W03065.D	11/27/23	18:21	08:06	Duplicate
ZZZZZZ	8W03066.D	11/27/23	19:01	08:46	(unrelated sample)
V8W123-SCC	8W03074.D	11/27/23	23:32	13:17	Summa Cleaning Certification
V8W123-SCC	8W03075.D	11/28/23	00:07	13:52	Summa Cleaning Certification
V8W123-SCC	8W03076.D	11/28/23	00:42	14:27	Summa Cleaning Certification
V8W123-SCC	8W03077.D	11/28/23	01:21	15:06	Summa Cleaning Certification
V8W123-SCC	8W03078.D	11/28/23	02:00	15:45	Summa Cleaning Certification
V8W123-SCC	8W03079.D	11/28/23	02:40	16:25	Summa Cleaning Certification
V8W123-SCC	8W03080.D	11/28/23	03:15	17:00	Summa Cleaning Certification
V8W123-SCC	8W03081.D	11/28/23	03:50	17:35	Summa Cleaning Certification
V8W123-SCC	8W03082.D	11/28/23	04:25	18:10	Summa Cleaning Certification
V8W123-SCC	8W03083.D	11/28/23	05:00	18:45	Summa Cleaning Certification
V8W123-SCC	8W03084.D	11/28/23	05:35	19:20	Summa Cleaning Certification
V8W123-SCC	8W03085.D	11/28/23	06:10	19:55	Summa Cleaning Certification
V8W123-SCC	8W03087.D	11/28/23	07:31	21:16	Summa Cleaning Certification
V8W123-SCC	8W03088.D	11/28/23	08:11	21:56	Summa Cleaning Certification

Surrogate Recovery Summary

Job Number: JD78929
Account: TRIHYFLJ Trihydro Corp
Project: PERMA-023-0004, Task 0003, Valdosta, GA

Method: TO-15 Matrix: AIR

Samples and QC shown here apply to the above method

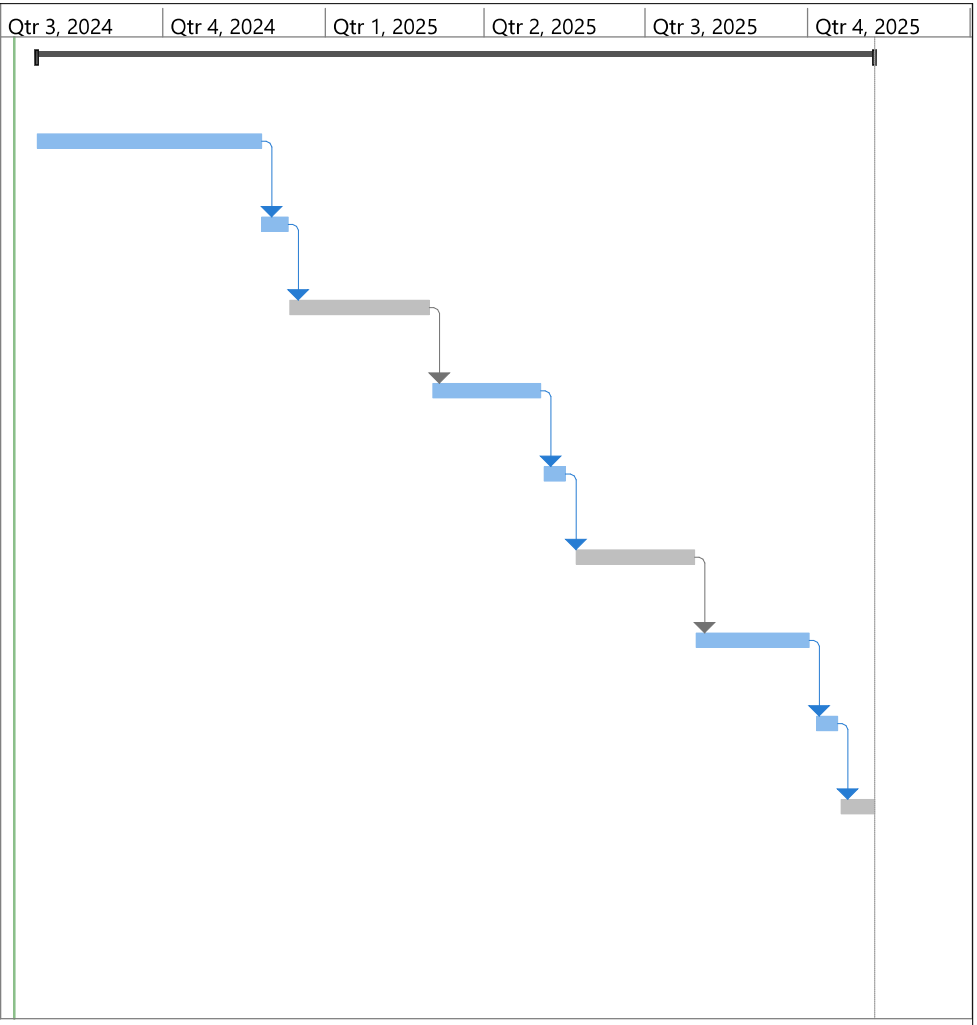
Lab Sample ID	Lab File ID	S1
JD78929-1	3W83925.D	69
JD78929-2	3W83942.D	69
JD78929-3	3W83807.D	83
JD78965-1DUP	3W83799.D	91
JD79520-9DUP	3W83941.D	86
JD79525-3DUP	3W83922.D	87
V3W3272-SCC	3W83147.D	93
V3W3300-BS	3W83789.D	93
V3W3300-BSD	3W83790.D	93
V3W3300-MB	3W83792.D	79
V3W3305-BS	3W83909.D	92
V3W3305-BSD	3W83910.D	91
V3W3305-MB	3W83913.D	73
V3W3306-BS	3W83930.D	91
V3W3306-BSD	3W83932.D	92
V3W3306-MB	3W83934.D	75
V7W112-SCC	7W02712.D	95
V8W116-SCC	8W02906.D	99
V8W123-SCC	8W03080.D	101
V3W3272-BS	3W83124.D	104
V3W3272-BSD	3W83125.D	104
V3W3272-MB	3W83127.D	93
V7W112-BS	7W02708.D	100
V7W112-BSD	7W02709.D	98
V7W112-MB	7W02711.D	95
V8W116-BS	8W02889.D	98
V8W116-BSD	8W02890.D	98
V8W116-MB	8W02892.D	97
V8W123-BS	8W03059.D	102
V8W123-BSD	8W03060.D	103
V8W123-MB	8W03063.D	100

Surrogate Compounds	Recovery Limits
S1 = 4-Bromofluorobenzene	65-128%

APPENDIX L

REVISED CONCEPTUAL PCCP PREPARATION SCHEDULE

ID	Task Name	Duration
1	**Revised PCCP Preparation**	**340 days**
2	Draft Revised PCCP Preparation 1	90 days
3	Perma-Fix Draft Revised PCCP Review 1	9 days
4	GEPD Revised PCCP Review 1	55 days
5	Prep Response to Comments 2	45 days
6	Perma-Fix Response to Comments Review 2	10 days
7	GEPD Revised PCCP Review 2	45 days
8	Prep Response to Comments 3	45 days
9	Perma-Fix Response to Comments Review 3	10 days
10	GEPD Revised PCCP Final Review and Approval	15 days



Project:
Revised Conceptual PCCP Preparation Schedule
Date: 7/19/24

Task Summary External Tasks Progress

Note: Duration relects working days and does not include weekends or holidays.

APPENDIX C

REMEDIATION DESIGN REPORT

REMEDIATION DESIGN REPORT

PERMA-FIX OF SOUTH GEORGIA, INC.

1612 JAMES P. RODGERS CIRCLE

VALDOSTA, GA 31601

EPA ID No. GAD093380814

GDNR HW Facility Permit No. HW-020(D)

April 4, 2025

Revised November 20, 2025

PREPARED FOR:

Perma-Fix Environmental Services, Inc.
8302 Dunwoody Place, Suite 250, Atlanta, GA 30350

PREPARED BY:

GeoSouth Environmental Solutions, LLC
11250 Old St. Augustine Rd., Suite 15 PMB 333, Jacksonville, FL 32257

Project: PFSG-025-002

Certification and Signatories

40 CFR 260.10

Pursuant to 40 CFR § 260.10, I certify that I am a Qualified Groundwater Scientist who has received a Baccalaureate or Post-Graduate Degree in the Natural Sciences or Engineering and have sufficient training and experience in groundwater hydrology and related fields as demonstrated by state registration and completion of accredited university courses that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by myself or by a subordinate working under my direction.

I also hereby certify that this "Remediation Design Report" was prepared under the direction of a Georgia Registered Professional Geologist.

William C. Kelly

Digitally signed by William C. Kelly
DN: cn=William C. Kelly, c=US, o=GeoSouth Environmental Solutions, LLC, ou=President, email=wkelly@geosouthes.com
Date: 2025.11.20 17:08:04 -05'00'

11/20/2025

William C. Kelly, PG
President and Principal Hydrogeologist
Georgia Professional Geologist No. 1568
Qualified Groundwater Scientist

Date

Certification and Signatories

40 CFR 270.11

The certifications as required by 40 CFR § 270.11(b)(1) and (d)(1) are provided below:

Certification is provided by Kevin Schmuggerow, Vice President, Industrial Business, Perma-Fix Environmental Services, Inc., as a responsible corporate officer in accordance with 40 CFR § 270.11(b).

In accordance with 40 CFR § 270.11(b)(1) and 270.11(d)(1), the following certification is made with respect to the Perma-Fix of South Georgia Remediation Design Report submitted April 4, 2025, and revised November 20, 2025.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kevin Schmuggerow Digitally signed by Kevin Schmuggerow
Date: 2025.11.20 16:54:59 -05'00'

Kevin Schmuggerow
Vice President, Industrial Business
Perma-Fix Environmental Services, Inc.
8302 Dunwoody Place, Suite 250
Atlanta, GA 30350

Date

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C. REMEDIATION EQUIPMENT SPEC SHEETS

List of Acronyms and Abbreviations

%	percent
µg/m^3	micrograms per cubic meter
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CO_2	carbon dioxide
COC	contaminants of concern
DCA	dichloroethane
DO	dissolved oxygen
DTW	depth to water
GEPD	Georgia Environmental Protection Division
inWC	inches water column vacuum
IM	Interim Measures
LNAPL	light nonaqueous phase liquids
MNA	monitored natural attenuation
mg/L	milligrams per liter
MDL	method detection limit
MTGW	migration to groundwater
NSZD	natural source-zone depletion
O&M	Operation and Maintenance
ORP	oxidation-reduction potential
PNA	plugging and abandonment
poly	polyethylene
PRA	Preliminary Remediation Agreement
PSI	pounds per square inch
PVC	polyvinyl chloride
QA/QC	Quality Assurance/Quality Control
RDR	Remediation Design Report

List of Acronyms and Abbreviations

ROI	Radius of Influence
scfm	standard cubic feet per minute
SCR	Site Characterization Report
SVE	Soil Vapor Extraction
VOC	volatile organic compound
VRP	Voluntary Remediation Program

1.0 INTRODUCTION

This Remediation Design Report (RDR) has been prepared by GeoSouth Environmental Solutions, LLC (GeoSouth) to present the design, installation, and operational details for a groundwater air sparging (AS) and soil vapor extraction (SVE) system proposed for installation at the Perma-Fix of South Georgia, Inc. (PFSG) facility, located in Valdosta, Georgia (the Site). The Site location is depicted on Figure 1. The Site layout, including groundwater monitoring well locations, is depicted on Figure 2. The purpose of the RDR is to update the previously-approved Interim Remedial Measures Work Plan for this facility by incorporating the findings of recent AS/SVE pilot test results that served to refine the conceptual design to address and remedy the primary volatile organic compound (VOC) soil and groundwater source areas identified at the Site.

This report presents a brief description of relevant, previous screening of remedial measures for the Site, subsequent recommendations for remedial technology selections, a summary of the historical soil and groundwater impacts, and the 2024 AS/SVE pilot study activities. This document has been prepared in accordance with the Resource Conservation and Recovery Act (RCRA) Class 3 Hazardous Waste Permit Modification issued by Georgia Department of Natural Resources, Environmental Protection Division (GEPD) on February 13, 2023.

1.1 OBJECTIVE

This document presents an RDR to address constituents of concern (COCs), composed of various chlorinated and aromatic volatile organic compounds (VOCs) in soil and groundwater at the PFSG RCRA facility located at 1612 James P. Rodgers Circle, Valdosta, Georgia. Based on the available historical data collected at the Site, the primary areas of soil and groundwater impacts appear to be located beneath the central portion of the facility in the Bulk Storage Tank Farm (BSTF), the Waste Bulking & Unloading Area (WBUA), Drum Storage & Process Area 2 (DSPA 2), and the Solidification & Stabilization Area (SSA), corresponding to Hazardous Waste Management Units (HWMU) 4-7, plus the Drum Storage Area 3 (DSA 3) that is not yet permitted as a HWMU.

The primary purpose of this interim remedial measures (IRM) effort, conducted as part of a RCRA Corrective Action, is to mitigate potential threats to human health and the environment. To meet this overall goal, the specific objectives of the proposed interim measure are: (1) to treat the impacted soils at the site that exceed risk-based remedial action objectives (RAO), represented by preliminary RAOs based on United States Environmental Protection Agency (USEPA) Regional Screening Levels (RSL) for soil in residential settings; (2) to reduce on-site COC concentrations in groundwater to levels that residential RAOs expressed as Groundwater Protection Standards (GWPS); (3) to monitor the extent and movement of dissolved phase COCs in groundwater; and (4) to track the performance of the soil and groundwater remediation systems and make adjustments, as necessary, in order to expedite achievement of RAOs.

This RDR is consistent with and fulfills the general recommendations and requirements described in the facility Permit and those provided in the following two USEPA IRM regulatory agency guidance documents:

- US Environmental Protection Agency (USEPA), RCRA Corrective Action Interim Measures Guidance – Interim

Final, EPA/530-SW-88-029, OSWER Directive 9902.4, June 1988.

- USEPA, RCRA Corrective Action Plan-Final, EC-G-2002-100, OSWER Directive 9902.3-2A, May 1994.

2.0 RELEVANT PROJECT BACKGROUND

In 2006, AS, SVE, and multiphase extraction (MPX) pilot testing events were performed at the Site to assess the potential effectiveness of these technologies to address known soil and groundwater impacts beneath the facility. Based upon the 2006 pilot test findings, the previous consultant concluded that combined AS-SVE technologies were the most suitable and cost-effective technologies to address the VOCs beneath the Site.

An Interim Measures Work Plan (IMWP 2016) was subsequently submitted to the GEPD as part of an April 2022 RCRA Hazardous Waste Permit Modification Application. Prior to GEPD approval of the permit modification application, PFSG submitted comments, including a request to perform an updated pilot test to reconfirm the previous findings. In February 2023, the GEPD issued a RCRA Permit Renewal that included an endorsement for the updated pilot testing.

In November and December 2023, the GEPD approved AS-SVE pilot test work plan was implemented, and the results of those field activities were reported to the GEPD on February 8, 2024 (Trihydro, 2024). The purpose of this AS/SVE RDR is to utilize the available project data to document the basis of the IRM system design, describe the planned systems operations, and present the proposed remedial action monitoring program. On July 31, 2023, the GEPD approved the AS/SVE Pilot Test Report (Appendix A).

2.1 PREVIOUS REMEDIAL MEASURE SCREENING

The 2010 Revised CAP provided a detailed evaluation and screening of potential remedial technologies that could potentially be applied to this PFSG RCRA Facility. The five evaluation and screening criteria for implementing the proposed IMs as part of the CM at this facility followed the standard corrective and interim measures criteria presented in the USEPA guidance document entitled "RCRA Corrective Action Plan (Final)," OSWER Directive 9902.3-2A May 1994. These five evaluation criteria included:

1. Long-term reliability and effectiveness;
2. Reduction of toxicity, mobility, or volume of waste;
3. Short-term effectiveness;
4. Feasibility of implementation; and
5. Cost.

Based on the results of the preliminary remedial screening using the USEPA criteria listed above, four remedial alternatives were retained by the previous consultant as viable potential remedies (AS, SVE, MPX, and in-situ biological reactors [ISBRs]) for further and more detailed evaluation to assess their future remedial performance and viability.

2.2 PREVIOUS REMEDIAL MEASURE TECHNOLOGY SELECTION

The preferred method of on-site source remediation (at the BSTF, WBUA, DSPA2, SSA, and DSA3) for both soil and groundwater was AS/SVE or MPX, with the ISBRs retained for on-site "hot-spot" treatment and for potentially addressing downgradient, off-site impacts to the south and southeast of the facility at some point in the future.

The AS/SVE and MPX both addressed the unsaturated zone and saturated zone source areas exhibiting elevated concentrations of VOCs. In this previous 2008 screening, both technologies combined vadose zone and saturated zone treatment technology and outperformed other technologies in addressing the principal on-site source area. Copies of the 2006 AS/SVE and MPX pilot test reports are provided in Appendix A.

The 2006 pilot test results indicated that AS/SVE was more efficient at removing VOCs than MPX (Cameron Cole 2008). Therefore, the previous consultant selected AS/SVE and ISBRs as the preferred remedial technologies to address the environmental impacts at the site.

2.3 2024 REMEDIAL MEASURE PILOT STUDY SUMMARY

In December 2023, the updated AS-SVE pilot test field activities were conducted by Trihydro Corporation (Trihydro) in general accordance with the GEPD-approved Revised AS/SVE Pilot Test Work Plan (Trihydro, 2023a). On July 29, 2024, PFSG/Trihydro submitted the Third Revision Air Sparge and Soil Vapor Extraction Pilot Testing Report to GEPD that documented and described the recent AS/SVE pilot testing results (Trihydro, 2024).

The findings of the 2023 AS/SVE pilot test were compared against the findings of the previous 2006 pilot test reported by others in 2008. A summary highlighting the relevant differences between these two tests and the resulting recommendations are provided in the bullet points below:

- The previous AS/SVE pilot test used an AS well that partially penetrated the upper shallow aquifer. The well was installed to a total depth of 35 feet and screened from 30-35 feet bgs. Typically, the majority of air introduced into an AS well enters the surrounding formation near the top of the screen interval and disperses laterally and vertically, rising toward the groundwater surface in a generally conical manner. The base of the upper shallow aquifer was previously reported to be approximately 40 feet bgs. The shallower AS well was thus interpreted to have not influenced groundwater to the base of the upper shallow aquifer and the radius of influence (ROI) may have been reduced due to the shallower screen interval.
- The recent AS/SVE pilot test installed well AS-2 to the base of the upper shallow aquifer at a total well depth of 40.5 feet bgs. The screen interval was also reduced to a 2-foot interval from 38.5-40.5 feet bgs, intended to maximize potential ROI based upon depth of air introduction into the native sediments.
- The previous SVE pilot test conducted four steps of vacuum influence from 23 to 100 inches water column (inWC), yielding air flow rates of 41 to 68 standard cubic feet per minute (scfm). Based on the findings, the report recommended an optimal SVE rate of 56 inWC to achieve an air flow rate of 55 scfm. This was predicted to provide an effective SVE ROI of 34 feet, based on a 1.0 inWC vacuum reference.
- The recent SVE pilot test conducted four steps of vacuum influence from 25 to 100 inWC, yielding air flow rates of 4.1 to 11.8 scfm. Based on the findings, the report recommended an optimal SVE rate of at least 100 inWC to achieve an air flow rate of 11.8 scfm. This was predicted to provide an effective SVE ROI of 39 feet, based on a 0.5 inWC vacuum reference.

- **SVE Comparison.** The well dimensions of the SVE wells used in both tests were similar. The lithologic log for the previous SVE well indicated a mixture of likely higher permeability sands interbedded with less permeable sandy clays. In contrast, the sediments encountered in the current SVE well were mostly silty sand. This indicates that there is sufficient heterogeneity in the shallow sediments beneath the site to yield contrasting air flow rates, but the overall effective ROI of both SVE pilot tests was relatively similar.
- The previous Combined AS-SVE pilot test examined AS air flow rates of 2 to 10.8 scfm with injection pressures of 5 to 7 psi. The report estimated an effective AS ROI of greater than 20 feet.
- The recent Combined AS-SVE pilot test conducted AS air flow rates at three steps (5, 7.5, and 10 scfm) with injection pressures of 10 to 11.2 psi. Based on the findings, the report recommended an optimal AS rate of 6 scfm at 10 psi. This was predicted to provide an effective AS ROI of 24 feet, based on observed water table mounding, increase in DO, and pressure readings.
- **AS Comparison.** The top of screen for the AS well in the previous pilot test was completed 8.5 feet shallower than the current pilot test AS well. The increased depth of the top of screen likely contributed to the increased effective ROI and observed increased mounding and bubbles beyond 24 feet.
- The previous pilot test report used Method 14 for air sample analyses. This yielded a subset of screened analytes compared to the more robust Method 15 analyte list screened for the most recent pilot test. The results of analyses will thus provide greater value when calculating total chemical loading when performing off gas treatment design calculations.

2.4 SUMMARY OF SOIL AND GROUNDWATER IMPACTS

The following section presents the site conditions for both the soil and groundwater environmental media at the PFSG facility. The evaluation of current conditions for soil is based upon the most recent soil analytical data collected at the site in the field investigations conducted in June and July of 2006. Summary tables and illustrative figures of these historical soil data and site conditions are provided in Appendix B1. Groundwater current conditions have been assessed based upon the December 2024 groundwater monitoring event. A summary table and illustrative figure of the recent groundwater data and site conditions are provided in Appendix B2. Using these subsurface data, an estimate was compiled for the total contaminant mass present within the on-site subsurface.

The 2006 soil samples were collected from three depth intervals between 1-2, 5-7, and 10-12 feet below land surface (ft bls). The average depth to groundwater across the facility is approximately 15 ft bls but does exhibit some seasonable variability. For the purpose of developing a conservative soil contaminant mass estimate, the analytical data obtained from each of these three depth intervals above were assumed to represent the 5-ft interval from which they were collected 0-5, 5-10, and 10-15 ft bls, respectively. The estimated soil contaminant mass is provided in Table 1, and these data provide an estimated total mass of roughly 9,250 lbs (4,180 kgs).

The groundwater monitoring program includes both shallow and deep wells that generally represent two intervals within the surficial aquifer system, approximately 15-30 and 30-45 ft bls. For the purpose of developing a conservative groundwater contaminant mass estimate, the analytical groundwater results for both of these zones were assumed to

represent the entire 15 ft depth interval from which they were collected 15-30 and 30-45 ft bls, respectively. The estimated groundwater contaminant mass is provided in Table 2, and these data provide an estimated total mass of roughly 347 lbs (158 kgs).

Based upon these estimates the general distribution (percentage) of contaminant mass in the soil and groundwater are estimated to be approximately 96 percent and 4 percent, respectively. This large percentage of contamination retained within the soil column is consist with typical trends within the environmental engineering industry and supports justification for implementing interim measures to address the primary source of onsite, subsurface contamination.

3.0 INTERIM REMEDIAL MEASURES

As previously described, an AS/SVE pilot study work plan for the Facility was conditionally approved by GEPD on November 17, 2023, implemented in November and December 2023, and reported to the GEPD in February 2024.

Based upon the recent (2023) AS/SVE pilot test and its comparison to the previous 2006 AS/SVE and MPX pilot tests, the general design operational parameters for each individual AS/SVE well are as follows:

- The SVE system should be operated at an applied vacuum of at least 100 inWC (~ 7.4 inches of mercury [inHg]), and a targeted air flow rate of ≥12 scfm or more per vertical SVE well. Based on these criteria, a conservative SVE ROI of 39 feet has been incorporated for the final design.
- Operating the AS system at a pressure of approximately 10 to 12 psi, and an air flow rate of 6 scfm. A conservative AS ROI of 24 feet has been incorporated for the final design.

Obviously, the subsurface variabilities (heterogeneities) occurring at this facility may influence the actual field performance and ROI achieved at any given AS/SVE well locations. However, the remedial system design will include the necessary valving, flow meters, and pressure/vacuum gauges to allow suitable adjustments to compensate for these site-specific variations. Furthermore, the specifications for and the selection of the air sparing compressor and vacuum blower equipment components will also provide adequate operational flexibility for an effective, yet flexible, remedial system design.

3.1 IRM BASIS OF REMEDIAL DESIGN

Consistent with the information summarized in the preceding sections and using the AS and SVE ROIs determined from the recent 2023 pilot study, it was determined that 19 AS wells and 12 SVE vertical wells are required to effectively influence the primary hot spot beneath the waste storage areas of the Facility (Figures 3 and 4). AS and SVE well construction details are depicted on Figure 5. Details for the piping cross-sections are illustrated on Figure 6.

Therefore, a summary of the planned AS system and its operational requirements for this Facility are as follows:

- Breakthrough pressure @ ~13-15 PSI
- Operational pressure @ ~10-12 PSI
- Air Flow - per AS well @ 7.5-10 scfm
- Air Flow – for entire AS system (19 AS wells) @ 142 - 190 scfm
- The AS system will include all appropriate valves, gauges, meters to regulate flow at each AS well
- The AS system will include a discharge silencer and heat exchanger
- The AS system will include galvanized steel discharge header leading to the AS piping manifold

Additionally, a summary of the planned SVE system and its operational requirements for this Facility are as follows:

- Operational air flow - per vertical SVE well @ 15 - 18 scfm (or greater, if subsurface conditions allow)
- SVE Flow - Entire System (12 SVE Wells) @ 180 - 216 scfm with ~100 in WC (~7.4 in Hg)
- SVE Flow - Entire System (max capacity) @ ≥225 scfm with ~100 in WC (~7.4 in Hg)
- The SVE blower must be capable of recovering ≥125% of the air flow for the entire AS system
- The SVE system will include all appropriate valves, gauges, meters to regulate flow at each SVE well

- The SVE system will include an air-water separator (knockout tank) with transfer pump
- SVE system will include an air inlet dilution (bleed) line and a discharge silencer
- SVE system will include galvanized steel discharge header leading to the SVE piping manifold

Furthermore, relying upon the soil contaminant mass estimate described above and additional soil gas analytical data obtained from the recent (2023) AS/SVE pilot test, the potential soil contaminant reduction rates were calculated and are provided in Table 3. The general design goal for the SVE system is to have the capability to recovery most of the estimated soil contaminant mass within approximately 1.5 years. However, it is understood that to account for some of the site heterogeneities and to stay within the operational range of the off-gas treatment system, the SVE operations may be varied (both spatially and over time) and/or the air dilution allowed into the SVE system. Thus, the actual contaminant reductions in the soil and cleanup time may extend beyond this initial 1.5-year milestone goal.

3.2 REMEDIATION SYSTEM WELL PLACEMENT & DESIGN

3.2.1 AS WELL PLACEMENT & DESIGN

The proposed locations for the planned 19 AS wells at this Facility are depicted on Figure 3. For the AS well installations, we anticipate using a GeoProbe® Model 7800 drill rig (or similar), which has both direct-push technology (DPT) and hollow stem auger (HSA) drilling capabilities. After coring through the concrete floor and underlying base gravel (limestone gravel fill) at each location, the upper 4 feet of soil penetration will be completed using a hand auger as a precaution to confirm that the location is clear of potential underground utilities. Soil samples will be collected using DPT equipment and methods and are anticipated to use 5-foot-long, acetate-lined, Macro-Core® DPT samplers.

Soil core samples will be inspected by a field geologist for lithologic description and soil samples will be screened for the presence of VOCs using an organic vapor analyzer equipped with a photoionization detector (PID) fitted with an 11.7 eV lamp. PID readings will be recorded at approximately 1-foot intervals from the retrieved 5-foot sample interval immediately after opening the acetate liner. Samples will also be collected from each 2-foot interval (minimum) and placed in quart-size zip-loc style bags for headspace PID screening. Soil descriptions and PID readings will be recorded on the field boring logs. The soil descriptions were used to confirm target depth lithology and verify proper placement of the AS well screened intervals during well installation. Decontamination procedures are discussed in Section 3.2.4, below.

The AS well installation and completion will be performed in general accordance with the Region 4 United States Environmental Protection Agency (USEPA) Design and Installation of Monitoring Wells guidance (USEPA, 2018). The DPT soil borings for the AS wells will be over-drilled using 4.25-inch inside diameter (ID) hollow stem augers, creating a nominal 6-inch diameter borehole to accommodate construction of the 2-inch diameter air sparge wells.

The AS well construction diagram is presented on Figure 5. As indicated in this figure, the typical AS well will be completed to an estimated total depth ranging between 40 to 42 feet bgs and constructed with 2 feet of 2-inch diameter

schedule (Sch) 80 polyvinyl chloride (PVC) riser pipe (for added wellhead pressure safety protection), glued fitting-connected to approximately 36 to 38 feet of 2-inch diameter Sch 40 PVC casing, thread-connected to 2 feet of 2-inch diameter 0.010-inch machine-slotted PVC well screen. The annular space void between the casing and native sediments will be filled from total depth to 1 foot above the screen interval with 20/30-grade silica sand, capped with a 2-foot-thick bentonite seal hydrated per manufacturer's instructions, and the remainder of the borehole will be filled to approximately 2 ft bgs with Type I Portland cement/bentonite grout. Each AS wellhead will be completed inside a minimum 10-inch diameter, traffic-rated, bolt-secured steel manhole, which is completed slightly above surrounding grade to promote drainage away from the wellhead, and the bottom of the manhole will be filled with concrete. The manhole will be grouted in place with approximately 8 inches of 4,000 psi Fibercrete and appropriately load rated for traffic (Figure 5).

3.2.2 SVE WELL DESIGN & PLACEMENT

The proposed locations for the planned 12 SVE wells at this Facility are illustrated on (Figure 3). For the SVE well installation, we plan to follow the same general drilling and soil screening procedures as that described above for the AS well drilling and installation procedures. However, for the SVE wells, an 8.25-inch ID hollow-stem auger will be used to drill a nominal 12.13-inch diameter borehole to allow for the installation of a 4-inch diameter SVE well.

The proposed SVE well completion diagram is illustrated on Figure 5. The SVE wells will be completed to a depth ranging between 20 to 22 feet bgs, constructed with 5 to 7 feet of 4-inch diameter Sch 40 PVC riser and thread-connected to 15 feet of 4-inch diameter 0.010-in machine-slotted PVC well screen. Upon reaching penetration total depth, the well screen and riser casing will be lowered into the subsurface via the hollow central interior of the hollow-stem auger assembly. The annular space between the casing and native sediments will be filled from total depth to approximately 1 foot above the screen interval with 20/30-grade silica sand, capped with a minimum 2-foot-thick bentonite seal hydrated per manufacturer's instructions, and the remainder of the borehole was filled to approximately 2 to 4 feet bgs with Type I Portland cement/bentonite grout. The remaining annulus to just above and inside the bottom of the well box was filled with concrete. Each SVE wellhead will be completed inside a minimum 12-inch diameter, traffic-rated, bolt-secured steel-manhole that is finished slightly above surrounding grade to promote drainage away from the wellhead. The manhole will be grouted in place with approximately 8 inches of 4,000 psi Fibercrete and appropriately load rated for traffic (Figure 5). One to two inches of cement grout will also be placed in the bottom of each SVE manhole to prevent potential air short circuiting.

3.2.3 WELL SURVEY

Upon completion of the AS/SVE well installation, a well survey will be performed by a Georgia-licensed professional land surveyor to document the horizontal locations and vertical elevations for all of these wells. Elevations for the well casings and adjacent ground will be surveyed to the nearest 0.01 foot, based on the NAD 83 datum and will be tied into an existing on-site, surveyed well. Survey location coordinates will follow the Georgia State Plane Coordinate System (as defined by the National Geodetic Survey, based on the National Spatial Reference System).

3.2.4 EQUIPMENT DECONTAMINATION

A temporary decontamination (decon) pad will be constructed to contain fluids and solids generated during equipment decontamination. The decon pad will be constructed using an outer rigid frame or berm and covered with a plastic liner. The pad will be assembled over concrete flooring inside an onsite concrete-bermed area that can serve as secondary containment.

Downhole drilling equipment will be decontaminated following general procedures of the Region 4 USEPA Laboratory Services and Applied Science Division (LSASD) Field Equipment Cleaning and Decontamination Procedure (USEPA, 2020). The following procedures will be used:

- At the beginning of work and between uses, all downhole DPT steel soil sampling probe equipment will be decontaminated using a tap water and non-phosphate detergent (Alconox®) solution, along with brushing to remove particulate matter and surface films. After the scrubbing and detergent wash, equipment will be rinsed thoroughly with tap water.

- Steel hollow-stem auger drilling equipment will be placed on sawhorses at least two feet above the floor of the decontamination pad and the equipment will be decontaminated by pressure washing with a tap water and non-phosphate detergent and using a brush to remove residual particulate matter and surface films. Hollow-stem augers and drill rods will be cleaned on the inside with pressure washing and vigorous brushing to remove particulate matter. After the scrubbing and detergent wash, equipment will be rinsed thoroughly with tap water.

The AS wells are not intended for groundwater sampling, so during well development activities, the pump will be decontaminated before use and between well locations similar to other drilling equipment, by pumping a potable water and non-phosphate detergent solution, followed by a thorough potable water rinse. Well development water will be pumped directly into steel 55-gallon drums.

Following completion of drilling and well installation activities, liquid and solid contents will be transferred from the liner into 55-gallon steel drums. The dirty plastic liner will then be removed from the lumber frame and placed in a 55-gallon steel drum. "Pending Analysis" labels will be placed on each drum. Waste characterization, transport, and disposal will be managed by Perma-Fix.

3.3 REMEDIATION EQUIPMENT & OPERATION PARAMETERS

PFSG intends to use leased equipment to power the AS and SVE systems. The motorized equipment will be installed inside an enclosed storage unit (stationary or trailer-mounted structure) that will be staged and secured on the paved area outside the southwestern corner of the BSTF portion of the warehouse. Piping and electrical will terminate in this area for connection to the trailer-mounted remedial system components. Piping from the AS and SVE wells will

independently connected to common manifolds constructed adjacent to the trailer. The AS and SVE manifolds will include individual valves and gauges to control air flow and vacuum to/from the individual treatment nodes. The individual AS lines will also be equipped with a rotameter to measure air flow. The individual SVE lines will also include a capped/valved fitting to enable air flow measurement using a pitot tube or alternate air velocity probe into the air stream, and a valved sample port to enable collection of influent air samples from the individual SVE lines.

3.3.1 AS EQUIPMENT

To achieve the planned AS system design objectives, a Rietschle DLR-301 20 hp rotary claw (or equivalent) compressor is proposed. When operating within the 12 to 15 psi pressure range, the performance curve for this compressor indicates this unit has the capacity to achieve up to 175 to 190 cfm air flow (Appendix C). The AS system will include a heat exchanger, a discharge silencer, and a galvanized steel discharge header leading to the AS piping manifold.

The selected AS pressure should be sufficient to overcome water column head; however, excessive air injection pressure should be avoided to prevent fracturing and soil channeling. Therefore, AS well injection pressures typically range between 11 and 15 psi. Based on these injection pressures, injection flowrates should also range between 7.5 to 10 scfm per AS well. The total air flow anticipated for the 19 AS well points is $\leq$180 scfm.

During the initial startup and operations of the RA system and in consideration of the contaminant mass distribution (and off-gas treatment), a greater emphasis will be placed on the performance of the SVE system to accelerate subsurface mass removal, with the AS system and groundwater impacts still being important but a lower priority.

These data will be useful and required to evaluate the active treatment influence and help adjust the AS/SVE systems for optimized performance.

3.3.2 SVE EQUIPMENT

The proposed SVE system design objectives will be achieved utilizing a Roots URAI 47 (10 hp) positive displacement vacuum blower (or equivalent). When the proposed 12 vertical SVE wells are operating at the minimum desired design air flow rate of 15 to 18 scfm while under a vacuum of 100 inWC, the performance curve for this PD vacuum blower indicates this unit has the capacity to exceed the targets air flow of 225 scfm and reach up to 350 scfm.(Appendix C). The SVE system will include a moisture separator, air dilution valve, flexible vacuum hoses connecting the individual vacuum lines to a common SVE piping manifold, and effluent treatment via vapor phase granular activated carbon (GAC) vessels prior to final treated effluent discharge to the atmosphere.

Based on the pilot test results and experience, the target vacuum of 100 inWC should be sufficient to achieve the minimum subsurface extraction flow rate of at least 225 scfm. If the SVE wells can yield up to 350 scfm, then less inflow air from the dilution line and valve will be required. Achieving a high airflow through the SVE system is desirable to allow the use of larger (2,000 lbs) GAC vessels. To optimize carbon polishing of the SVE influent vapor stream, the minimum

pass-through air flow velocity for these vessels is approximately 25 ft/minute to provide adequate contact time with carbon within the carbon vessels. The vapor phase GAC vessels will be configured in a three canister series with sampling ports available to collect vapor samples prior to the initial GAC unit, a port between the first and second GAC unit, and a final port located after the third GAC unit.

After the initial bump start testing of all remediation equipment, the SVE system will remain operational for an estimated 3 to 6 months before initiating sustained operation of the AS system.

3.3.3 SVE SYSTEM EFFLUENT TREATMENT

3.3.3.1 SVE KNOCKOUT TANK – WATER EFFLUENT

SVE technology is used to remediate soil impacts located in the unsaturated vadose zone soil horizon. A vacuum is applied to the subsurface via a series of vertical wells, followed by treatment of recovered effluent vapors. As the pressure in the treated soil horizon is reduced, air is drawn through the unsaturated soils, and volatilized contaminants (VOCs) flow in the vapor stream to the SVE wells. The captured vapor stream is directed through a knockout tank to separate condensate moisture from the vapor stream prior to further treatment of the influent soil gas stream. The small amount of fluid recovered within the SVE system knockout tank will be pumped through a 55-gallon liquid-phase GAC drum and the treated effluent will be collected into a separate storage container (estimated 250-500 gallon capacity poly holding tank or similar) for subsequent testing, manifesting and appropriate disposal. The treatment system knockout tank is a 140 gallon tank with a pump and auto-pump out controls and totalizing flow meter.

3.3.3.2 SVE SYSTEM – SOIL GAS/AIR EFFLUENT

Vapor phase GAC is the most common type of adsorption media available for treatment of soil vapor generated by remediation technologies. The carbon is activated to increase the available internal pore space and surface area, and thereby increasing its adsorptivity. Treatment of the vapor stream is achieved by passing the stream through one or more GAC vessels, most commonly connected in series, to provide a safety factor and allow the monitoring for potential breakthrough before all of the carbon vessels are spent (fully used).

The quantity of vapor-phase contaminants phase that are adsorbed onto GAC is a function of the temperature and pressure of the influent vapor stream, the vapor pressures of the different contaminants being treated, moisture (relative humidity) of the vapor stream, and also the GAC characteristics, such as particle size and pore structure.

In general, the adsorption capacity (adsorptivity) of activated carbon increases with the partial pressure of the contaminants, but decreases with increasing temperature and/or moisture. However, if the vapor stream concentrations are above 1,000 ppm (as is anticipated to be the initial influent stream for this site), the moisture content does not significantly affect the absorptivity of the activated carbon.

Additionally, where there are multiple contaminants present within the gas stream, typically the parameter with the lower vapor pressure will be adsorbed by the activate carbon before those with higher vapor pressures. Thus, the vapor pressures of the contaminants need to be compared against one another and their respective concentrations when evaluating the carbon consumption/usage rate.

The anticipated SVE gas flow rate and anticipated contaminant loading concentrations will be used to determine the size of the carbon vessels used to house the carbon. The two primary factors are contaminant concentrations and contact time within the vessels. From our discussions with carbon suppliers, they typically target a minimum air flow velocity of 25 ft/minute for the gas streams passing through their carbon vessels. If the anticipated concentrations are high (> 5,000 ppm) but the air flows are low, then additional (ambient) air flow may be introduced into the influent air stream (upstream of the vacuum blower) through the use of an air inlet dilution (bleed) line and valve system. This bleed air stream dilution valve system could increase the air flow (to ≥ 25 ft/min) and dilute the overall influent concentrations, which in turn could improve the efficiency of the contaminant removal by the vapor phase GAC. During the startup of the SVE system, air dilution will be used to control the initial contaminant concentrations and carbon loading.

According to the FRTR website (May 2024), vapor phase carbon adsorption has been demonstrated as effective for treating nonhalogenated VOCs, halogenated VOCs, and various fuels. Several advantages for the use of GAC for vapor phase treatment include:

- Relatively low level operational and maintenance complexity, effort, and cost;
- Limited susceptibility to varying influent COC concentrations (low to high);
- Generally low utility operational expenses;
- Low level of noise concerns, especially with the use of noise silencers on the SVE equipment; and
- Waste disposal of the carbon is required, this can be minimized through media regeneration.

Both for cost and these operational reasons, GAC was deemed the preferred method of soil gas treatment.

3.4 AS/SVE OPERATIONAL PERFORMANCE MONITORING PROGRAM

3.4.1 BASELINE SOIL AND GROUNDWATER SAMPLING AND AS/SVE SYSTEM MONITORING

Prior to and during the initial startup phase and first week of operation of the remedial system, water level, vapor flow rate, and COC monitoring data in air will be collected to provide “initial conditions” data. This data collection will be conducted in addition to the “baseline” soil and groundwater sampling. The groundwater elevation data will be used to evaluate the hydraulic head distribution and groundwater flow field around the new wells. The COC data collected in soil, groundwater, and air will be used to track AS/SVE mass removal and system loading and to evaluate remedial performance by comparing baseline sampling results with ongoing remedial performance data. The following system

testing, sampling and analysis program will be performed prior to and during the course of operation of the remediation systems after AS/SVE system startup:

- Prior to startup, baseline soil samples will be collected from the 12 newly constructed SVE wells. The soil samples will be collected at continuous intervals using a 2-inch O.D. split-spoon sampler or a direct-push soil penetration probe to the base of the silt and clay unit, and in 5-ft intervals thereafter to the termination depth. The recovered soil samples will be: (1) screened in the field by headspace analysis for the presence of COCs using an organic vapor analyzer (OVA) equipped with a photo-ionization detector (PID), and (2) described for lithology, color, plasticity, and discoloration. As the borings for the AS, SVE, and groundwater monitoring wells are drilled, the soil will be logged with notation of soil anomalies, such as abrupt soil changes as might be expected for pipe runs or variable fill. These data will supplement existing site characterization. A combination of visual observation of the borehole soil samples and groundwater-level gauging of the nearest existing groundwater monitoring well be used to determine the depth of the groundwater table below ground surface. These data will also be used to place the vertical location of the screen to ensure that that the screen intercepts the potentiometric surface.
- The soil analytical samples will be collected at 0-1 ft, 5-6 ft, and from approximately the foot above the water table. More specifically, to avoid potential analyte volatilization, and as recommended by EPA Region 4 Soil Sampling guidance document LSASDPROC-300-R5, undisturbed samples recovered from the prescribed probe sampling interval and intended for volatile organics analysis will be collected using Terra Core® sampling equipment and promptly transferred into laboratory-supplied pre-preserved sample containers, sealed, labelled, and stored inside a chilled cooler. The undisturbed samples recovered from the prescribed probe sampling interval and intended for semivolatile organics analysis will be collected using stainless steel sampling tools and promptly transferred into laboratory-supplied sample containers filled to zero headspace, then sealed, labelled, and stored inside a chilled cooler. The soil samples collected from the SVE well borings will be submitted and analyzed for VOCs by USEPA Method 8260D and SVOCs by USEPA Method 8270. The results of these samples will be used as pre-remediation baseline samples and compared to a future set of soil verification sampling data. The future verification sampling procedures will be included in the Corrective Action Plan that will be submitted five years after system startup is completed, in accordance with permit condition III.E.3.c. For appropriate and valid comparison, the soil samples will be collected in a similar location and intervals as described for the baseline sampling. The soil analytical data review will include a comparison against EPA regional screening levels to assess that final remediation to soil RAOs has been achieved.
- Prior to startup, baseline groundwater levels will be collected from 52 on-site and off-site groundwater monitoring wells and groundwater samples will be collected from 47 groundwater monitoring wells (permit modification Exhibit I-2 PCCP Table 18). The baseline sampling will be completed as part of the standard semiannual sampling. The sampling will include the three planned new monitoring wells (proposed shallow downgradient wells MW-20S and MW-21S and proposed well MW-25S near the facility entrance). The well locations are shown on Figure 3. The groundwater field parameters that will be collected from the groundwater monitoring wells will include pH, temperature, conductivity, DO, and oxidation-reduction potential. The groundwater samples collected from the wells

will be analyzed by USEPA Method 8260D based on the 66 VOC parameters identified in Exhibit E-3 of this permit modification application.

- An O&M checklist and log sheet will be developed for on-going operator use, based on final equipment layout, performance goals, and manufacturer equipment maintenance recommendations.
- During the first week of system operation, COC concentrations in the off-gas of each SVE well will be measured with an OVM during the first day of startup, after three days of system operation, and at the end of one week of system operation. The vapor samples will be collected into Tedlar® bags for field screening. Vapor recovery rates from each SVE well and vacuum readings will also be recorded in the O&M logbook.
- Air pressure and air flow rates to each AS well will be recorded in the O&M logbook.
- Following completion of the first week of system operation, total COC measurements in vapor (as measured with an OVM), vacuum readings, and airflow rates will be collected weekly from the appropriate wells and influent and effluent sample ports to effectively monitor the system. This monitoring program will continue through the first month of system operation. At that time, the total COC measurements using an OVM will move to a quarterly schedule while the vacuum readings and airflow rates will be monitored at least monthly until RAOs are achieved.
- At a minimum, vapor (off-gas) samples will be collected in summa canisters at the influent sample port and at the effluent sample port to the SVE system on the first day of startup, third day of startup, after one week of startup, and quarterly thereafter for the first year of operation of the AS/SVE remedial measures system. The vapor (off-gas) samples will be analyzed for the vapor COCs by USEPA Method TO-15 or an equivalent, U.S. EPA-approved vapor analytical method.

3.4.2 PROJECT SITE REMEDIATION PERFORMANCE MONITORING

The data collected during the monitoring of the AS/SVE remediation system and the routine groundwater monitoring program will be included in the semi-annual corrective action effectiveness reports required under the permit (condition III.G.). These reports will be submitted upon completion of the second quarter and fourth quarter sampling events and include and describe all analytical data collected during the first half and second half of the calendar year. In addition, short and concise summary quarterly reports documenting the first and third quarter remediation performance in terms of VOC mass removal and describing system operation and maintenance will be submitted following the first and third quarters while the AS/SVE system is in operation. The data and information presented in these reports is described in the subsections below.

3.4.2.1 First and Third Quarter AS/SVE System Operation and Maintenance Letter Reports

The first and third quarter monitoring reports will consist of brief letter reports summarizing the AS/SVE system mass removal and the system operation and maintenance data collected during the first and third quarters. The reports will summarize the AS/SVE system data collected, the general operation and maintenance (O&M) of the system, and the total VOC (TVOC) mass removal of the remedial system. The brief reports will include an assessment of the performance of the AS/SVE system and provide a TVOC cumulative mass removal and TVOC versus time graph for the overall AS/SVE system based on the first and third quarter data. These reports will be

submitted during the course of remediation until remedial action objectives are met and formal closure of the site is approved by GEPD.

3.4.2.2 Semi-Annual AS/SVE Remedial and Groundwater Monitoring Reports

The Semi-Annual Groundwater Monitoring Reports will be prepared following the first half and following the second half of a given calendar year throughout the course of remediation. The reports will include details of the groundwater monitoring and the AS/SVE remedial system performance monitoring, operation, and maintenance during the semi-annual reporting period. The semi-annual report content will include the required elements outlined in the Groundwater Monitoring Sampling and Analysis Plan with an additional section that will present AS/SVE remedial system operation for the semi-annual period.

The AS/SVE remedial performance portion of the reports will present the VOC soil vapor analytical data, airflow data, and soil vacuum data collected at the site during the reporting period. The reports will include an operating summary (days operated, TVOC mass removed), discussion of problems encountered and maintenance performed, and the AS/SVE remedial system parameters such as airflow and vacuum data, TVOC vapor concentrations, and hours operated. The vapor, airflow, and vacuum data will be compiled into figures and tables to assess the operational requirements, radius of influence, and overall effectiveness of the AS/SVE system. The total amount, in pounds, of TVOCs recovered from the SVE system at the site will be calculated. A description of how any significant O&M activities or problems encountered during the semiannual monitoring period will be addressed will also be included in the reports.

With regard to the groundwater monitoring portion of the reports, the groundwater analytical and groundwater elevation data collected during the semi-annual events will be compiled into figures and tables to assess the operational requirements and the overall effectiveness of the AS/SVE remediation system in removing VOCs from groundwater. Specifically, the data compiled into figures, tables, and graphs will be used to assess the effectiveness of the soil and groundwater remediation system, the hydraulic effects and impacts the AS/SVE remediation has on the groundwater table, the lateral and vertical extent of groundwater contamination, and estimates of VOC mass removal in both soil and groundwater. To properly assess the remedial performance of the system, the reports will include shallow and deep zone isopleth maps for TVOCs and seven individual COCs: TCE, PCE, 1,1-DCE, 1,1,1-TCA, methylene chloride, vinyl chloride, and total aromatic VOCs.

The data in the reports will be used to track remedial performance and to aid in making adjustments to the AS/SVE system to optimize performance and to determine when certain AS/SVE wells can be shut off. This will be accomplished using: (1) TVOC soil vapor mass removal and TVOC versus time plots for the overall AS/SVE system based on the preceding six months of operation; (2) groundwater elevation contour maps for the shallow and deep zones; (3) the total VOC and individual COC groundwater isopleth maps for the shallow and deep zones; and (4) compiled vapor concentrations and air flow rates, and the estimated radius of influence of the AS/SVE

wells. The groundwater plume maps will be presented on a semi-annual basis until risk-based RAOs have been achieved for any particular constituent, at which time that plume map will be removed from future reports.

3.5 SYSTEM INSTALLATION - WASTE CONTAINERIZATION AND DISPOSAL

Soil cuttings, decon fluids, and well development water generated during the AS/SVE well drilling will be containerized in 55-gallon steel drums. During the subsurface piping installation and trenching, the concrete vs impacted subsurface soils will be segregated and placed into lined roll offs. Composite samples will be collected from the drummed investigative derived waste (IDW), and the bulked trenched soils and concrete construction debris. These samples will be submitted to a laboratory for testing requested by Perma-Fix for waste characterization purposes. Each container will be labeled, manifested, and shipped to the Perma-Fix of Florida facility and processed under the existing hazardous waste profile for final disposition. The Perma-Fix system has a profile in place for this type of waste that is based on other historical soil boring and well installations onsite. Upon completion of the AS/SVE construction and startup, a *Remedial System As-Built Report* will be submitted to GEPD. The report will include copies of all soil boring logs, well installation logs, well development details, field data form, and other records that document the installation of the AS, SVE, and groundwater monitoring wells.

3.6 REMEDIATION SYSTEM PERMITTING

As previously discussed, the selected remedial design technologies to address the soil and groundwater in the on-site source area include AS and SVE. Prior to the implementation of the remedial system, applicable permit applications will be prepared by Perma-Fix and submitted to the appropriate agencies. These applications will include obtaining a new air permit, any required injection, construction, or building permits, and other permits as applicable.

3.7 PRELIMINARY IRM CONSTRUCTION/OPERATIONAL SCHEDULE

An estimated schedule for the final design, contracting, and implementation of the AS/SVE source area remedial system is presented on Figure 36 of the Post Closure Care Plan. This schedule provides a list of the tasks required to complete the remedial design, contracting and installation, start-up and monitoring, and the estimated duration of each task. This schedule is not intended to provide absolute time frames for completion of specific tasks, but rather it provides a project framework and estimated duration for individual tasks. The schedule may change once the final design is complete and does not take into account factors such as inclement weather, unforeseeable geological and engineering circumstances, and regulatory review. Should the schedule require change, GEPD will be notified of any change in the schedule and a revised schedule acceptable to GEPD will be provided.

4.0 REMEDIATION SYSTEM AS-BUILT DRAWINGS AND REPORT

After installation of the remedial system is complete, a Remedial System As-Built Report will be prepared that presents the final field layout of the new AS/SVE well locations, the system piping and controls, and the final engineered drawings for the remediation system. The report will include detailed final engineering design and process flow diagrams for the remediation system as installed at the facility. The report will also include a description of the construction activities completed during installation of the system. The report will be submitted to GEPD for review and approval within ninety (90) days following final startup and the commencement of full-time operation of the AS/SVE interim measures.

5.0 REMEDIATION SYSTEM OPERATION AND MAINTENANCE (O&M) PLAN

In addition to vapor sampling and airflow measurements, the monitoring of the remediation system will include routine operation and maintenance. Routine operation and maintenance at a minimum will include visual inspection of the electrical system, valves, meters, vacuum blower, air compressors, conveyance piping, and wellheads. The visual inspections of the remediation system will be conducted on a regular basis and operation and maintenance of the existing systems will be conducted on an "as-needed" basis and in accordance to any component manufacturer recommendation. All shut-downs and start-ups due to equipment malfunctions will be documented on a facility log.

A *Draft Operation and Maintenance (O&M) Plan* is included as Appendix D of the PCCP. The draft version of the plan has been prepared, using standard operating procedures and proposed equipment specifications. Following startup, the plan will be revised as necessary to compensate for site-specific performance observations and actual equipment installed. The final O&M Plan will be kept on file at the facility with a copy submitted to GEPD for review and comment once completed.

The final O&M Plan will include several sections, including as-built drawings, start-up procedures, standard operating procedures, equipment performance monitoring parameters and inspections and maintenance, corrective action monitoring, and soil vapor and groundwater sampling and analysis (SAP) protocols for the remedial performance monitoring. The performance optimization monitoring parameters are intended to ensure proper operation of the remediation equipment, as distinct from the effectiveness of the equipment regarding remediation.

In addition to vapor sampling, vacuum/pressure and airflow measurements, the monitoring of the remediation system will include routine operation and maintenance. Routine operation and maintenance will include visual inspection of the electrical system, valves, meters, vacuum blower, air compressor, conveyance piping, and wellheads. The visual inspections of the remediation system will be conducted on a regular basis and operation and maintenance of the existing systems will be conducted on an "as-needed" basis. The history of shut-downs and start-ups due to equipment malfunctions will be recorded. These maintenance procedures will also be based upon available manufacturers' equipment specifications and operation manuals, which include preventative maintenance, repair, and troubleshooting protocols.

6.0 REMEDIATION SYSTEM PERFORMANCE MONITORING PLAN

After the installation and prior to and during the startup of the AS/SVE system, a program of scheduled monitoring will be implemented to establish pre-remediation or "baseline" conditions and to effectively monitor the remedial systems. The frequency of AS/SVE monitoring will decrease with time and as contamination is removed.

6.1 AS/SVE SYSTEM MONITORING

Prior to and during the initial startup phase and first week of operation of the remedial system, water level, vapor flow rate, and COC monitoring data in air and groundwater will be collected to provide "initial conditions" data. The groundwater elevation data will be used to evaluate the hydraulic head distribution and groundwater flow field around the new wells. The COC analytical data will be used to track mass removal and system loading and evaluate remedial performance. The following system testing and sampling and analysis program will be performed prior to and during the first week of operation of the remediation systems after AS/SVE system startup:

- An O&M checklist and log sheet will be used to record system operation and monitoring data.
- Prior to startup, baseline groundwater levels will be measured once in all existing groundwater monitoring and all newly constructed and inactive AS and SVE wells. The groundwater level measurements will be completed to coincide with the appropriate quarterly groundwater monitoring event, or other sampling frequency approved by the GEPD, if possible.
- Prior to startup, baseline groundwater levels will be measured once in all existing groundwater monitoring and all newly constructed and inactive AS and SVE wells. The groundwater level measurements will be completed to coincide with the appropriate quarterly groundwater monitoring event, if possible.
- Prior to startup, all existing monitoring wells and newly constructed AS wells will be sampled and analyzed for COCs in groundwater by USEPA Method 8260 at the same time as the groundwater level measurements are collected, and will coincide with the appropriate quarterly groundwater monitoring event, or other sampling frequency approved by the GEPD, if possible.
- COC concentrations in the off-gas of each SVE well will be measured during the startup, daily for the first three days of system operation, during weeks 1-3 of the first month, and monthly thereafter, of system operation using an OVM and Tedlar® bags. Vapor recovery rates from each well and vacuum readings will also be recorded in the O&M logbook.
- Air pressure and air flow rates to each AS well will be recorded in the O&M logbook.
- Potential collection of condensate from the SVE wells will be monitored.
- Vacuum pressure and water levels will be measured daily for the first three days, weekly for weeks 1-3, and monthly thereafter at 11 designated O&M performance monitoring wells (MW-7S, MW-8S, MW-9S, MW-10S, MW-13S, MW-24S, B106, B108, B113, B114, and MP-8).

- At a minimum, vapor (off-gas) samples will be collected at the influent sample port (pre-GAC) and at the final effluent sample port (post GAC) to the SVE system during the first day of operation, after 24-48 hours of operation, weekly for weeks 1-3, and monthly thereafter for the first year of operation of the AS/SVE remedial measures system. The vapor (off-gas) samples will be analyzed for the vapor VOCs by USEPA Method TO-15 or an equivalent, U.S. EPA-approved vapor analytical method.

7.0 REFERENCES

Cameron-Cole. 2008. Air Sparge and Soil Vapor Extraction Pilot Test, Perma-Fix of South Georgia, Inc., Valdosta, GA. April 30, 2008.

Trihydro. 2023. Air Sparge and Soil Vapor Extraction Pilot Test Work Plan, Revision 2, Perma-Fix of South Georgia, Inc., Valdosta, GA. November 27, 2023.

Trihydro. 2024. Air Sparge and Soil Vapor Extraction Pilot Test Report, Third Revision, Perma-Fix of South Georgia, Inc., Valdosta, GA. July 29, 2024.

GeoSouth. 2024. 2024 Annual Groundwater Monitoring Report, Perma-Fix of South Georgia, Inc., Valdosta, GA. February 26, 2025.

USACE. 2013-01. In-Situ Air Sparging Engineer Manual. December 31, 2013.

USEPA. 2018. Design and Installation of Monitoring Wells. January 16, 2018.

USEPA, 2020. Laboratory Services and Applied Science Division (LASASD) Field Equipment Cleaning and Decontamination, June 22, 2020.

TABLES

TABLE 1
SOIL CONTAMINANT MASS ESTIMATES
PERMA-FIX OF SOUTH GEORGIA, VALDOSTA, GA

Based on 2015 Cameron-Cole Report using 2006 Data

SHALLOW SOIL PLUME					Soil Volumes	Soil Volumes	Soil Weight	Soil Weight	Contaminant Mass		
1 -2 ft bls	Area 1 (ft2)	Area 2 (ft2)	SubAreas (ft2)	Thickness (ft)	(cft)	(cyds)	tons	kg	Mass - mg	Mass - kg	Mass - lbs
10 mg/kg	1,360	3,020	4,380	5	21,900	820	1,220	1,107,760	33,232,800	40	90
50 mg/kg	440	830	1,270	5	6,350	240	360	326,880	24,516,000	30	70
100 mg/kg		2,350	2,350	5	11,750	440	660	599,280	179,784,000	180	400
500 mg/kg		2,400	2,400	5	12,000	450	670	608,360	456,270,000	460	1,020
1000 mg/kg											
5000 mg/kg											
									Mass Subtotals -	**710**	**1,580**

INTERMEDIATE SOIL PLUME					Soil Volumes	Soil Volumes	Soil Weight	Soil Weight	Contaminant Mass		
5 -7 ft bls	Area 1	Area 2	SubAreas	Thickness	(cft)	(cyds)	tons	kg	Mass - mg	Mass - kg	Mass - lbs
10 mg/kg	4,650		4,650	5	23,250	870	1,300	1,180,400	35,412,000	40	90
50 mg/kg	2,425		2,425	5	12,125	450	680	617,440	46,308,000	50	110
100 mg/kg	4,425		4,425	5	22,125	820	1,240	1,125,920	337,776,000	340	750
500 mg/kg	1,400		1,400	5	7,000	260	390	354,120	265,590,000	270	600
1000 mg/kg	600		600	5	3,000	120	170	154,360	463,080,000	470	1,040
5000 mg/kg											
									Mass Subtotals -	**1,170**	**2,590**

DEEP SOIL PLUME					Soil Volumes	Soil Volumes	Soil Weight	Soil Weight	Contaminant Mass		
10 -12 ft bls	Area 1	Area 2	SubAreas	Thickness	(cft)	(cyds)	tons	kg	Mass - mg	Mass - kg	Mass - lbs
10 mg/kg	3,575		3,575	5	17,875	670	1,000	908,000	27,240,000	30	70
50 mg/kg	7,125		7,125	5	35,625	1,320	1,990	1,806,920	135,519,000	140	310
100 mg/kg	3,875		3,875	5	19,375	720	1,080	980,640	294,192,000	300	660
500 mg/kg	630		630	5	3,150	120	180	163,440	122,580,000	130	290
1000 mg/kg	470		470	5	2,350	90	140	127,120	381,360,000	390	860
5000 mg/kg	320		320	5	1,600	60	90	81,720	612,900,000	620	1,370
10000 mg/kg	180		180	5	900	40	60	54,480	681,000,000	690	1,520
									Mass Subtotals -	**2,300**	**5,080**

	Mass - kg	Mass - lbs
Estimated Soil Contaminant Mass -	**4,180**	**9,250**

Soil concentration and plume data used were based on 2006 data and observations as reported in the 2015 Cameron-Cole Report
Althought soil samples were collected over 2 ft sample intervals, a conservative approach applied these data over their respective 5 ft depth intervals

TABLE 2
GROUNDWATER CONTAMINANT MASS ESTIMATES
PERMA-FIX OF SOUTH GEORGIA, VALDOSTA, GA

Based on 2024 Annual GWM Report using Dec 2024 Data - Calculations limited to Area of planned IM treatment

	SHALLOW GW PLUME (~15-30 ft bls)				GW Volumes		Contaminant Mass		
Conc. Range	Area (ft2)	Thickness (ft)	Volume (cft)	Porosity (%)	(cft)	Liters (L)	Mass - ug	Mass - kg	Mass - lbs
10 ug/L	10,600	15	159,000	35%	55,650	1,576,010	86,680,550	0.1	0.2
100 ug/L	27,400	15	411,000	35%	143,850	4,073,840	2,240,612,000	2.2	4.9
1,000 ug/L	20,000	15	300,000	35%	105,000	2,973,600	16,354,800,000	16.4	36.0
10,000 ug/L	8,400	15	126,000	35%	44,100	1,248,920	68,690,600,000	68.7	151.1
100,000 ug/L	3,600	15	54,000	35%	18,900	535,250	66,906,250,000	66.9	147.2
							Mass Subtotals -	**154.3**	**339.4**

	DEEP GW PLUME (~30-45 ft bls)						Contaminant Mass		
Conc. Range	Area (ft2)	Thickness (ft)	Volume (cft)	Porosity (%)	(cft)	Liters (L)	Mass - ug	Mass - kg	Mass - lbs
10 ug/L	42,500	15	637,500	50%	318,750	9,027,000	496,485,000	0.5	1.1
100 ug/L	2,900	15	43,500	50%	21,750	615,960	338,778,000	0.3	0.7
1,000 ug/L	2,200	15	33,000	50%	16,500	467,280	2,570,040,000	2.6	5.7
10,000 ug/L	10	15	150	50%	80	2,270	28,375,000	0.0	0.1
							Mass Subtotals -	**3.4**	**7.6**

	Mass - kg	Mass - lbs
Estimated GW Contaminant Mass -	**157.7**	**347.0**

TABLE 3
ESTIMATED CONTAMINANT MASS REDUCTION RATES FOR SOIL IMPACTS
PERMA-FIX OF SOUTH GEORGIA
VALDOSTA, GA

Project Name: PFSG - Interim Measures Remedial Design
RCRA Fac ID No.: GAD093380814
Proj. No.: PFSG

Address: 1620 James P Rodgers Circle
City: Valdosta, GA
County: Lowndes

Prepared by: Brad Pekas, P.E.
Date: 3/18/2024
Reviewed by: William Kelly, PG

ESTIMATED SVE MASS REMOVAL RATES

$R_{est} = (F_{ot}-F_f)*C_{SV} * Q$

Where:

R_{est} = Estimated Removal Rate

C_{SV} = Estimated Initial Soil Vapor Concentration Removed by SVE System (estimate from average vapor samples collected during pilot test)

Q = Proposed SVE Rate

F_f = fraction of vapor flow estimated to be through uncontaminated/low contaminated soils

F_{ot} = fraction of time SVE system is expected to be operational

Source: modified from Johnson etal 1990 to include operational time efficiencies

Est. Soil Contaminant Mass
9250 lbs
4200 kg

SVE Conc.	Proposed SVE Rate		Fraction	Fraction	Est. Removal Rate					Cumulative		Cumulative Time		Est. Carbon	
C_{SV} (mg/m^3)	Q (scfm)	Q (m^3/d)	F_f (%)	F_{ot} (%)	R_{est} (mg/d)	R_{est} (g/d)	R_{est} (lbs/d)	Days	lbs Removed	lbs Removed	% Removed	Days	Years	Consumption	
7,320	225	9178	0.625	0.9	18,476,261	18476.3	40.7	5	204	204	2.2%	5.0	0.01	0.6	
7,320	225	9178	0.625	0.9	18,476,261	18476.3	40.7	5	204	407	4.4%	10.0	0.03	1.3	
7,320	225	9178	0.625	0.9	18,476,261	18476.3	40.7	10	407	815	8.8%	20.0	0.05	2.5	
7,320	225	9178	0.625	0.9	18,476,261	18476.3	40.7	10	407	1222	13.2%	30.0	0.08	3.8	
6,954	225	9178	0.625	0.9	17,552,448	17552.4	38.7	15	580	1802	19.5%	45.0	0.12	5.6	
6,954	225	9178	0.625	0.9	17,552,448	17552.4	38.7	15	580	2383	25.8%	60.0	0.16	7.4	
6,954	225	9178	0.625	0.9	17,552,448	17552.4	38.7	30	1161	3544	38.3%	90.0	0.25	11.1	12 - # of 2K GAC Vessels - 90 days
6,259	225	9178	0.625	0.9	15,797,203	15797.2	34.8	30	1045	4589	49.6%	120.0	0.33	14.3	
6,259	225	9178	0.625	0.9	15,798,212	15798.2	34.8	30	1045	5633	60.9%	150.0	0.41	17.6	
5,007	225	9178	0.625	0.9	12,638,065	12638.1	27.9	30	836	6469	69.9%	180.0	0.49	20.2	10 - # of 2K GAC Vessels - 90-180 days
5,007	225	9178	0.625	0.9	12,638,065	12638.1	27.9	30	836	7305	79.0%	210.0	0.58	22.8	
3,505	225	9178	0.625	0.9	8,846,898	8846.9	19.5	30	585	7890	85.3%	240.0	0.66	24.7	
3,505	225	9178	0.625	0.9	8,846,898	8846.9	19.5	30	585	8475	91.6%	270.0	0.74	26.5	8 - # of 2K GAC Vessels - 180-270 days
2,103	225	9178	0.625	0.9	5,308,139	5308.1	11.7	30	351	8826	95.4%	300.0	0.82	27.6	
2,103	225	9178	0.625	0.9	5,308,139	5308.1	11.7	30	351	9177	99.2%	330.0	0.90	28.7	
1,051	225	9178	0.625	0.9	2,652,807	2652.8	5.8	30	175	9353	101.1%	360.0	0.99	29.2	2 - # of 2K GAC Vessels - 270-360 days
1,051	225	9178	0.625	0.9	2,652,807	2652.8	5.8	30	175	9528	103.0%	390.0	1.07	29.8	
526	225	9178	0.625	0.9	1,327,666	1327.7	2.9	30	88	9616	104.0%	420.0	1.15	30.1	
526	225	9178	0.625	0.9	1,327,666	1327.7	2.9	30	88	9704	104.9%	450.0	1.23	30.3	
263	225	9178	0.625	0.9	663,833	663.8	1.5	30	44	9748	105.4%	480.0	1.32	30.5	
263	225	9178	0.625	0.9	663,833	663.8	1.5	30	44	9792	105.9%	510.0	1.40	30.6	
131	225	9178	0.625	0.9	331,741	331.7	0.7	30	22	9814	106.1%	540.0	1.48	30.7	
131	225	9178	0.625	0.9	330,654	330.7	0.7	30	22	9836	106.3%	570.0	1.56	30.7	
66	225	9178	0.625	0.9	166,589	166.6	0.4	30	11	9847	106.4%	600.0	1.64	30.8	
66	225	9178	0.625	0.9	166,589	166.6	0.4	30	11	9858	106.6%	630.0	1.73	30.8	
33	225	9178	0.625	0.9	83,295	83.3	0.2	30	6	9863	106.6%	660.0	1.81	30.8	
33	225	9178	0.625	0.9	83,295	83.3	0.2	30	6	9869	106.7%	690.0	1.89	30.8	
16	225	9178	0.625	0.9	40,385	40.4	0.1	30	3	9871	106.7%	720.0	1.97	30.8	
8	225	9178	0.625	0.9	20,193	20.2	0.0	30	1	9873	106.7%	750.0	2.05	30.9	
4	225	9178	0.625	0.9	10,096	10.1	0.0	30	1	9873	106.7%	780.0	2.14	30.9	
2	225	9178	0.625	0.9	5,048	5.0	0.0	30	0	9874	106.7%	810.0	2.22	30.9	
1	225	9178	0.625	0.9	2,524	2.5	0.0	30	0	9874	106.7%	840.0	2.30	30.9	
0.5	225	9178	0.625	0.9	1,262	1.3	0.0	30	0	9874	106.7%	870.0	2.38	30.9	
0.25	225	9178	0.625	0.9	631	0.6	0.0	30	0	9874	106.7%	900.0	2.47	30.9	
											107%				

SVE Estimated remediation time is approximately 2.5 yrs (24-30 months). However contributions from ground water impacts, water-to-vapor transfer, and preferential flow pathways, and overall system operational controls, experience indicates the actual remediation time may take longer.

FIGURES

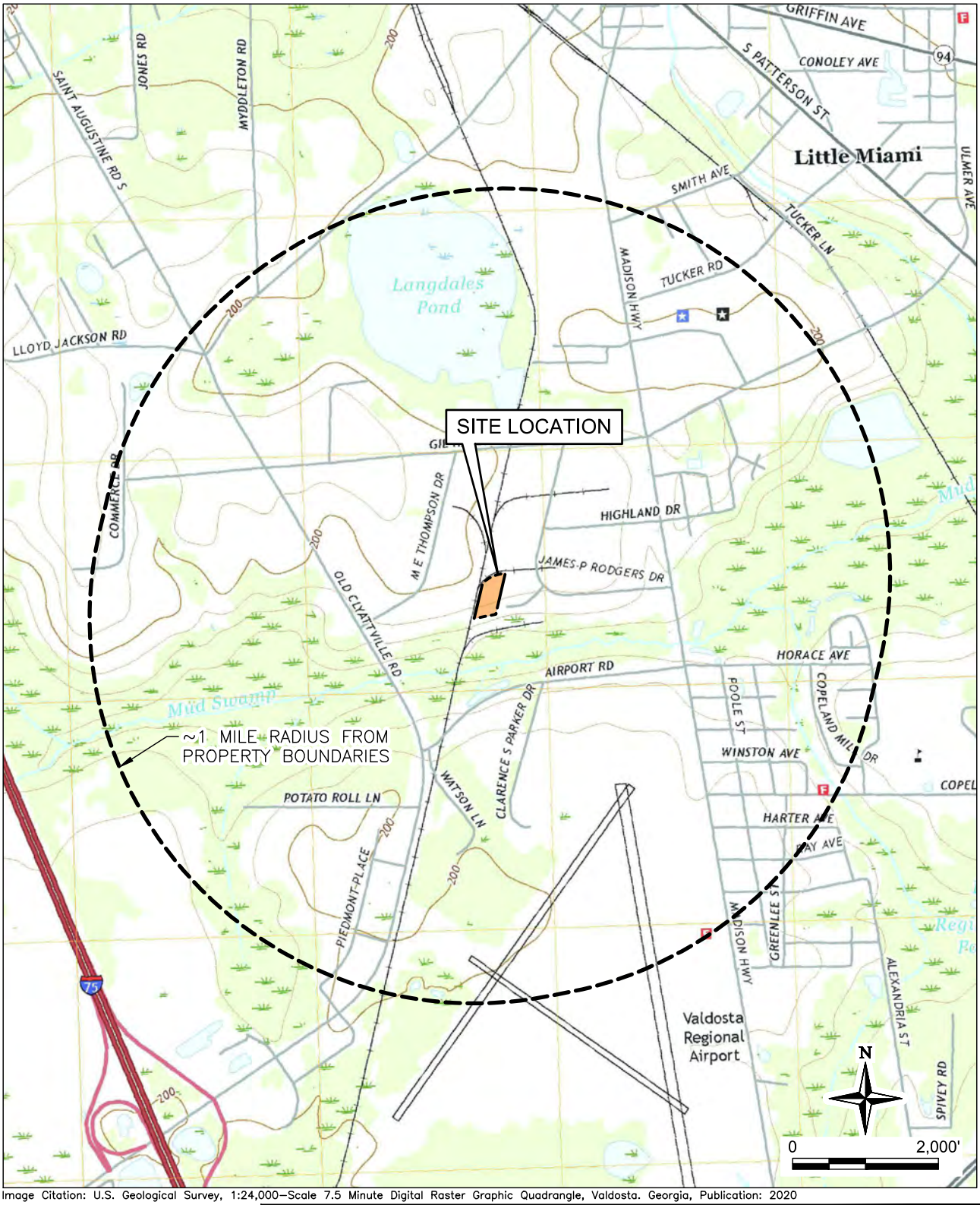


Image Citation: U.S. Geological Survey, 1:24,000–Scale 7.5 Minute Digital Raster Graphic Quadrangle, Valdosta. Georgia, Publication: 2020

QUADRANGLE LOCATION

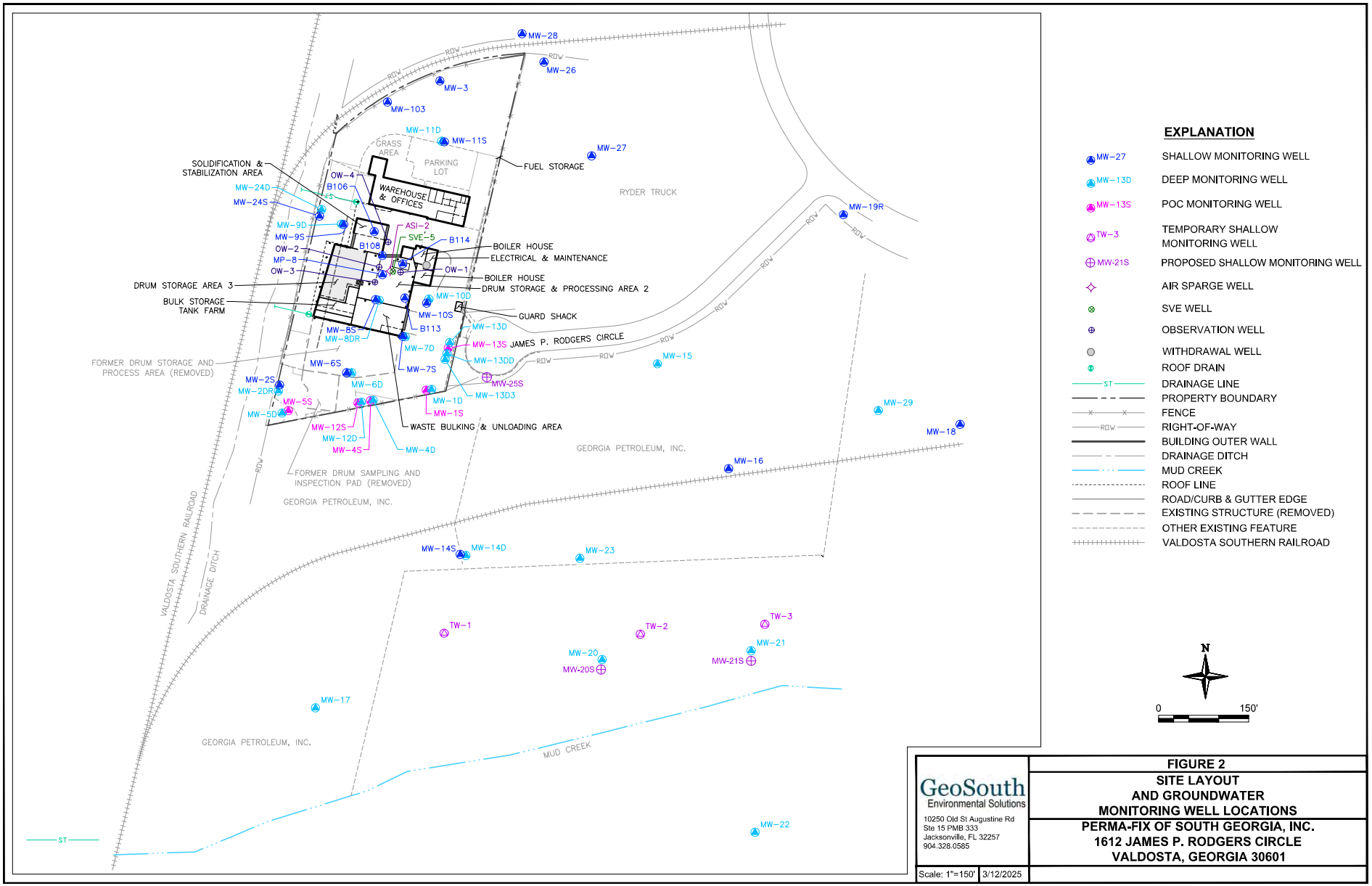
GeoSouth
Environmental Solutions
10250 Old St Augustine Rd
Ste 15 PMB 333
Jacksonville, FL 32257
904.328.0585

Scale: 1"=2000' | 1/20/2025

FIGURE 1

SITE LOCATION MAP

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



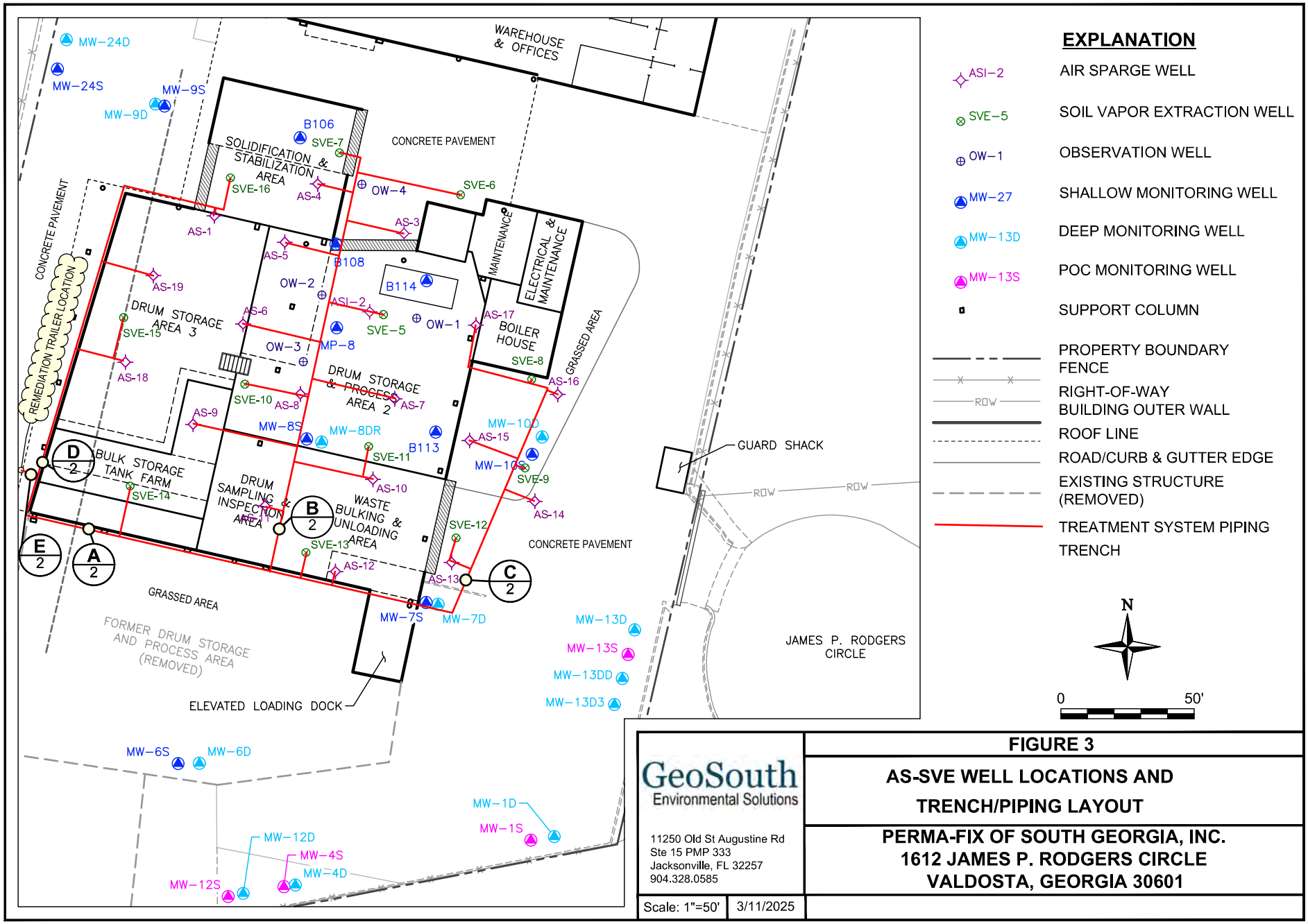
GeoSouth Environmental Solutions
10250 Old St Augustine Rd
Ste 15 PMB 333
Jacksonville, FL 32257
904.328.0585

FIGURE 2

SITE LAYOUT AND GROUNDWATER MONITORING WELL LOCATIONS

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

Scale: 1"=150' | 3/12/2025



GeoSouth Environmental Solutions

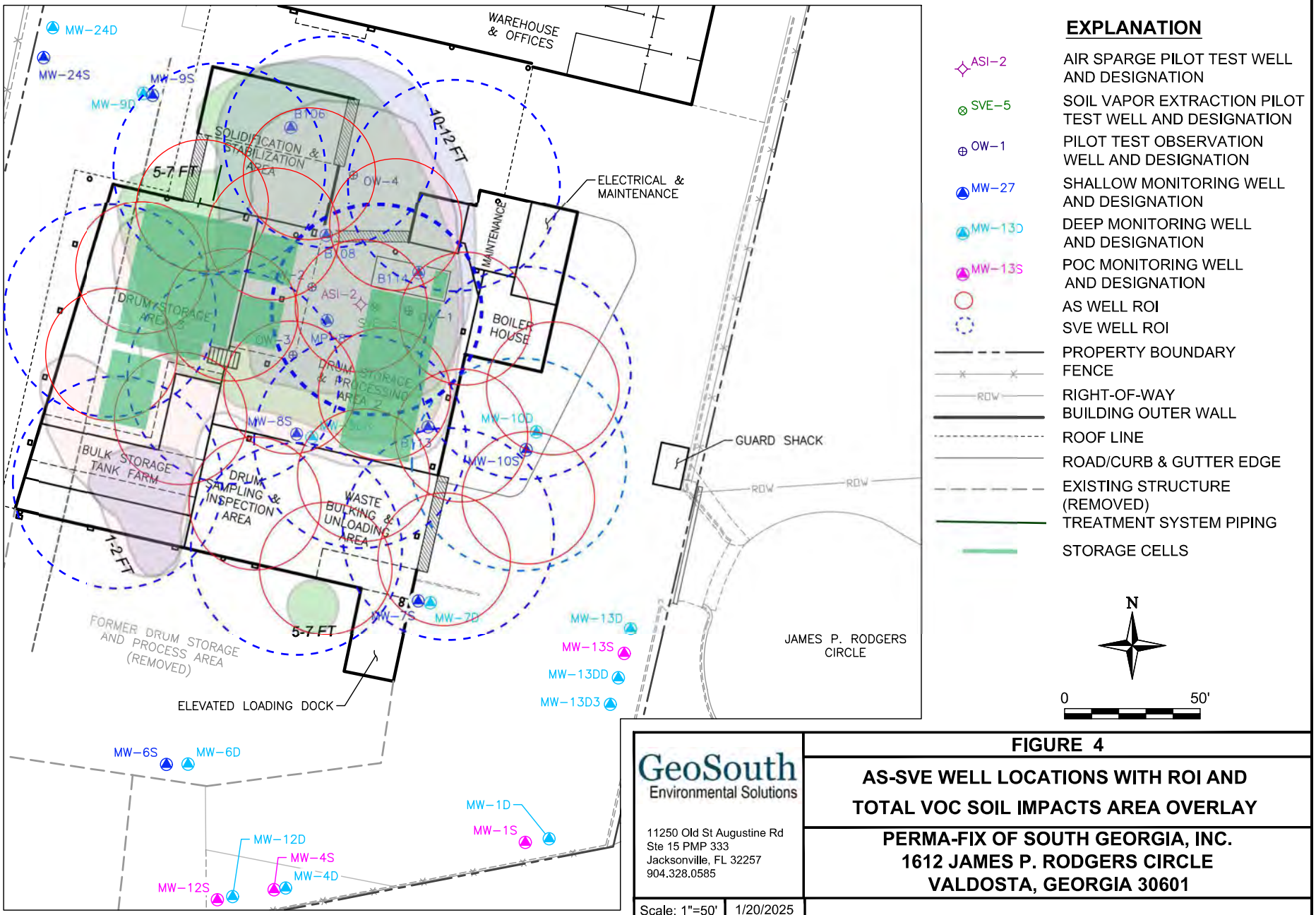
11250 Old St Augustine Rd
Ste 15 PMP 333
Jacksonville, FL 32257
904.328.0585

Scale: 1"=50' | 3/11/2025

FIGURE 3

AS-SVE WELL LOCATIONS AND TRENCH/PIPING LAYOUT

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



GeoSouth Environmental Solutions

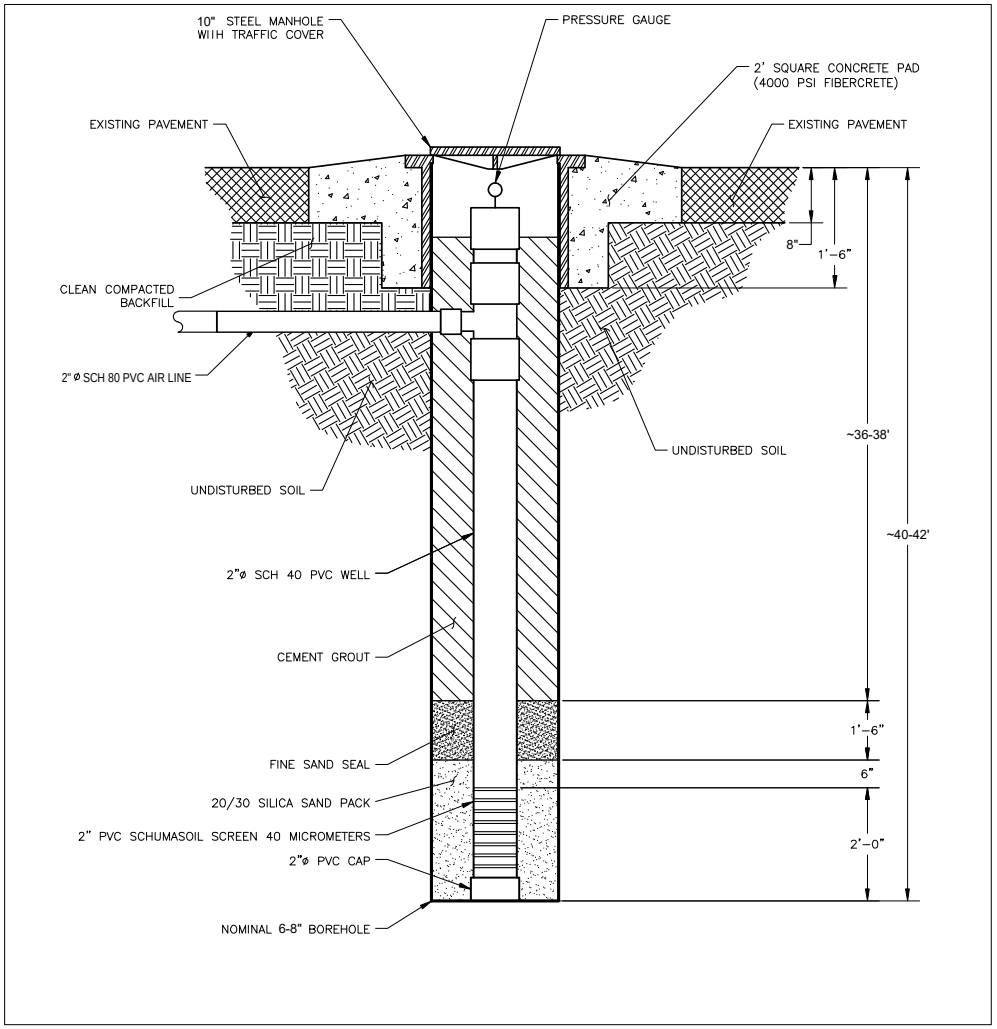
11250 Old St Augustine Rd
Ste 15 PMP 333
Jacksonville, FL 32257
904.328.0585

Scale: 1"=50' | 1/20/2025

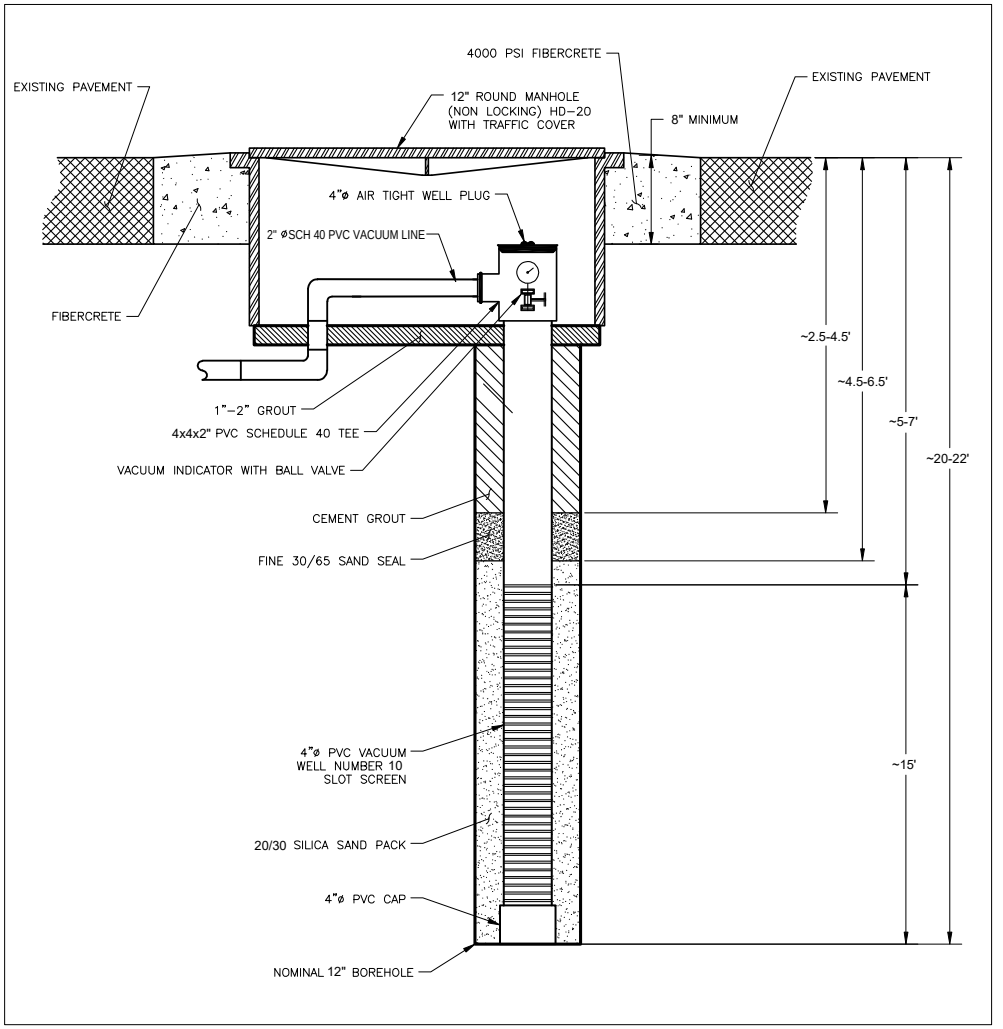
FIGURE 4

AS-SVE WELL LOCATIONS WITH ROI AND TOTAL VOC SOIL IMPACTS AREA OVERLAY

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



1 **AIR SPARGE WELL DETAIL**
SCALE: NONE



2 **VERTICAL SOIL EXTRACTION WELL**
SCALE: NONE

FIGURE 5

AS-SVE WELL CONSTRUCTION DETAILS

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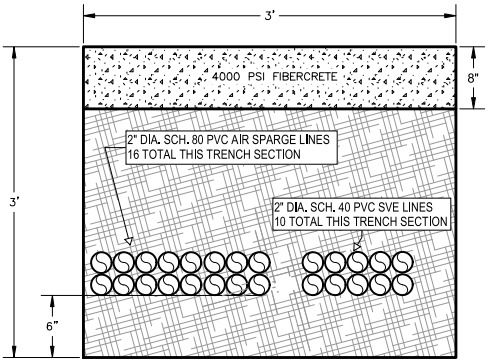
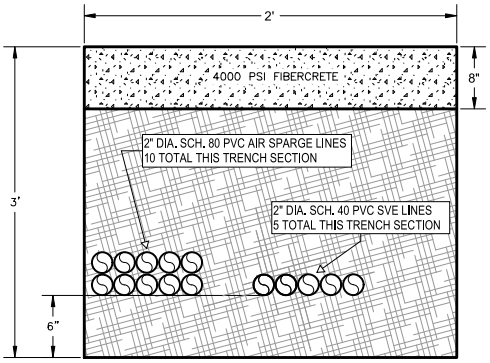
PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

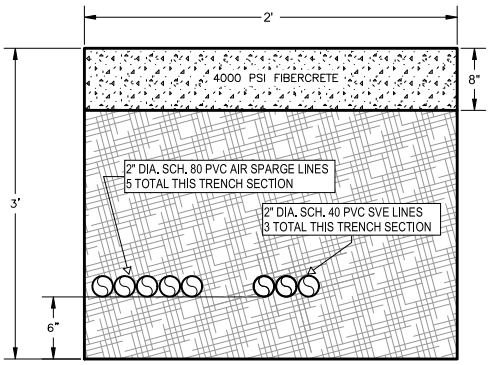
Scale: NONE | 9/10/2025



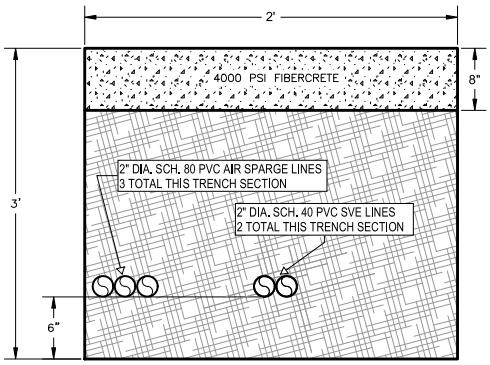
A **TYPICAL TRENCH SECTION A**
SCALE: 1" = 1'



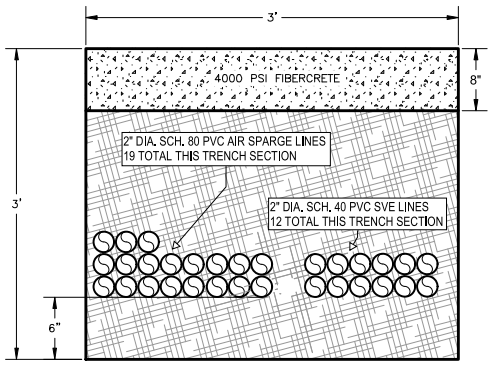
B **TYPICAL TRENCH SECTION B**
SCALE: 1" = 1'



C **TYPICAL TRENCH SECTION C**
SCALE: 1" = 1'



D **TYPICAL TRENCH SECTION D**
SCALE: 1" = 1'



E **TYPICAL TRENCH SECTION E**
SCALE: 1" = 1'

EXPLANATION

DIA	DIAMETER
SVE	SOIL VAPOR EXTRACTION
SCH.	SCHEDULE
PVC	POLYVINYL CHLORIDE

NOTE: FOR TRENCH SECTIONS A AND C, REPLACE CONCRETE WITH POLY SHEET VAPOR SEAL AND SAND/TURF COVER IN UNPAVED AREA SEGMENTS

0 1'

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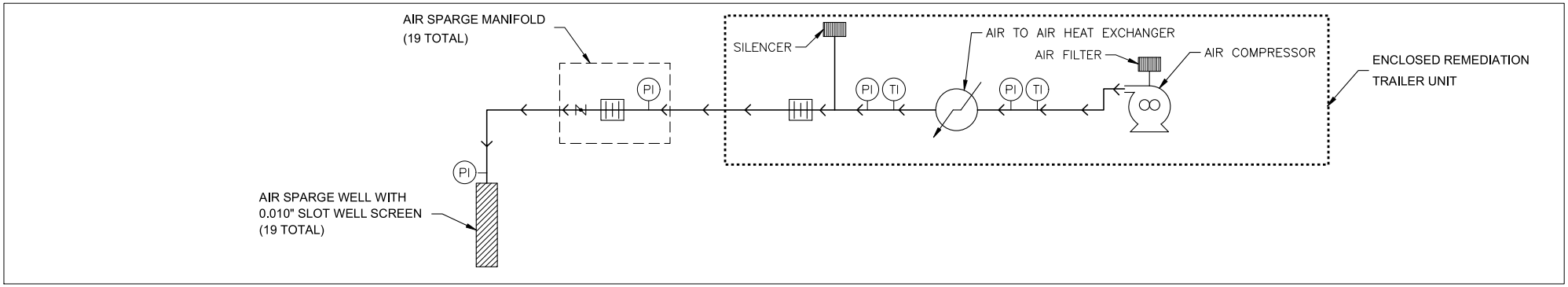
Jacksonville, FL 32257
904.328.0585

FIGURE 6

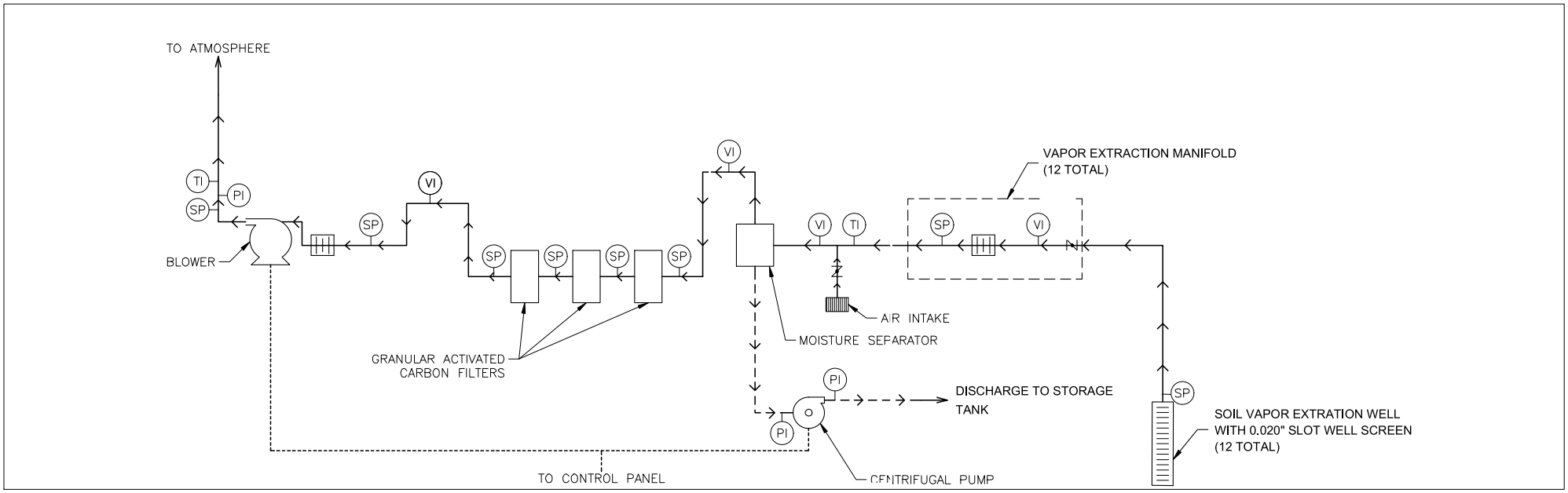
TRENCH PIPING CROSS SECTION DETAILS

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

Scale: 1" = 1' | 3/12/2025



1 AIR SPARGE P&ID
SCALE: NONE



2 SOIL VAPOR EXTRACTION P&ID
SCALE: NONE

EXPLANATION

	FLOW METER	TI	TEMPERATURE INDICATOR		AIR LINE WITH FLOW DIRECTION
	VALVE	PI	PRESSURE INDICATOR		WATER DISCHARGE LINE WITH FLOW DIRECTION
SP	SAMPLE PORT		ELECTRICAL LINE	P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
VI	VACUUM INDICATOR		AIR LINE		

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Jacksonville, FL 32257
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FIGURE 7

AS-SVE SYSTEMS
PROCESS AND INSTRUMENTATION DIAGRAMS

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

Scale: NONE | 3/12/2025

APPENDIX A

AS/SVE PILOT TEST REPORT GEPD APPROVAL LETTER

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Jeffrey W. Cown, Director

Land Protection Branch
2 Martin Luther King, Jr. Drive S.E.
Suite 1058, East Tower
Atlanta, Georgia 30334
404-657-8600

July 31, 2024

SENT VIA ELECTRONIC MAIL

Mr. Kevin Schmuggerow
VP, Industrial Business
8302 Dunwoody Pl., Suite 250
Atlanta, Ga. 30350

SUBJECT: REVISION 3 - AS/SVE PILOT TEST REPORT APPROVAL,
Perma-Fix of South Georgia, Inc.
Valdosta, Georgia
EPA I.D. No. GAD093380814
Permit No. HW-020 (D)

Dear Mr. Schmuggerow:

The Georgia Environmental Protection Division has reviewed the Revision 3 – Air Sparge/Soil Vapor Extraction Pilot Test Report (Report) revised July 29, 2024, for the above referenced facility. The Report is approved.

Please proceed with the preparation of a Revised Post-Closure Care Plan, commencing within thirty (30) days of receipt of this letter, and pursuant to the schedule contained in Appendix L of the Report. Also, please submit one hard copy and one CD copy of the Report at your earliest convenience.

Should you have any questions, please contact Becky Ferguson at Becky.Ferguson@dnr.ga.gov [(470) 524-0529], or Andrea Kemberling at andrea.kemberling1@dnr.ga.gov [(470) 524-0726].

Thank you for your cooperation in protecting Georgia's environment.

Sincerely,

Sharon Priyadarshini

Sharon Priyadarshini
Unit Manager, Treatment & Storage Unit
Hazardous Waste Management Program

Ec: Bill Kelly, Trihydro
File: Perma-Fix of South Georgia, Inc. (254-0062) (G)

APPENDIX B1

HISTORICAL SUMMARY OF SOIL CONTAMINATION & VOC DISTRIBUTION IN SOILS MAPS

Historical Soil Analytical Results 1995-1997 (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Soil Boring/ Monitoring Well Designation	Depth (ft)	Sampling Event (mo/yr)	Volatile Organic Aromatics by Method EPA 8240A																			Total VOCs	Semi-Volatile Organic Aromatics by EPA Method 8270A												
			Acetone	Benzene	2-Butanone	Carbon Disulfide	Chlorobenzene	Chloroform	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	Ethylbenzene	2-Hexanone	Methylene Chloride	4-Methyl-2-Pentanone	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Total Xylenes[1]		Benzyl Alcohol	Benzylbutyl Phthalate	Diethyl Phthalate	Dimethyl Phthalate	Di-n-Butyl Phthalate	Di-n-Octylphthalate	Isophorone	2-Methylphenol	3&4 Methylphenol[2]	Naphthalene	Phenol	1,2,4-Trichlorobenzene	2,4,5-Trichlorophenol
	RAOs:		6100	1.2	2700	77	28	0.32	3.6	0.46	23	16	5.8	20	35	3300	8.1	490	810	0.41	58	--	630	290	5100	--	630	63	570	320	320	2	1900	5.8	630
	1-2 ft	3/96	0.1676	ND	0.17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-1	**5-6 ft**	3/96	0.062	ND	0.062	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	0.0372	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.077	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-2	**5-6 ft**	3/96	ND	ND	0.026	0.0115	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.038	ND	ND	ND	ND	ND	ND	0.0906	ND	ND	ND	ND	ND
	10-11 ft	3/96	3.30	ND	3.6126	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.044	ND	ND	ND	ND	ND	ND	0.044	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-3	**5-6 ft**	3/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.044	ND	ND	ND	ND	ND	ND	0.044	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	0.132	ND	0.0206	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.044	ND	ND	ND	ND	ND	ND	0.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.077	ND	ND	ND	0.0125	0.0137	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-4	**5-6 ft**	3/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	ND	ND	ND	ND	ND	ND	ND	0.0193	0.081	0.0193	ND	ND	0.086	ND	ND	ND	0.0721	0.0707	ND	0.35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	0.115	ND	ND	0.265	ND	ND	ND	ND	ND	ND	ND	ND	0.036	ND	ND	ND	ND	ND	ND	0.42	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-5	**5-6 ft**	3/96	ND	ND	ND	0.0679	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.068	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	0.0668	ND	ND	0.041	ND	ND	ND	ND	ND	ND	ND	ND	0.028	ND	ND	ND	ND	ND	ND	0.14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	13.054	ND	2.516	ND	ND	ND	ND	ND	ND	ND	**6.883**	ND	0.633	ND	0.364	5.886	ND	ND	35.301	64.6	ND	2.469	ND	ND	1.88	ND	ND	0.313	ND	0.184	1.023	ND	5.297
B-7	**5-6 ft**	3/96	6.113	ND	0.457	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.829	ND	ND	ND	ND	ND	ND	8.40	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	7.3	ND	4.026	ND	ND	ND	ND	ND	ND	ND	0.16	ND	2.18	ND	ND	0.799	ND	ND	0.901	15.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.79	ND	0.184
	1-2 ft	3/96	33.824	ND	31.118	ND	ND	ND	ND	ND	ND	ND	0.412	ND	2.647	2.941	ND	16.691	0.382	0.265	2.309	90.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.008	ND	ND
B-8	**5-6 ft**	3/96	49.794	ND	68.63	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.137	5.137	ND	1.027	ND	ND	ND	130	0.33	ND	ND	ND	ND	ND	0.326	ND	ND	ND	ND	1.731
	10-11 ft	3/96	69.695	ND	100.732	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.439	3.658	ND	ND	ND	ND	ND	177	ND	ND	ND	ND	ND	ND	0.181	ND	ND	ND	0.197	ND	0.72
	1-2 ft	3/96	9.2	ND	20.2	ND	ND	ND	ND	ND	ND	ND	0.04	ND	0.131	0.528	0.0346	0.075	ND	0.0176	0.2835	30.5	0.18	0.4725	ND	ND	0.1088	ND	ND	ND	ND	ND	0.39	ND	0.5588
B-9	**5-6 ft**	3/96	17.1	ND	3.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.14	1.07	ND	0.009	ND	ND	ND	21.6	0.4758	ND	ND	ND	ND	ND	0.2226	ND	ND	ND	0.8979	ND	0.6753
	10-11 ft	3/96	21.616	ND	22.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	0.685	ND	0.0071	ND	ND	ND	44.8	0.0897	ND	ND	ND	ND	ND	0.3336	ND	0.1506	ND	0.391	ND	ND
	1-2 ft	3/96	2.1	ND	0.0311	ND	ND	ND	ND	ND	ND	0.0104	0.0067	ND	0.134	ND	0.017	0.0177	0.0067	0.05	0.0396	2.41	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-10	**5-6 ft**	3/96	4.3	ND	4.42	ND	ND	ND	0.008	ND	ND	ND	ND	ND	0.725	0.268	ND	0.0659	0.0094	0.091	0.0297	9.92	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	3.9	ND	11.738	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.577	0.566	ND	0.021	ND	0.0203	ND	16.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	217.5	ND	280.8	0.682	ND	ND	ND	ND	ND	ND	0.276	ND	1.136	7.63	ND	1.526	ND	ND	1.494	511	ND	0.257	ND	0.18	ND	ND	0.68	ND	ND	0.3514	ND	ND	ND
B-11	**5-6 ft**	3/96	51.17	ND	95.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.472	ND	ND	ND	ND	ND	150	0.077	ND	ND	0.0587	ND	ND	0.39	ND	ND	ND	0.0917	ND	ND
	10-11 ft	3/96	20.3449	ND	41.039	0.2591	ND	ND	ND	ND	ND	ND	ND	ND	0.762	2.591	ND	ND	ND	ND	ND	65.0	ND	0.1489	ND	ND	ND	ND	0.2213	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	4.665	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.61	ND	0.3811	ND	ND	ND	ND	5.66	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-12	**5-6 ft**	3/96	0.3954	ND	0.104	0.044	ND	ND	ND	ND	ND	0.027	ND	ND	0.065	0.013	ND	ND	ND	ND	ND	0.65	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	ND	ND	0.0208	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.021	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	32.5	ND	280	ND	ND	ND	ND	ND	0.20	ND	0.95	ND	2.17	5.67	0.8167	11.3	20.2	**1.45**	5.3	361	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.16	0.59	ND	ND
B-15	**5-6 ft**	3/96	18.9	ND	30.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.06	3.43	ND	0.4808	0.192	ND	0.33	55.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.218	ND	ND
	10-11 ft	3/96	25.6	ND	23.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.316	2.63	ND	ND	ND	ND	ND	53.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	19.082	0.015	26.805	ND	ND	ND	0.03	0.01	0.012	ND	ND	0.027	2.854	2.093	ND	0.104	0.146	0.137	0.008	51.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-16	**5-6 ft**	3/96	35.801	ND	57.372	ND	ND	ND	0.016	ND	0.007	ND	0.017	0.064	3.526	4.167	ND	0.376	0.09	0.141	0.085	102	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	13.694	ND	22.542	ND	ND	ND	ND	ND	ND	ND	ND	0.029	0.152	1.011	ND	0.008	ND	ND	ND	37.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	3/96	8.228	ND	4.347	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.53	ND	ND	ND	ND	ND	ND	19.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-17	**5-6 ft**	3/96	7.484	ND	12.42	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.731	0.641	ND	ND	ND	ND	ND	27.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	12.534	ND	7.72	ND	ND	ND	ND	ND	ND	ND	ND	ND	11.486	0.844	ND	ND	0.186	**0.439**	ND	33.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	10/95	0.049	ND	ND	ND	ND	ND	0.008	ND	ND	0.054	0.008	ND	0.096	ND	0.065	0.021	ND	0.039	0.073	0.41	ND	0.379	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-18	**5-6 ft**	10/95	0.274	ND	0.193	0.006	ND	ND	ND	ND	ND	ND	ND	ND	0.049	ND	ND	ND	ND	ND	ND	0.52	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	10/95	3.861	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.944	ND	ND	ND	ND	ND	ND	5.81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1-2 ft	10/95	4.911	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.083	ND	ND	ND	ND	ND	ND	6.99	ND	ND	ND	ND	ND	ND	ND	ND	0.232	ND	ND	ND	ND
B-19	**5-6 ft**	10/95	14.284	ND	13.989	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.826	0.421	ND	ND	ND	ND	ND	30.5	ND	ND	ND	ND	ND	ND	ND	ND	0.185	ND	ND	ND	ND
	10-11 ft	10/95	15.876	ND	17.126	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.724	0.862	ND	ND	ND	ND	ND	35.6	ND	ND	0.205	ND	ND	ND	ND	ND	0.106	ND	0.102	ND	ND
	1-2 ft	3/96	0.326	ND	0.155	0.0094	ND	ND	ND	ND	ND	ND	ND	ND	0.031	ND	ND	ND	0.012	ND	ND	0.53	ND	0.615	ND	ND	0.586	ND	ND	ND	ND	ND	ND	ND	ND
B-20	**5-6 ft**	3/96	9.819	ND	4.736	ND	ND	ND	ND	ND	ND	ND	ND	0.022	0.278	0.95	ND	0.028	0.0061	0.012	0.009	15.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.059	ND	ND
	10-11 ft	3/96	10.892	ND	18.722	ND	ND	ND	0.006	ND	ND	ND	0.0269	0.013	0.418	0.56	0.0115	0.199	0.044	0.101	0.181	31.2	ND	0.167	ND	ND	0.127	ND	0.098	ND	ND	ND	0.083	ND	ND
	1-2 ft	3/96	70.538	0.266	80.988	ND	0.0078	**0.601**	0.273	0.151	0.319	ND	**38.686**	ND	**45.217**	8.038	**28.738**	129.32	139.268	**195.236**	**180.767**	918	0.3896	0.3101	ND	ND	0.437	ND	0.0875	ND	ND	ND	ND	ND	ND
B-21	**5-6 ft**	3/96	34.124	ND	90.661	ND	ND	0.05	0.016	0.056	ND	ND	0.01	0.048	1.437	4.31	ND	0.162	0.048	0.178	0.0741	131	0.459	ND	ND	ND	ND	ND	ND	ND	0.152	ND	0.3945	ND	ND
	10-11 ft	3/96	32.384	ND	70.091	ND	ND	ND	ND	ND	ND	ND	ND	0.007	0.149	0.681	ND	ND	ND	ND	ND	103	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1088	ND	ND

Historical Soil Analytical Results 1995-1997 (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Soil Boring/ Monitoring Well Designation	Depth (ft)	Sampling Event (mo/yr)	Volatile Organic Aromatics by Method EPA 8240A																			Semi-Volatile Organic Aromatics by EPA Method 8270A												
			Acetone	Benzene	2-Butanone	Carbon Disulfide	Chlorobenzene	Chloroform	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	Ethylbenzene	2-Hexanone	Methylene Chloride	4-Methyl-2-Pentanone	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Total Xylenes[1]	**Total VOCs**	Benzyl Alcohol	Benzylbutyl Phthalate	Diethyl Phthalate	Dimethyl Phthalate	Di-n-Butyl Phthalate	Di-n-Octylphthalate	Isophorone	2-Methylphenol	3&4 Methylphenol[2]	Naphthalene	Phenol	1,2,4-Trichlorobenzene	2,4,5-Trichlorophenol
	RAOs:		6100	1.2	2700	77	28	0.32	3.6	0.46	23	16	5.8	20	35	3300	8.1	490	810	0.41	58	--	630	290	5100	--	630	63	570	320	320	2	1900	5.8	630
B-22	**1-2 ft**	3/96	0.392	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.52	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-6 ft	3/96	0.187	ND	0.098	0.80	ND	ND	ND	ND	ND	ND	ND	ND	0.033	ND	ND	ND	ND	ND	ND	1.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-11 ft	3/96	ND	ND	0.011	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.045	ND	ND	ND	ND	ND	ND	0.056	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
S-4	**1-2 ft**	3/96	ND	ND	ND	ND	ND	ND	ND	ND	0.018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-6 ft	3/96	ND	ND	ND	ND	ND	ND	ND	ND	0.033	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.033	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-1	**1-3 ft**	3/96	6.14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057	ND	ND	ND	ND	ND	ND	6.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	27.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.012	ND	ND	ND	ND	ND	ND	27.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	2.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-2	**1-3 ft**	3/96	1.34	ND	ND	ND	ND	ND	ND	ND	ND	0.010	0.023	ND	ND	0.006	ND	0.171	ND	ND	0.135	1.69	ND	2.088	ND	ND	14.3	0.145	ND	ND	ND	0.074	ND	0.085	0.975
	5-7 ft	3/96	12.8	ND	0.016	ND	ND	ND	ND	ND	ND	0.010	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	3.26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	28.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.012	ND	ND	ND	ND	ND	ND	28.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-3	**1-3 ft**	3/96	5.24	ND	ND	ND	ND	ND	ND	ND	ND	0.009	0.112	ND	0.012	ND	ND	0.038	ND	ND	1.132	6.54	ND	0.166	ND	ND	ND	0.511	ND	ND	ND	0.693	ND	ND	ND
	5-7 ft	3/96	5.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	6.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.70	ND	ND	ND	ND	ND	0.097	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	14.2	ND	ND	ND	ND	ND	ND	ND	ND	0.008	0.066	ND	ND	ND	ND	0.021	ND	ND	0.659	15.0	ND	0.114	ND	ND	ND	0.224	ND	ND	ND	0.46	ND	ND	ND
SS-4	**1-3 ft**	3/96	10.8	ND	0.016	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.012	ND	ND	ND	ND	ND	ND	10.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011	ND	ND	ND	ND	ND	ND	0.61	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.058	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.058	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-5	**1-3 ft**	3/96	0.486	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.072	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.072	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.131	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.367	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.37	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-6	**1-3 ft**	3/96	0.106	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.061	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.061	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-7	**1-3 ft**	3/96	6.243	ND	0.937	ND	ND	ND	0.061	ND	ND	0.197	0.066	ND	ND	0.171	0.053	0.151	ND	ND	0.403	8.28	ND	ND	ND	ND	ND	ND	ND	ND	0.149	ND	ND	ND	ND
	5-7 ft	3/96	11.071	ND	0.925	ND	ND	ND	0.007	ND	ND	ND	0.008	ND	ND	0.09	ND	0.012	ND	ND	0.056	12.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	27.9	ND	1.63	ND	ND	ND	0.006	ND	ND	ND	ND	ND	ND	0.125	ND	ND	ND	ND	ND	29.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.082	ND	ND
	12-14 ft	3/96	8.69	ND	0.897	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.096	ND	ND	ND	ND	ND	9.68	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-9	**1-3 ft**	3/96	0.60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011	ND	ND	ND	ND	ND	ND	0.61	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	8.67	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.67	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	35.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	12.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-10	**1-3 ft**	3/96	0.338	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.208	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.153	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.081	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.081	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-11	**1-3 ft**	3/96	0.227	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.319	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.145	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.132	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-12	**1-3 ft**	3/96	0.125	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.148	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.189	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.134	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-13	**1-3 ft**	3/96	0.868	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.87	ND	0.102	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	10.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.008	10.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	19.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.064	ND	ND	ND	ND	ND	ND	19.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	28.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.064	ND	ND	ND	ND	ND	ND	28.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Historical Soil Analytical Results 1995-1997 (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Soil Boring/ Monitoring Well Designation	Depth (ft)	Sampling Event (mo/yr)	Volatile Organic Aromatics by Method EPA 8240A																			Total VOCs	Semi-Volatile Organic Aromatics by EPA Method 8270A												
			Acetone	Benzene	2-Butanone	Carbon Disulfide	Chlorobenzene	Chloroform	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	Ethylbenzene	2-Hexanone	Methylene Chloride	4-Methyl-2-Pentanone	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Total Xylenes[1]		Benzyl Alcohol	Benzylbutyl Phthalate	Diethyl Phthalate	Dimethyl Phthalate	Di-n-Butyl Phthalate	Di-n-Octylphthalate	Isophorone	2-Methylphenol	3&4 Methylphenol[2]	Naphthalene	Phenol	1,2,4-Trichlorobenzene	2,4,5-Trichlorophenol
	RAOs:		6100	1.2	2700	77	28	0.32	3.6	0.46	23	16	5.8	20	35	3300	8.1	490	810	0.41	58	--	630	290	5100	--	630	63	570	320	320	2	1900	5.8	630
SS-14	**1-3 ft**	6/97	0.034	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.032	ND	ND	ND	ND	ND	ND	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	6/97	0.088	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.042	ND	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	6/97	0.028	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.021	ND	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	6/97	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.028	ND	ND	ND	ND	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5S	**5-7 ft**	3/96	2.0	ND	0.373	ND	ND	ND	ND	ND	ND	ND	0.955	ND	0.067	0.018	ND	2.045	ND	ND	5.621	11.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	11-13 ft	3/96	0.359	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.094	ND	ND	ND	ND	ND	ND	0.45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-5D	**1-3 ft**	3/96	0.708	ND	ND	0.009	ND	ND	ND	ND	ND	ND	0.39	ND	ND	0.086	ND	7.06	ND	ND	2.282	10.5	ND	1.5	ND	ND	0.165	0.135	ND	ND	0.245	0.323	ND	ND	ND
	5-7 ft	3/96	0.468	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.022	ND	ND	ND	ND	0.054	ND	ND	0.156	0.70	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.489	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.037	ND	ND	ND	ND	0.138	ND	ND	0.249	0.91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-6S	**5-7 ft**	3/96	0.471	ND	0.020	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.024	ND	ND	ND	ND	ND	ND	0.52	ND	ND	ND	ND	ND	ND	ND	0.21	ND	ND	ND	ND	ND
	11-13 ft	3/96	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.017	ND	ND	ND	ND	ND	ND	1.62	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-6D	**1-3 ft**	3/96	0.496	0.009	ND	ND	ND	ND	ND	ND	ND	ND	0.037	ND	ND	ND	ND	0.088	ND	ND	0.229	0.86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.009	ND	ND	0.068	1.48	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	2.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.017	ND	ND	ND	ND	ND	ND	2.62	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	14-16 ft	3/96	0.817	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-7S	**5-7 ft**	3/96	0.266	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	11-13 ft	3/96	1.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-7D	**1-3 ft**	3/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.915	ND	0.032	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011	ND	ND	ND	ND	ND	0.96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	1.8	ND	0.038	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.84	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	4.5	ND	0.156	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.022	ND	ND	ND	ND	ND	4.68	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-8S	**5-7 ft**	3/96	13.4	ND	7.35	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.043	0.521	ND	ND	ND	ND	0.036	21.4	0.39	2.25	ND	ND	0.48	3.15	ND	ND	ND	ND	1.12	ND	ND
	11-13 ft	3/96	16.5	ND	12	ND	ND	ND	ND	ND	ND	ND	2	0.012	0.056	0.856	0.058	0.41	0.012	0.021	11.5	43.4	ND	ND	ND	ND	ND	0.481	ND	ND	ND	ND	0.08	ND	ND
MW-9S	**1-3 ft**	3/96	0.047	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.027	ND	ND	ND	ND	ND	ND	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.027	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.023	ND	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.099	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.022	ND	ND	ND	ND	ND	ND	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.762	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.033	ND	ND	ND	ND	ND	ND	0.80	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-10S	**1-3 ft**	3/96	0.246	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.006	ND	0.151	ND	ND	0.008	ND	ND	ND	0.41	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	7.452	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.091	ND	ND	ND	ND	ND	ND	7.54	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	11.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.112	ND	ND	ND	ND	ND	ND	11.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	6.71	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.169	ND	ND	ND	ND	ND	ND	6.88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-10D	**1-3 ft**	3/96	0.128	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	0.26	ND	0.427	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	9.93	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.108	ND	ND	ND	ND	ND	ND	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	8.48	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.124	ND	ND	ND	ND	ND	ND	8.60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	1.107	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.098	ND	ND	ND	ND	ND	ND	1.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-12D	**1-3 ft**	3/96	1.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.111	ND	ND	ND	ND	ND	ND	1.17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	3/96	0.111	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.158	ND	ND	ND	ND	ND	ND	0.27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	3/96	0.251	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.182	ND	ND	ND	ND	ND	ND	0.43	ND	0.418	ND	0.073	ND	0.479	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	3/96	0.869	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.141	ND	ND	ND	ND	ND	ND	1.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13D	**1-3 ft**	6/97	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.024	ND	ND	ND	ND	ND	ND	0.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5-7 ft	6/97	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.027	ND	ND	ND	ND	ND	ND	0.22	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10-12 ft	6/97	0.047	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.022	ND	ND	ND	ND	ND	ND	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12-14 ft	6/97	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.037	ND	ND	ND	ND	ND	ND	1.84	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Units: mg/kg
ND = Not Detected
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in **bold**

[1] RAO based on the lowest of the two of m- or p-xylene

[2] RAO based on the lowest of the two of 3- or 4-methylphenol

Soil Analytical Results - June 2006 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Volatile Organic Compounds by USEPA Method 8260B																																		
			Chlorinated VOCs														Aromatic/Hydrocarbon VOCs																Ketones/Other				
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Chlorobenzene	Chloroform	Chloromethane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,1-Dichloroethane	Tetrachloroethene	Trichloroethene	Cis-1,2-Dichloroethene	Trans-1,2-Dichloroethene	Vinyl Chloride	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	4-Isopropyltoluene	Benzene	Ethylbenzene	Isopropylbenzene	M,P-Xylenes[1]	O-Xylene	Total Xylenes	Methyl Tert-Butyl Ether	Naphthalene	N-Butylbenzene	N-Propylbenzene	Sec-Butylbenzene	Styrene	Tert-Butylbenzene	Toluene	2-Butanone	4-Methyl-2-Pentanone	Acetone	Carbon Disulfide	Total VOCs
		RAOs:	28	0.32	11	35	810	0.2	23	0.46	3.6	8.1	0.41	16	7	0.06	30	27	--	1.2	5.8	190	55	65	58	47	2.0	390	380	780	600	780	490	2,700	3,300	6,100	77	--
ASI-1	**1-2 ft**	6/15/2006	<0.010	<0.010	<0.030	7.85	0.456	<0.0197	<0.0197	0.0591	0.0217	<0.079	**0.806**	0.022	<0.0295	<0.030	<0.0197	<0.0197	<0.0492	0.115	0.091	<0.0197	0.379	0.11	0.489	<0.010	0.443	<0.030	<0.020	<0.02	<0.020	<0.030	1.64	75.6	5.03	89.6	<0.030	182
	6-7 ft	6/15/2006	<0.009	0.038	<0.027	13.3	3.9	<0.0181	0.147	0.0424	0.0641	<0.072	**6.89**	0.042	<0.0271	<0.027	2.78	1.45	0.347	0.633	1.23	0.226	3.77	1.02	4.79	<0.009	<0.153	0.496	0.315	0.13	<0.018	<0.027	16.6	31.9	2.85	31.3	<0.027	119
	11-12 ft	6/15/2006	<0.011	0.024	<0.033	10.2	1.15	<0.0217	0.17	0.0469	0.0281	<0.087	**0.968**	<0.022	<0.0326	<0.033	<0.0217	<0.0217	<0.0543	0.132	0.051	<0.0217	0.185	0.057	0.242	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	1.38	56.3	<0.0977	68.9	<0.033	140
ASM-3	**1-1.5 ft**	6/15/2006	<0.012	0.074	<0.035	2.12	1.82	<0.0233	<0.0233	<0.0116	0.0294	<0.093	**2.13**	<0.023	<0.0349	<0.035	2.19	1.4	0.417	0.148	0.149	0.201	0.609	0.306	0.915	<0.012	0.364	0.741	0.223	0.15	<0.023	<0.035	1.56	<0.1510	<0.1050	<0.1510	<0.035	14.6
	6-7 ft	6/15/2006	<0.009	0.047	<0.026	28.1	2.19	<0.0172	0.239	0.109	0.0982	<0.069	**3.07**	0.064	<0.0258	<0.026	0.214	0.0586	<0.0431	0.511	0.228	<0.0172	0.742	0.204	0.946	<0.009	<0.150	<0.026	0.042	<0.02	<0.017	<0.026	5.47	40.7	3.61	49.7	0.028	135
	11-12 ft	6/15/2006	<0.010	0.061	<0.029	1.63	2.52	**0.22**	0.0726	0.0335	<0.0191	0.688	**6.31**	<0.019	<0.0287	<0.029	2.69	3.52	1.15	0.192	0.692	0.246	2.57	1.87	4.44	<0.010	0.269	1.03	0.333	0.51	<0.019	0.19	2.69	<0.1240	<0.0860	<0.1240	<0.029	29.5
B-100	**1-1.5 ft**	6/14/2006	<0.000	0.005	<0.000	0.006	0.0034	<0.0002	<0.0002	0.0021	0.0007	0.001	0.008	0.001	<0.0002	<0.000	0.0005	0.0002	<0.0004	<0.000	<0.000	0.0004	0.002	0.001	0.003	<0.000	<0.000	<0.000	<0.000	<0.00	<0.000	<0.000	0.003	0.0169	<0.0007	0.0754	<0.000	0.127
	5-6 ft	6/14/2006	<0.009	<0.009	<0.027	1.37	<0.0090	<0.0181	<0.0181	<0.0090	0.0859	<0.072	0.061	0.063	<0.0271	<0.027	<0.0181	<0.0181	<0.0452	0.034	<0.018	<0.0181	0.032	0.019	0.051	<0.009	<0.027	<0.027	<0.018	<0.02	<0.018	<0.027	0.193	57.9	2.03	33.9	<0.027	95.7
	10-11 ft	6/14/2006	<0.008	<0.008	<0.023	0.299	<0.0078	<0.0155	<0.0155	<0.0078	0.0178	<0.062	<0.008	0.016	<0.0233	<0.023	<0.0155	<0.0155	<0.0388	<0.008	<0.016	<0.0155	<0.023	<0.008	ND	<0.008	<0.023	<0.023	<0.016	<0.02	<0.016	<0.023	0.042	57.1	<0.0698	33.5	<0.023	91.0
B-101	**1-2 ft**	6/19/2006	<0.012	0.105	<0.037	<0.062	0.143	<0.0246	<0.0246	<0.0123	0.0285	<0.098	**0.65**	0.152	<0.0369	<0.037	<0.0246	<0.0246	<0.0615	0.045	0.033	<0.0246	0.063	0.027	0.09	<0.012	<0.037	<0.037	<0.025	<0.02	<0.025	<0.037	0.141	<0.1600	<0.1110	<0.1600	<0.037	1.39
	6-7 ft	6/19/2006	<0.010	0.023	<0.029	25.6	2.32	<0.0191	0.416	0.0516	0.17	<0.076	**5.79**	0.707	<0.0286	<0.029	<0.0191	<0.0191	<0.0477	0.299	0.153	<0.0191	0.096	0.254	0.35	<0.010	<0.029	<0.029	<0.019	<0.02	<0.019	<0.029	1.79	0.906	<0.0859	0.53	<0.029	39.1
	11-12 ft	6/19/2006	<0.009	<0.009	<0.028	8.85	0.869	<0.0188	0.152	0.031	0.0329	<0.075	**1.73**	0.155	<0.0282	<0.028	<0.0188	<0.0188	<0.0469	0.085	0.064	<0.0188	0.132	0.058	0.19	<0.009	<0.028	<0.028	<0.019	<0.02	<0.019	<0.028	1.2	26.9	<0.0845	14.1	<0.028	54.4
B-102	**1-2 ft**	6/14/2006	<0.010	0.153	<0.029	<0.049	<0.0098	<0.0195	<0.0195	<0.0098	<0.0195	<0.078	<0.010	<0.020	<0.0293	<0.029	<0.0195	<0.0195	<0.0488	<0.010	<0.020	<0.0195	<0.029	<0.010	ND	<0.010	<0.029	<0.029	<0.020	<0.02	<0.020	<0.029	<0.020	<0.1270	<0.0878	<0.1270	<0.029	0.153
	5-6 ft	6/14/2006	<0.011	0.284	<0.034	4.84	0.065	<0.0228	<0.0228	0.0788	0.0288	<0.091	0.239	0.045	<0.0341	<0.034	<0.0228	<0.0228	<0.0569	0.049	0.033	<0.0228	0.105	0.054	0.159	<0.011	<0.034	<0.034	<0.023	<0.02	<0.023	<0.034	0.389	96.6	3.58	109	<0.034	215
	11-12 ft	6/14/2006	<0.008	0.016	<0.025	3.02	0.0907	<0.0163	<0.0163	0.027	0.0294	<0.065	0.28	0.034	<0.0245	<0.025	<0.0163	<0.0163	<0.0408	0.048	0.022	<0.0163	0.087	0.034	0.121	<0.008	<0.025	<0.025	<0.016	<0.02	<0.016	<0.025	0.376	45	2.16	48	<0.025	99.2
B-103	**1-2 ft**	6/20/2006	<0.013	0.043	<0.039	4.55	0.245	<0.0261	<0.0261	<0.0130	0.0469	<0.104	**0.808**	0.048	<0.0391	<0.039	<0.0261	<0.0261	<0.0652	0.068	<0.026	<0.0261	<0.039	<0.013	ND	<0.013	<0.039	<0.039	<0.026	<0.03	<0.026	<0.039	0.139	<0.1690	<0.1170	<0.1690	<0.039	5.95
	6-7 ft	6/20/2006	<0.011	0.187	<0.034	21.3	0.683	<0.0227	0.157	<0.0114	0.0974	<0.091	**2.59**	0.194	<0.0341	<0.034	<0.0227	<0.0227	<0.0568	0.208	0.057	<0.0227	0.104	0.041	0.145	<0.011	<0.034	<0.034	<0.023	<0.02	<0.023	<0.034	1.13	<0.1480	<0.1020	<0.1480	<0.034	26.7
	11-12 ft	6/20/2006	<0.044	0.194	<0.133	**62.2**	3.74	<0.0884	0.937	<0.0442	0.349	<0.353	**9.67**	0.672	<0.1330	<0.133	<0.0884	<0.0884	<0.2210	0.663	0.186	<0.0884	0.292	0.106	0.398	<0.044	<0.133	<0.133	<0.088	<0.09	<0.088	<0.133	3.6	<0.5740	<0.3980	<0.5740	<0.133	82.6
B-104	**1-2 ft**	6/15/2006	<0.012	0.047	<0.035	0.982	0.0335	<0.0231	<0.0231	0.0554	<0.0231	<0.093	0.212	<0.023	<0.0347	<0.035	<0.0231	<0.0231	<0.0578	<0.012	<0.023	<0.0231	<0.035	<0.012	ND	<0.012	<0.035	<0.035	<0.023	<0.02	<0.023	<0.035	0.053	<0.1500	<0.1040	<0.1500	<0.035	1.38
	6-7 ft	6/15/2006	<0.010	0.207	<0.029	29.8	0.729	<0.0190	<0.0190	**0.518**	0.113	<0.076	**2.77**	0.115	<0.0285	<0.029	<0.0190	<0.0190	<0.0475	0.299	0.151	<0.0190	0.412	0.164	0.576	<0.010	<0.029	<0.029	0.021	<0.02	<0.019	<0.029	2.3	72.9	4.21	89.3	<0.029	204
	11-12 ft	6/15/2006	<0.010	0.187	<0.029	**44.4**	1.3	<0.0195	0.251	0.443	0.185	0.223	**4.74**	0.153	<0.0293	<0.029	<0.0195	<0.0195	<0.0489	0.491	0.217	<0.0195	0.659	0.215	0.874	<0.010	<0.029	<0.029	<0.020	<0.02	<0.020	<0.029	4.12	80.5	5.72	76.8	<0.029	221
B-105	**1-2 ft**	6/16/2006	<0.011	<0.011	<0.034	0.265	0.0856	<0.0227	<0.0227	<0.0114	<0.0227	<0.091	0.148	<0.023	<0.0341	<0.034	<0.0227	<0.0227	<0.0568	<0.011	<0.023	<0.0227	<0.034	0.025	0.025	<0.011	<0.034	0.046	<0.023	<0.02	<0.023	<0.034	<0.023	<0.1480	<0.1020	<0.1480	<0.034	0.570
	6-7 ft	6/16/2006	<0.109	**0.395**	<0.326	33.7	60	<0.2170	0.694	<0.1090	0.32	2.67	**83.6**	<0.217	<0.3260	<0.326	<0.2170	<0.2170	<0.5430	**3.42**	**25.5**	<0.2170	**88.5**	20.2	**108.7**	<0.109	0.314	0.534	0.662	<0.22	0.811	<0.326	190	146	<0.9780	43.5	<0.326	701
	11-12 ft	6/16/2006	<0.047	0.21	<0.140	**53.5**	22.4	<0.0934	0.635	<0.0467	0.299	<0.374	**19.5**	<0.093	<0.1400	<0.140	<0.0934	<0.0934	<0.2340	**2.32**	4.38	<0.0934	13.7	2.97	16.67	<0.047	<0.148	0.29	0.21	<0.09	<0.093	<0.140	59.7	177	<0.4200	60.6	0.15	418
B-106	**1-2 ft**	6/20/2006	<0.011	0.026	<0.033	1.76	0.208	<0.0220	<0.0220	<0.0110	<0.0220	<0.088	**0.585**	0.069	<0.0330	<0.033	<0.0220	<0.0220	<0.0549	0.018	<0.022	<0.0220	<0.033	<0.011	ND	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	0.047	<0.1430	<0.0989	<0.1430	<0.033	2.71
	6-7 ft	6/20/2006	<0.052	0.253	<0.155	**57.7**	7.33	<0.1030	1.06	<0.0517	0.413	<0.413	**15.6**	0.64	<0.1550	<0.155	<0.1030	<0.1030	<0.2580	0.522	0.129	<0.1030	0.377	<0.052	0.377	<0.052	<0.153	<0.155	<0.103	<0.10	<0.103	<0.155	3.04	<0.6710	<0.4650	<0.6710	<0.155	87.1
	11-12 ft	6/20/2006	<0.072	**0.487**	<0.215	**110**	8.59	<0.1430	1.35	<0.0716	0.594	<0.572	**17.1**	0.687	<0.2150	<0.215	<0.1430	<0.1430	<0.3580	0.759	0.215	<0.1430	0.479	0.165	0.644	<0.072	<0.153	<0.215	<0.143	<0.14	<0.143	<0.215	4.07	<0.9300	<0.6440	<0.9300	0.458	145
B-107	**1-2 ft**	6/20/2006	<0.062	**0.482**	<0.185	**74.5**	0.971	<0.1230	0.338	**0.747**	0.434	<0.494	**6.83**	0.537	<0.1850	<0.185	<0.1230	<0.1230	<0.3090	0.518	0.808	<0.1230	3.74	1.4	5.14	<0.062	<0.185	<0.185	<0.123	<0.12	<0.123	<0.185	5.95	91.7	<0.5560	126	<0.185	315
	6-7 ft	6/20/2006	<0.054	<0.054	<0.163	28.5	0.12	<0.1090	<0.1090	**0.47**	<0.1090	<0.435	**1.28**	0.16	<0.1630	<0.163	<0.1090	<0.1090	<0.2720	<0.054	<0.109	<0.1090	0.17	<0.054	0.17	<0.054	<0.147	<0.163	<0.109	<0.11	<0.109	<0.163	0.826	<0.7070	<0.4890	45.1	<0.163	76.6
	11-12 ft	6/20/2006	<0.050	0.228	<0.149	**48.7**	0.258	<0.0992	<0.0992	0.407	<0.0992	<0.397	**2.35**	0.263	<0.1490	<0.149	<0.0992	<0.0992	<0.2480	0.169	<0.099	<0.0992	0.293	<0.050	0.293	<0.050	<0.148	<0.149	<0.099	<0.10	<0.099	<0.149	1.19	47.1	<0.4460	43.8	<0.149	145
B-108	**1-2 ft**	6/21/2006	<0.012	**0.53**	<0.035	**56.7**	5.64	<0.0230	0.344	0.146	0.361	1.0	**54**	<0.023	<0.0345	<0.035	0.284	0.136	<0.0575	<0.012	2.05	0.0805	7.78	2.76	10.54	<0.012	<0.035	<0.035	0.068	<0.02	<0.023	<0.035	4.32	22.3	1.79	82.4	<0.035	243
	6-7 ft	6/21/2006	<1.090	**10.1**	<3.260	**565**	581	<2.1700	19.7	<1.0900	**8.37**	**41.1**	**2250**	<2.170	<3.2600	<3.260	<2.1700	<2.1700	<5.4300	<1.090	**34.5**	<2.1700	**112**	25.5	**137.5**	<1.090	<0.147	<3.260	<2.170	<2.17	<2.170	<3.260	214	<14.1000	<9.7800	355	<3.260	4216
	11-12 ft	6/21/2006	<1.090	**75.4**	<3.260	**2180**	**5480**	<2.1700	**128**	<1.0900	**45.9**	**139**	**18200**	<2.170	<3.2600	<3.260	4.57	<2.1700	<5.4300	**47.3**	**97.5**	<2.1700	**345**	**81.3**	**426.3**	<1.090	<0.147	<3.260	<2.170	<2.17	21	<3.260	**854**	<14.1000	31.1	276	<3.260	28006
B-109	**1-2 ft**	6/20/2006	<0.755	**2.19**	<2.260	**48.7**	215	<1.5100	<1.5100	<0.7550	<1.5100	<6.040	**380**	<1.510	<2.2600	<2.260	<1.5100	<1.5100	<3.7700	**2.42**	3.62	<1.5100	6.19	1.13	7.32	<0.755	<0.148	<2.260	<1.510	<1.51	<1.510	<2.260	56.8	<9.8100	<6.7900	<9.8100	<2.260	716
	6-7 ft	6/20/2006	<0.111	**0.823**	<0.333	**171**	18.4	<0.2220	2.14	<0.1110	1.02	<0.889	**26.5**	<0.222	<0.3330	<0.333	<0.2220	<0.2220	<0.5560	0.638	<0.222	<0.2220	<0.333	0.134	0.134	<0.111	<0.150	<0.333	<0.222	<0.22	<0.222	<0.333	4.63	26.3	<1.0000	7.54	<0.333	259
	11-12 ft	6/20/2006	<0.049	**0.388**	<0.147	**108**	9.86	<0.0983	1.05	<0.0492	0.497	<0.393	**12.3**	<0.098	<0.1470	<0.147	<0.0983	<0.0983	<0.2460	0.438	0.147	<0.0983	0.359	0.074	0.433	<0.049	<0.147	<0.147	<0.098	<0.10	<0.098	<0.147	2.99	33.1	<0.4420	12	<0.147	181
B-110	**1-2 ft**	6/21/2006	<0.013	**0.773**	<0.038	**98.9**	7.7	<0.0252	2.23	<0.0126	0.654	0.349	**48.5**	<0.025	<0.0378	<0.038	<0.0252	<0.0252	<0.0630	<0.013	0.183	<0.0252	0.359	0.204	0.563	<0.013	<0.038	<0.038	<0.025	<0.03	<0.025	<0.038	1.02	<0.1640	<0.1130	<0.1640	<0.038	161
	6-7 ft	6/21/2006	<0.056	**0.566**	<0.168	**105**	1.7	<0.1120	<0.1120	<0.0561	0.308	<0.448	**12.1**	<0.112	<0.1680	<0.168	<0.1120	<0.1120	<0.2800	<0.056	<0.112	<0.1120	0.219	<0.056	0.219	<0.056	<0.151	<0.168	<0.112	<0.11	<0.112	<0.168	0.83	52.3	<0.5040	93.3	<0.168	266
	11-12 ft	6/21/2006	<0.011	**1.06**	<0.033	**219**	8.3	<0.0219	1.94	0.0921	0.644	0.26	**82.5**	0.28	<0.0329	**0.068**	<0.0219	<0.0219	<0.0548	0.084	0.163	<0.0219	0.586	0.17	0.756	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	1.92	30.5	<0.0987	42.3	<0.033	390
B-110a	**1-2 ft**	6/21/2006	<0.012	**0.462**	<0.035	**65.8**	8.98	<0.0230	1.08	<0.0115	0.548	0.762	**51.2**	<0.023	<0.0345	<0.035	<0.0230	<0.0230	<0.0575	<0.012	0.28	<0.0230	0.41	0.411	0.821	<0.012	<0.035	<0.035	<0.023	<0.02	<0.023	<0.035	0.829	<0.1490	<0.1030	<0.1490	<0.035	131
B-111	**1-2 ft**	6/20/2006	<0.095	0.227	<0.284	32.8	16.1	<0.1890	2.58	<0.0945	**6.66**	3.66	**23.4**	1.25	<0.2840	<0.284	<0.1890	<0.1890	<0.4730	0.397	**30.9**	1.76	**235**	**65.9**	**300.9**	<0.095	<0.157	<0.284	<0.189	<0.19	<0.189	<0.284	101	166	<0.8510	148	<0.284	836
	6-7 ft	6/20/2006	<0.054	<0.054	<0.163	14.2	0.854	<0.1090	0.462	<0.0543	0.987	<0.435	**2.63**	0.356	<0.1630	<0.163	<0.1090	<0.1090	<0.2720	0.154	1.72	<0.1090	13	3.32	16.32	<0.054	<0.147	<0.163	<0.109	<0.11	<0.109	<0.163	7.56	128	<0.4890	99.6	<0.163	273
	11-12 ft	6/20/2006	<0.048	0.077	<0.144	12.3	0.269	<0.0961	0.355	<0.0480	0.744	<0.384	**1.72**	0.533	<0.1440	<0.144	<0.0961	<0.0961	<0.2400	<0.048	0.149	<0.0961	0.764	0.197	0.961	<0.048	<0.144	<0.144	<0.096	<0.10	<0.096	<0.144	2.98	70.1	<0.4320	58.8	<0.144	149
B-112	**1-2 ft**	6/21/2006	<0.011	0.239	<0.034	27.3	1.48	<0.0225	0.409	<0.0112	0.229	0.096	**13.5**	<0.023	<0.0337	<0.034	<0.0225	<0.0225	<0.0562	<0.011	0.063	<0.0225	0.117	0.071	0.188	<0.011	<0.034	<0.034	<0.023	<0.02	<0.023	<0.034	0.422	<0.1460	<0.1010	<0.1460	<0.034	43.9
	6-7 ft	6/21/2006	<0.057	**0.892**	<0.170	**210**	5.97	<0.1140	1.79	<0.0568	0.841	<0.455	**55.3**	<0.114	<0.1700	<0.170	<0.1140	<0.1140	<0.2840	<0.057	0.324	<0.1140	0.989	0.295	1.284	<0.057	<0.153	<0.170	<0.114	<0.11	<0.114	<0.170	3.86	51.9	<0.5110	62.1	<0.170	394
	11-12 ft	6/21/2006	<0.011	**0.375**	<0.033	**236**	2.44	<0.0220	0.577	<0.0110	0.346	0.097	**20.6**	<0.022	<0.0330	**0.069**	<0.0220	<0.0220	<0.0549	0.024	0.1	<0.0220	0.296	0.092	0.388	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	1.65	22.3	<0.0989	20.5	<0.033	305
B-113	**1-2 ft**	6/21/2006	<0.058	**0.494**	<0.174	17	38.5	<0.1160	1.3	**1.24**	**5.45**	**91.2**	**60.1**	5.14	<0.1740	<0.174	2.44	1.13	<0.2910	<0.058	**10.4**	0.512	**88**	37.1	**125.1**	<0.058	<0.174	<0.174	0.372	<0.12	<0.116	<0.174	73.2	63.1	<0.5230	59.8	<0.174	556.5
	6-7 ft	6/21/2006	<0.056	**0.461**	<0.169	13.6	24.1	<0.1120	0.781	**0.86**	3.35	**73.8**	**41.6**	4.02	<0.1690	<0.169	1.66	0.708	<0.2810	<0.056	**11.3**	0.393	**72.7**	26.2	**98.9**	<0.056	<0.169	<0.169	0.337	<0.11	<0.112	<0.169	62.6	73.4	<0.5060	62.9	<0.169	474.8
	11-12 ft	6/21/2006	<0.011	0.067	<0.032	4.29	0.0656	<0.0215	<0.0215	0.0892	0.319	0.326	0.41	1.28	<0.0323	<0.032	<0.0215	<0.0215	<0.0538	<0.011	0.094	<0.0215	0.553	0.248	0.801	<0.011	<0.032	<0.032	<0.022	<0.02	<0.022	<0.032	1.09	33.7	0.52	28.2	<0.032	71.3

Soil Analytical Results - June 2006 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Volatile Organic Compounds by USEPA Method 8260B																																		
			Chlorinated VOCs														Aromatic/Hydrocarbon VOCs																Ketones/Other				
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Chlorobenzene	Chloroform	Chloromethane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,1-Dichloroethane	Tetrachloroethene	Trichloroethene	Cis-1,2-Dichloroethene	Trans-1,2-Dichloroethene	Vinyl Chloride	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	4-Isopropyltoluene	Benzene	Ethylbenzene	Isopropylbenzene	M,P-Xylenes[1]	O-Xylene	Total Xylenes	Methyl Tert-Butyl Ether	Naphthalene	N-Butylbenzene	N-Propylbenzene	Sec-Butylbenzene	Styrene	Tert-Butylbenzene	Toluene	2-Butanone	4-Methyl-2-Pentanone	Acetone	Carbon Disulfide	Total VOCs
		RAOs:	28	0.32	11	35	810	0.2	23	0.46	3.6	8.1	0.41	16	7	0.06	30	27	--	1.2	5.8	190	55	65	58	47	2.0	390	380	780	600	780	490	2,700	3,300	6,100	77	--
B-114	**1-2 ft**	6/21/2006	<0.012	<0.012	<0.035	0.415	0.986	<0.0230	0.376	<0.0115	0.245	0.225	**6.84**	<0.023	<0.0345	<0.035	<0.0230	<0.0230	<0.0575	<0.012	<0.023	<0.0230	<0.035	<0.012	ND	<0.012	<0.035	<0.035	<0.023	<0.02	<0.023	<0.035	<0.023	<0.1490	<0.1030	<0.1490	<0.035	9.1
	6-7 ft	6/21/2006	<0.011	0.078	<0.033	1.45	1.46	<0.0220	0.412	<0.0110	0.267	0.211	**9.21**	<0.022	<0.0330	<0.033	<0.0220	<0.0220	<0.0549	<0.011	0.033	<0.0220	0.078	0.029	0.107	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	0.111	<0.1430	<0.0989	<0.1430	<0.033	13.3
	11-12 ft	6/21/2006	<0.011	0.073	<0.033	0.11	1.86	<0.0222	0.962	<0.0111	0.459	0.41	**11.9**	0.204	<0.0333	<0.033	<0.0222	<0.0222	<0.0556	<0.011	0.024	<0.0222	0.05	<0.011	0.05	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	0.066	<0.1440	<0.1000	<0.1440	<0.033	16.1
HA-1	**1-2 ft**	6/21/2006	<0.062	<0.062	<0.185	**97.6**	4.27	<0.1230	1.33	**0.821**	2.39	3.77	**17.4**	0.599	<0.1850	<0.185	<0.1230	<0.1230	<0.3090	<0.062	1.19	<0.1230	5.35	1.73	7.08	<0.062	<0.167	<0.185	<0.123	<0.12	<0.123	<0.185	21.5	324	11.2	268	<0.185	761
HA-2	**1-2 ft**	6/21/2006	<0.061	<0.061	<0.181	30.2	<0.0605	<0.1210	<0.1210	<0.0605	0.423	0.556	**2.76**	<0.121	<0.1810	<0.181	<0.1210	<0.1210	<0.3020	<0.061	0.236	<0.1210	1.22	0.532	1.752	<0.061	<0.163	<0.181	<0.121	<0.12	<0.121	<0.181	4.58	299	2.64	259	<0.181	601
HA-3	**1-2 ft**	6/21/2006	<0.063	<0.063	<0.188	34.3	2.36	<0.1250	0.394	**1.86**	1.26	**9.59**	**9.74**	<0.125	<0.1880	<0.188	0.275	0.131	<0.3120	<0.063	1.17	<0.1250	6.5	1.97	8.47	<0.063	<0.169	<0.188	<0.125	<0.13	<0.125	<0.188	12.7	166	4.03	189	<0.188	441
HA-4	**1-2 ft**	6/21/2006	<0.012	0.32	<0.035	**152**	8.85	<0.0233	2.07	**1.16**	3.55	**33.2**	**43.2**	4.12	<0.0349	**0.459**	0.356	0.255	<0.0581	0.271	3.05	0.106	14.4	4.58	18.98	<0.012	<0.035	<0.035	0.109	<0.02	<0.023	<0.035	37.8	240	14.4	235	<0.035	799
MPX-1	**1-2 ft**	6/14/2006	<0.012	0.037	0.549	0.862	0.0417	<0.0239	<0.0239	<0.0119	<0.0239	<0.096	0.097	<0.024	<0.0358	<0.036	<0.0239	<0.0239	<0.0597	<0.012	<0.024	<0.0239	<0.036	<0.012	ND	<0.012	<0.036	<0.036	<0.024	<0.02	<0.024	<0.036	0.052	<0.1550	<0.1070	<0.1550	0.074	1.71
	5-6 ft	6/14/2006	<0.010	0.022	<0.029	1.8	0.0604	<0.0195	<0.0195	0.0224	<0.0195	<0.078	0.094	<0.020	<0.0292	<0.029	<0.0195	<0.0195	<0.0487	0.026	<0.020	<0.0195	0.052	<0.010	0.052	<0.010	<0.029	<0.029	<0.020	<0.02	<0.020	<0.029	0.224	19.6	<0.0877	34.2	<0.029	56.1
	10-11 ft	6/14/2006	<0.009	<0.009	<0.028	5.07	1.19	<0.0185	0.0823	0.0268	0.0194	<0.074	**1.63**	<0.019	<0.0277	<0.028	1.26	0.622	0.126	0.13	0.462	0.163	1.78	0.46	2.24	<0.009	<0.150	0.262	0.138	<0.02	<0.019	<0.028	4.39	44.6	2.24	50.4	<0.028	115
MW-100	**2-3 ft**	6/20/2006	0.013	**0.44**	<0.027	<0.045	0.0697	<0.0179	<0.0179	0.0411	0.1	6.38	**5.99**	1.01	<0.0268	<0.027	<0.0179	<0.0179	<0.0447	0.03	<0.018	<0.0179	<0.027	<0.009	ND	<0.009	<0.027	<0.027	<0.018	<0.02	<0.018	<0.027	<0.016	<0.1160	<0.0804	<0.1160	0.06	14.1
	6-7 ft	6/20/2006	<0.011	0.152	<0.034	<0.057	<0.0114	<0.0227	<0.0227	<0.0114	0.0498	<0.091	**0.564**	0.97	<0.0341	<0.034	<0.0227	<0.0227	<0.0568	0.016	<0.023	<0.0227	<0.034	<0.011	ND	<0.011	<0.034	<0.034	<0.023	<0.02	<0.023	<0.034	<0.023	<0.1480	<0.1020	<0.1480	<0.034	1.75
	11-12 ft	6/20/2006	<0.009	0.224	<0.028	<0.047	<0.0093	<0.0186	<0.0186	<0.0093	0.053	<0.074	**0.506**	2.6	<0.0279	**0.176**	<0.0186	<0.0186	<0.0465	0.023	<0.019	<0.0186	<0.028	0.009	0.009	<0.009	<0.028	<0.028	<0.019	<0.02	<0.019	<0.028	0.021	<0.1210	<0.0837	<0.1210	<0.028	3.61
MW-101	**1-2 ft**	6/20/2006	<0.000	0.003	<0.000	<0.001	0.001	<0.0002	0.0033	0.0039	0.0148	0.003	0.005	0.08	0.0005	0.032	0.0011	0.0005	<0.0006	0.008	0.008	0.0005	0.038	0.022	0.06	<0.000	<0.000	<0.000	<0.000	<0.00	<0.000	<0.000	0.038	<0.0016	<0.0011	<0.0016	0.001	0.264
	6-7 ft	6/20/2006	<0.000	0.004	<0.000	0.006	0.0032	<0.0002	0.0129	0.0088	0.0684	0.005	0.018	0.198	0.001	**0.145**	0.0007	0.0004	<0.0006	0.031	0.014	0.0006	0.066	0.045	0.111	0.001	<0.000	<0.000	<0.000	<0.00	<0.000	<0.000	0.071	0.004	0.0025	0.0294	0.001	0.737
	11-12 ft	6/20/2006	<0.000	0.003	0.001	0.049	0.0025	<0.0002	0.0063	0.0016	0.0432	0.002	0.014	0.11	0.0003	0.042	0.0005	0.0003	<0.0005	0.026	0.01	0.0003	0.068	0.048	0.116	<0.000	<0.000	<0.000	<0.000	<0.00	<0.000	<0.000	0.028	<0.0012	<0.0008	<0.0012	0.001	0.457
MW-102	**1-2 ft**	6/14/2006	<0.010	0.043	<0.031	1.55	<0.0104	<0.0207	<0.0207	0.0383	<0.0207	1.67	**0.47**	0.024	<0.0311	<0.031	12.3	5.02	0.261	0.031	1.64	0.498	12.4	5.25	17.65	<0.010	1.67	0.503	1.46	<0.02	<0.021	<0.031	1.36	<0.1350	<0.0932	<0.1350	<0.031	46.2
	5-6 ft	6/14/2006	<0.008	0.018	<0.023	1.19	<0.0078	<0.0156	<0.0156	<0.0078	<0.0156	<0.063	0.068	0.019	<0.0234	<0.023	<0.0156	<0.0156	<0.0391	<0.008	0.038	<0.0156	0.169	0.055	0.224	<0.008	<0.149	0.037	0.022	<0.02	<0.016	<0.023	0.135	2.58	<0.0703	1.33	<0.023	5.66
	10-11 ft	6/14/2006	<0.008	0.07	<0.024	6.28	0.0949	<0.0158	0.0435	0.0443	0.1	<0.063	**0.686**	0.16	<0.0237	<0.024	<0.0158	<0.0158	<0.0395	0.076	0.059	<0.0158	0.235	0.081	0.316	<0.008	<0.150	<0.024	0.016	<0.02	<0.016	<0.024	0.652	38	1.79	35	<0.024	83.4
MW-103	**1-2 ft**	6/19/2006	<0.011	0.001	0.001	<0.056	0.0009	<0.0225	<0.0225	<0.0113	<0.0225	<0.090	0.002	<0.023	<0.0338	<0.034	0.0003	0.0003	<0.0563	<0.011	<0.000	<0.0225	0.001	<0.011	0.001	<0.011	<0.034	<0.034	<0.023	<0.02	<0.023	<0.034	0.035	<0.1460	<0.1010	<0.1460	0.001	0.043
	6-7 ft	6/19/2006	<0.010	0.001	<0.030	<0.050	0.003	<0.0198	<0.0198	<0.0099	<0.0198	<0.079	0.003	<0.020	<0.0297	<0.030	0.0003	<0.0198	<0.0495	<0.010	<0.000	<0.0198	0.001	<0.010	0.001	<0.010	<0.030	<0.030	<0.020	<0.02	<0.020	<0.030	0.024	<0.1290	<0.0891	<0.1290	0.001	0.033
	11-12 ft	6/19/2006	<0.011	0.003	<0.033	<0.056	0.0011	<0.0223	<0.0223	<0.0111	<0.0223	<0.089	0.002	<0.022	<0.0334	<0.033	0.0004	<0.0223	<0.0557	<0.011	<0.000	<0.0223	0.001	<0.011	0.001	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	0.023	<0.1450	<0.1000	<0.1450	0.045	0.076
SVE-4	**1-2 ft**	6/19/2006	<0.013	**0.347**	<0.039	<0.065	0.0441	<0.0259	<0.0259	<0.0130	<0.0259	<0.104	0.108	<0.026	<0.0389	<0.039	<0.0259	<0.0259	<0.0648	<0.013	<0.026	<0.0259	0.043	<0.013	0.043	<0.013	<0.039	<0.039	<0.026	<0.03	<0.026	<0.039	0.132	<0.1680	<0.1170	<0.1680	<0.039	0.674
	6-7 ft	6/19/2006	<0.011	0.064	<0.033	6.53	0.402	<0.0219	0.0804	0.0407	0.0315	<0.088	**0.589**	0.045	<0.0329	<0.033	<0.0219	<0.0219	<0.0548	0.052	0.063	<0.0219	0.233	0.083	0.316	<0.011	<0.033	<0.033	<0.022	<0.02	<0.022	<0.033	0.786	71.2	3.44	94.8	<0.033	178
	11-12 ft	6/19/2006	<0.010	0.15	<0.029	4.46	0.976	<0.0195	0.14	<0.0098	0.0205	<0.078	**0.79**	0.04	<0.0293	<0.029	<0.0195	<0.0195	<0.0489	0.045	0.042	<0.0195	0.094	0.027	0.121	<0.010	<0.029	<0.029	<0.020	<0.02	<0.020	<0.029	0.666	58.4	1.89	63.1	<0.029	131

Notes:
Units: mg/kg
NS = Not Sampled
<# = Concentration less than detection limit
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in **bold**
[1] RAO based on the lowest of the two of m- or p-xylene

Soil Analytical Results - June 2006 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Semi-Volatile Organic Compounds by USEPA Method 8270C																			Metals
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Benzoic Acid	Benzyl Alcohol	Bis(2-Ethylhexyl) Phthalate	Butyl Benzyl Phthalate	Di-N-Butyl Phthalate	1,2-Dichlorobenzene	Dimethyl Phthalate	Isophorone	4-Isopropyltoluene	1-Methylnaphthalene	2-Methylnaphthalene	2-Methylphenol	4-Methylphenol	Naphthalene	3-Nitroaniline	N-Nitrosodimethylamine	Di-N-Octyl Phthalate	Phenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	Lead (Total)
		RAOs:	25,000	630	39	290	630	180	--	570	--	18	24	320	630	2.0	--	0.002	63	1,900	630	6	400
ASI-1	**1-2 ft**	**6/15/2006**	<0.035	<0.131	2.23	0.241	<0.164	<0.1230	<0.127	0.504	<0.0492	0.246	0.368	<0.1340	<0.1410	1.47	2.08	<0.157	<0.186	<0.141	<0.1640	<0.1410	NS
	6-7 ft	**6/15/2006**	<0.035	<0.131	<0.228	<0.142	<0.164	<0.1230	<0.127	<0.071	0.347	<0.153	<0.1460	<0.1350	<0.1420	0.771	<0.1350	<0.157	<0.187	<0.142	<0.1640	<0.1420	NS
	11-12 ft	**6/15/2006**	<0.034	<0.126	<0.218	<0.136	<0.157	<0.1180	<0.122	<0.068	<0.0543	<0.147	<0.1400	<0.1290	<0.1360	<0.147	<0.1290	<0.151	<0.179	<0.136	<0.1570	<0.1360	NS
ASM-3	**1-1.5 ft**	**6/15/2006**	<0.036	<0.135	<0.234	<0.146	<0.169	<0.1270	<0.130	0.226	0.417	<0.157	<0.1500	<0.1390	<0.1460	1.26	<0.1390	<0.162	<0.192	<0.146	<0.1690	<0.1460	NS
	6-7 ft	**6/15/2006**	<0.034	<0.128	<0.223	<0.138	<0.161	<0.1210	<0.124	<0.070	<0.0431	<0.150	<0.1430	<0.1320	<0.1380	0.409	<0.1320	<0.154	<0.183	0.192	<0.1610	<0.1380	NS
	11-12 ft	**6/15/2006**	<0.034	<0.126	<0.218	<0.136	<0.157	<0.1180	<0.122	<0.068	1.15	<0.147	<0.1400	<0.1290	<0.1360	**3.53**	<0.1290	<0.151	<0.179	<0.136	<0.1570	<0.1360	NS
B-100	**1-1.5 ft**	**6/14/2006**	<0.035	<0.132	4.18	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.0004	<0.154	<0.1470	<0.1350	<0.1420	<0.154	<0.1350	<0.158	<0.188	<0.142	0.436	<0.1420	NS
	5-6 ft	**6/14/2006**	1.32	<0.126	<0.219	<0.136	<0.158	<0.1190	<0.122	0.456	<0.0452	<0.147	<0.1410	<0.1300	<0.1360	<0.147	<0.1300	<0.152	<0.180	0.679	0.601	<0.1360	NS
	10-11 ft	**6/14/2006**	1.05	<0.128	0.23	<0.138	<0.160	<0.1200	<0.123	0.522	<0.0388	<0.149	<0.1420	<0.1310	<0.1380	<0.149	<0.1310	<0.153	<0.182	0.636	0.552	<0.1380	NS
B-101	**1-2 ft**	**6/19/2006**	<0.038	<0.143	<0.247	<0.154	<0.178	<0.1340	<0.138	<0.077	<0.0615	<0.166	<0.1590	<0.1460	<0.1540	<0.166	<0.1460	<0.171	<0.203	<0.154	<0.1780	<0.1540	NS
	6-7 ft	**6/19/2006**	<0.036	<0.136	<0.236	<0.147	<0.171	<0.1280	<0.132	<0.074	<0.0477	<0.159	<0.1520	<0.1400	<0.1470	<0.159	<0.1400	<0.164	<0.194	<0.147	<0.1710	<0.1470	NS
	11-12 ft	**6/19/2006**	1.58	<0.130	<0.225	<0.140	<0.162	<0.1220	<0.125	<0.070	<0.0469	<0.151	<0.1440	<0.1330	<0.1400	<0.151	<0.1330	<0.155	<0.184	<0.140	<0.1620	<0.1400	NS
B-102	**1-2 ft**	**6/14/2006**	<0.036	<0.133	0.237	<0.144	<0.167	<0.1250	<0.129	<0.072	<0.0488	<0.155	<0.1480	<0.1370	<0.1440	<0.155	<0.1370	<0.160	<0.190	<0.144	<0.1670	<0.1440	NS
	5-6 ft	**6/14/2006**	0.836	<0.132	<0.229	<0.142	<0.165	<0.1240	0.29	1.01	<0.0569	<0.154	<0.1470	<0.1350	<0.1420	<0.154	<0.1350	<0.158	<0.188	0.578	<0.1650	<0.1420	NS
	11-12 ft	**6/14/2006**	0.322	<0.132	<0.228	<0.142	<0.164	<0.1240	<0.127	0.48	<0.0408	<0.153	<0.1460	<0.1350	<0.1420	<0.153	<0.1350	<0.158	<0.187	0.268	<0.1640	<0.1420	NS
B-103	**1-2 ft**	**6/20/2006**	<0.036	<0.135	<0.234	<0.145	<0.169	<0.1270	<0.130	<0.073	<0.0652	<0.157	<0.1500	<0.1380	<0.1450	<0.157	<0.1380	<0.162	<0.192	<0.145	<0.1690	<0.1450	NS
	6-7 ft	**6/20/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.0568	<0.153	<0.1470	<0.1350	<0.1420	<0.153	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
	11-12 ft	**6/20/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.2210	<0.153	<0.1470	<0.1350	<0.1420	<0.153	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
B-104	**1-2 ft**	**6/15/2006**	<0.036	<0.134	<0.232	<0.145	<0.168	<0.1260	<0.129	<0.073	<0.0578	<0.156	<0.1490	<0.1380	<0.1450	<0.156	<0.1380	<0.161	<0.191	<0.145	<0.1680	<0.1450	NS
	6-7 ft	**6/15/2006**	0.318	<0.130	<0.225	<0.140	<0.162	<0.1220	<0.125	0.297	<0.0475	<0.151	<0.1440	<0.1330	<0.1400	<0.151	<0.1330	<0.155	<0.184	0.21	<0.1620	<0.1400	NS
	11-12 ft	**6/15/2006**	0.229	<0.131	<0.227	<0.141	<0.164	<0.1230	<0.127	0.429	<0.0489	<0.153	<0.1460	<0.1340	<0.1410	<0.153	<0.1340	<0.157	<0.186	<0.141	<0.1640	<0.1410	NS
B-105	**1-2 ft**	**6/16/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.0568	<0.153	<0.1470	<0.1350	<0.1420	<0.153	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
	6-7 ft	**6/16/2006**	0.945	<0.126	4.72	0.364	0.434	<0.2170	0.268	0.209	<0.5430	<0.147	<0.1400	<0.1290	<0.1360	**4.5**	<0.1290	<0.151	<0.179	<0.136	<0.1580	0.186	NS
	11-12 ft	**6/16/2006**	0.462	<0.127	0.295	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.2340	<0.148	<0.1420	<0.1310	<0.1370	**2.16**	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
B-106	**1-2 ft**	**6/20/2006**	<0.034	<0.127	<0.221	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.0549	<0.148	<0.1420	<0.1310	<0.1370	<0.148	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
	6-7 ft	**6/20/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.2580	<0.153	<0.1470	<0.1350	<0.1420	<0.155	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
	11-12 ft	**6/20/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1430	<0.127	<0.072	<0.3580	<0.153	<0.1470	<0.1350	<0.1420	<0.215	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
B-107	**1-2 ft**	**6/20/2006**	3.79	<0.143	11.5	0.576	0.603	<0.1350	<0.138	0.509	<0.3090	<0.167	<0.1590	<0.1470	<0.1540	0.26	<0.1470	<0.172	0.423	0.758	<0.1790	<0.1540	28.3
	6-7 ft	**6/20/2006**	0.782	<0.126	<0.218	<0.136	<0.158	<0.1180	<0.122	0.338	<0.2720	<0.147	<0.1400	<0.1290	<0.1360	<0.163	<0.1290	<0.151	<0.179	0.659	<0.1580	<0.1360	NS
	11-12 ft	**6/20/2006**	0.424	<0.127	<0.221	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.2480	<0.148	<0.1420	<0.1310	<0.1370	<0.149	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
B-108	**1-2 ft**	**6/21/2006**	<0.036	<0.133	0.54	<0.144	<0.167	<0.1250	<0.129	0.213	<0.0575	<0.155	<0.1480	<0.1370	<0.1440	<0.155	<0.1370	<0.160	<0.190	<0.144	<0.1670	<0.1440	NS
	6-7 ft	**6/21/2006**	0.767	0.224	<0.218	<0.136	<0.158	<2.1700	<0.122	<0.068	<5.4300	<0.147	<0.1400	0.293	0.226	<3.260	<0.1290	<0.151	<0.179	0.383	<0.1580	<0.1360	NS
	11-12 ft	**6/21/2006**	<0.034	<0.126	0.535	<0.136	<0.158	<2.1700	<0.122	<0.068	<5.4300	<0.147	<0.1400	<0.1290	<0.1360	<3.260	<0.1290	<0.151	<0.179	<0.136	<0.1580	<0.1360	NS
B-109	**1-2 ft**	**6/20/2006**	<0.034	<0.127	2.76	0.281	<0.159	<1.5100	<0.123	<0.069	<3.7700	<0.148	0.208	<0.1310	<0.1370	<2.260	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
	6-7 ft	**6/20/2006**	<0.034	<0.129	<0.223	<0.139	<0.161	<0.2220	<0.124	<0.070	<0.5560	<0.150	<0.1430	<0.1320	<0.1390	<0.333	<0.1320	<0.154	<0.183	<0.139	<0.1610	<0.1390	NS
	11-12 ft	**6/20/2006**	<0.034	<0.129	<0.223	<0.139	<0.161	<0.1210	<0.124	<0.070	<0.2460	<0.150	<0.1430	<0.1320	<0.1390	<0.150	<0.1320	<0.154	<0.183	<0.139	<0.1610	<0.1390	NS
B-110	**1-2 ft**	**6/21/2006**	<0.039	<0.146	<0.253	<0.157	<0.183	<0.1370	<0.141	<0.079	<0.0630	<0.170	<0.1620	<0.1500	<0.1570	<0.170	<0.1500	<0.175	<0.208	<0.157	<0.1830	<0.1570	NS
	6-7 ft	**6/21/2006**	<0.035	<0.130	<0.225	<0.140	<0.163	<0.1220	<0.126	<0.071	<0.2800	<0.151	<0.1450	<0.1330	<0.1400	<0.168	<0.1330	<0.156	<0.185	<0.140	<0.1630	<0.1400	NS
	11-12 ft	**6/21/2006**	<0.034	<0.127	<0.220	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.0548	<0.148	<0.1410	<0.1300	<0.1370	<0.148	<0.1300	<0.152	<0.181	<0.137	<0.1590	<0.1370	NS
B-110a	**1-2 ft**	**6/21/2006**	<0.036	<0.133	3.59	<0.144	<0.167	<0.1250	<0.129	<0.072	<0.0575	<0.155	<0.1480	<0.1370	<0.1440	<0.155	<0.1370	<0.160	<0.190	<0.144	<0.1670	<0.1440	NS
B-111	**1-2 ft**	**6/20/2006**	7.81	0.414	5.52	0.477	<0.169	<0.1890	<0.130	<0.073	<0.4730	<0.157	<0.1500	<0.1380	<0.1450	<0.284	<0.1380	<0.162	<0.192	0.334	<0.1690	<0.1450	NS
	6-7 ft	**6/20/2006**	0.811	0.212	0.702	<0.136	<0.158	<0.1180	<0.122	<0.068	<0.2720	<0.147	<0.1400	<0.1290	<0.1360	<0.163	<0.1290	<0.151	<0.179	0.354	<0.1580	<0.1360	NS
	11-12 ft	**6/20/2006**	<0.034	<0.127	<0.221	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.2400	<0.148	<0.1420	<0.1310	<0.1370	<0.148	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
B-112	**1-2 ft**	**6/21/2006**	<0.035	<0.130	<0.226	<0.140	<0.163	<0.1220	<0.126	<0.071	<0.0562	<0.152	<0.1450	<0.1340	<0.1400	<0.152	<0.1340	<0.156	<0.185	<0.140	<0.1630	<0.1400	NS
	6-7 ft	**6/21/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.2840	<0.153	<0.1470	<0.1350	<0.1420	<0.170	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
	11-12 ft	**6/21/2006**	<0.034	<0.127	<0.221	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.0549	<0.148	<0.1420	<0.1310	<0.1370	<0.148	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
B-113	**1-2 ft**	**6/21/2006**	<0.036	<0.135	14.5	<0.145	<0.169	<0.1270	<0.130	<0.073	<0.2910	<0.157	<0.1500	<0.1380	<0.1450	0.455	<0.1380	<0.162	0.334	<0.145	<0.1690	<0.1450	23.5
	6-7 ft	**6/21/2006**	2.13	<0.130	10.3	0.598	0.222	<0.1220	<0.126	<0.071	<0.2810	<0.152	<0.1450	<0.1340	<0.1400	0.205	<0.1340	<0.156	0.444	0.651	<0.1630	<0.1400	23.6
	11-12 ft	**6/21/2006**	2.54	<0.125	0.3	<0.134	<0.156	<0.1170	<0.120	<0.068	<0.0538	<0.145	<0.1390	<0.1280	0.184	<0.145	<0.1280	<0.149	<0.177	0.628	<0.1560	<0.1340	4.2

Soil Analytical Results - June 2006 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Semi-Volatile Organic Compounds by USEPA Method 8270C																			Metals
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Benzoic Acid	Benzyl Alcohol	Bis(2-Ethylhexyl) Phthalate	Butyl Benzyl Phthalate	Di-N-Butyl Phthalate	1,2-Dichlorobenzene	Dimethyl Phthalate	Isophorone	4-Isopropyltoluene	1-Methylnaphthalene	2-Methylnaphthalene	2-Methylphenol	4-Methylphenol	Naphthalene	3-Nitroaniline	N-Nitrosodimethylamine	Di-N-Octyl Phthalate	Phenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	Lead (Total)
		RAOs:	25,000	630	39	290	630	180	--	570	--	18	24	320	630	2.0	--	0.002	63	1,900	630	6	400
B-114	**1-2 ft**	**6/21/2006**	<0.036	<0.133	<0.231	<0.144	<0.167	<0.1250	<0.129	<0.072	<0.0575	<0.155	<0.1480	<0.1370	<0.1440	<0.155	<0.1370	<0.160	<0.190	<0.144	<0.1670	<0.1440	NS
	6-7 ft	**6/21/2006**	<0.034	<0.127	<0.221	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.0549	<0.148	<0.1420	<0.1310	<0.1370	<0.148	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
	11-12 ft	**6/21/2006**	<0.034	<0.129	<0.223	<0.139	<0.161	<0.1210	<0.124	<0.070	<0.0556	<0.150	<0.1430	<0.1320	<0.1390	<0.150	<0.1320	<0.154	<0.183	<0.139	<0.1610	<0.1390	NS
HA-1	**1-2 ft**	**6/21/2006**	0.872	<0.143	<0.248	<0.154	<0.179	<0.1350	<0.138	<0.078	<0.3090	<0.167	<0.1590	<0.1470	<0.1540	<0.185	<0.1470	<0.172	<0.204	0.22	<0.1790	<0.1540	NS
HA-2	**1-2 ft**	**6/21/2006**	0.636	<0.140	<0.243	<0.151	<0.175	<0.1320	<0.135	<0.076	<0.3020	<0.163	<0.1560	<0.1440	<0.1510	<0.181	<0.1440	<0.168	<0.200	0.232	<0.1750	<0.1510	NS
HA-3	**1-2 ft**	**6/21/2006**	0.654	<0.145	<0.251	<0.156	<0.181	<0.1360	<0.140	<0.079	<0.3120	<0.169	<0.1610	<0.1490	<0.1560	<0.188	<0.1490	<0.174	<0.206	<0.156	<0.1810	<0.1560	NS
HA-4	**1-2 ft**	**6/21/2006**	<0.036	<0.135	<0.234	<0.145	<0.169	<0.1270	<0.130	<0.073	<0.0581	<0.157	<0.1500	<0.1380	<0.1450	<0.157	<0.1380	<0.162	<0.192	0.332	<0.1690	<0.1450	NS
MPX-1	**1-2 ft**	**6/14/2006**	<0.037	<0.138	<0.240	<0.149	<0.173	<0.1300	<0.134	<0.075	<0.0597	<0.161	<0.1540	<0.1420	<0.1490	<0.161	<0.1420	<0.166	<0.197	<0.149	<0.1730	<0.1490	10.3
	5-6 ft	**6/14/2006**	0.697	<0.130	0.552	<0.140	<0.163	<0.1220	<0.126	<0.071	<0.0487	<0.152	<0.1450	<0.1340	<0.1400	<0.152	<0.1340	<0.156	<0.185	<0.140	<0.1630	<0.1400	14.9
	10-11 ft	**6/14/2006**	<0.035	<0.129	<0.224	<0.139	<0.161	<0.1210	<0.125	<0.070	0.126	<0.150	<0.1440	<0.1330	<0.1390	0.509	<0.1330	<0.155	<0.184	<0.139	<0.1610	<0.1390	NS
MW-100	**2-3 ft**	**6/20/2006**	<0.036	<0.135	<0.234	<0.145	<0.169	<0.1270	<0.130	<0.073	<0.0447	<0.157	<0.1500	<0.1380	<0.1450	<0.157	<0.1380	<0.162	<0.192	<0.145	<0.1690	<0.1450	NS
	6-7 ft	**6/20/2006**	<0.035	<0.132	<0.228	<0.142	<0.165	<0.1240	<0.127	<0.072	<0.0568	<0.153	<0.1470	<0.1350	<0.1420	<0.153	<0.1350	<0.158	<0.188	<0.142	<0.1650	<0.1420	NS
	11-12 ft	**6/20/2006**	<0.034	<0.127	<0.221	<0.137	<0.159	<0.1200	<0.123	<0.069	<0.0465	<0.148	<0.1420	<0.1310	<0.1370	<0.148	<0.1310	<0.153	<0.181	<0.137	<0.1590	<0.1370	NS
MW-101	**1-2 ft**	**6/20/2006**	<0.038	<0.141	<0.245	<0.152	<0.177	<0.1330	<0.137	<0.077	<0.0006	<0.165	<0.1570	<0.1450	<0.1520	<0.165	<0.1450	<0.170	<0.201	<0.152	<0.1770	<0.1520	NS
	6-7 ft	**6/20/2006**	<0.036	<0.136	<0.236	<0.147	<0.171	<0.1280	<0.132	<0.074	<0.0006	<0.159	<0.1520	<0.1400	<0.1470	<0.159	<0.1400	<0.164	<0.194	<0.147	<0.1710	<0.1470	NS
	11-12 ft	**6/20/2006**	<0.034	<0.129	<0.223	<0.139	<0.161	<0.1210	<0.124	<0.070	<0.0005	<0.150	<0.1430	<0.1320	<0.1390	<0.150	<0.1320	<0.154	<0.183	<0.139	<0.1610	<0.1390	NS
MW-102	**1-2 ft**	**6/14/2006**	<0.037	<0.138	1.33	<0.149	<0.172	0.0404	<0.133	1.29	0.261	<0.161	0.211	<0.1410	<0.1490	**2.51**	<0.1410	<0.165	<0.196	<0.149	<0.1720	<0.1490	NS
	5-6 ft	**6/14/2006**	0.379	<0.128	0.369	<0.138	<0.160	<0.1200	<0.123	0.388	<0.0391	<0.149	<0.1420	<0.1310	<0.1380	0.351	<0.1310	<0.153	<0.182	<0.138	<0.1600	<0.1380	NS
	10-11 ft	**6/14/2006**	0.353	<0.129	0.249	<0.139	<0.161	<0.1210	<0.124	0.229	<0.0395	<0.150	<0.1430	<0.1320	<0.1390	0.334	<0.1320	**0.418**	<0.183	<0.139	<0.1610	<0.1390	NS
MW-103	**1-2 ft**	**6/19/2006**	<0.035	<0.131	<0.226	<0.141	<0.163	<0.1230	<0.126	<0.071	<0.0006	<0.152	<0.1450	<0.1340	<0.1410	<0.152	<0.1340	<0.157	<0.186	<0.141	<0.1630	<0.1410	NS
	6-7 ft	**6/19/2006**	<0.035	<0.130	<0.226	<0.141	<0.163	<0.1230	<0.126	<0.071	<0.0005	<0.152	<0.1450	<0.1340	<0.1410	<0.152	<0.1340	<0.156	<0.186	<0.141	<0.1630	<0.1410	NS
	11-12 ft	**6/19/2006**	<0.039	<0.146	<0.253	<0.157	<0.182	<0.1370	<0.141	<0.079	<0.0005	<0.170	<0.1620	<0.1500	<0.1570	<0.170	<0.1500	<0.175	<0.208	<0.157	<0.1820	<0.1570	NS
SVE-4	**1-2 ft**	**6/19/2006**	<0.035	<0.131	0.237	<0.141	<0.164	<0.1230	<0.127	0.208	<0.0648	<0.153	<0.1460	<0.1340	<0.1410	<0.153	<0.1340	<0.157	<0.186	<0.141	1.44	<0.1410	NS
	6-7 ft	**6/19/2006**	3.09	0.314	<0.220	<0.137	<0.159	<0.1200	<0.123	0.731	<0.0548	<0.148	<0.1410	<0.1300	<0.1370	<0.148	<0.1300	<0.152	<0.181	0.803	2.09	<0.1370	NS
	11-12 ft	**6/19/2006**	0.334	0.219	<0.220	<0.137	<0.159	<0.1200	<0.123	1.11	<0.0489	<0.148	<0.1410	<0.1300	<0.1370	<0.148	<0.1300	<0.152	<0.181	0.804	2.36	<0.1370	NS

Notes:
Units: mg/kg
NS = Not Sampled
<# = Concentration less than detection limit
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in bold

1 RAO based on the lowest of the two of m- or p-xylene

Soil Analytical Results - January Through March 2014 Field Investigations (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Volatile Organic Compounds by USEPA Method 8260B																						
			Chlorinated VOCs										Aromatic/Hydrocarbon VOCs									Ketones/Other				
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Chloroform	2-Chlorotoluene	Cis-1,2-Dichloroethene	1,2-Dichloroethane	1,1-Dichloroethane	Methylene Chloride	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane	Tetrachloroethene	Trichloroethene	Benzene	Ethylbenzene	Isopropylbenzene	Methyl Tert-Butyl Ether	Styrene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Toluene	Total Xylenes	Acetone	2-Butanone	Carbon Disulfide	4-Methyl-2-Pentanone	Total VOCs
RAOs (mg/kg)			0.32	160	16	0.46	3.6	35	5.8	810	8.1	0.41	1.2	5.8	190	47	600	30	27	490	58	6,100	2,700	77	3,300	
SS-1	**2-2.5 ft**	1/28/2014	ND	ND	ND	ND	ND	ND	ND	ND	**100**	**0.60**	ND	ND	0.45	ND	ND	ND	ND	ND	0.6	ND	ND	ND	ND	102
SS-1 (DUP)	**2-2.5 ft**	1/28/2014	ND	ND	ND	ND	ND	0.21 J	ND	ND	**100**	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.67 J	ND	ND	ND	ND	101
SS-2	**2-2.5 ft**	1/28/2014	0.085	ND	0.0074	ND	ND	0.0016 J	ND	ND	0.062	0.0008 J	ND	0.00556	ND	ND	0.0037	0.0042	0.0031	0.015	0.053	0.036	0.0035 J	ND	0.0013 J	0.28
SS-3	**0.5-1 ft**	1/28/2014	**23**	ND	ND	ND	ND	0.18 J	ND	ND	0.64	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	23.8
SS-4	**0.5-1 ft**	1/28/2014	**1.7**	ND	ND	ND	ND	0.012	0.0015 J	0.0011 J	ND	0.086	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80
SS-5	**0.5-1 ft**	1/28/2014	**9.4**	ND	ND	ND	ND	0.011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.02	0.0045 J	0.024	ND	ND	0.0020 J	9.46
SS-6	**0.5-1 ft**	1/28/2014	**0.42**	ND	ND	0.0058	ND	0.0009 J	ND	ND	0.11	ND	ND	0.0007 J	ND	ND	0.0036	ND	ND	0.0021	0.0064	0.11	0.0044	ND	0.0007 J	0.66
SS-7	**0.5-1 ft**	1/28/2014	0.0053	ND	0.0033	ND	ND	ND	ND	ND	0.58	0.00098	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59
SS-8	**0.5-1 ft**	1/30/2014	**9.9**	ND	ND	ND	ND	0.13 J	ND	ND	ND	ND	ND	0.068 J	ND	ND	ND	ND	ND	0.49	0.56	0.86	ND	0.14 J	ND	12.1
SS-9	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	0.0660 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0970 J	0.63	ND	ND	0.18 J	ND	0.97
SS-10	**0.5-1 ft**	2/11/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-11	**0.5-1 ft**	2/11/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-12	**0.5-1 ft**	2/11/2014	**2.6**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.60
SS-13	**0.5-1 ft**	2/11/2014	**0.57**	ND	0.026	ND	0.0026 J	0.01	ND	ND	0.0029 J	0.0020 J	0.0059	ND	ND	ND	ND	ND	ND	0.0015 J	0.0038	ND	ND	ND	ND	0.62
SS-14	**0.5-1 ft**	3/5/2014	0.0055	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0016 J	ND	ND	ND	ND	ND	0.0027	ND	0.011	ND	0.0014 J	ND	0.022
SS-15	**0.5-1 ft**	3/5/2014	ND	0.0023	ND	ND	ND	0.0008 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0009 J	ND	ND	0.03	ND	ND	ND	0.034
SS-16	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	0.16	ND	ND	**12**	0.88	ND	1.7	6.7	3.1	31	**85**	ND	ND	ND	ND	141
SS-16 (DUP)	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**17**	0.94	ND	2.6	5.9	2.7	56	**110**	ND	ND	ND	0.99	196
SS-17	**0.5-1 ft**	3/5/2014	**2.6**	ND	ND	ND	ND	0.16 J	ND	ND	ND	ND	ND	0.25 J	ND	ND	ND	0.31 J	0.17 J	ND	0.531	1.8	ND	ND	ND	5.82
SS-18	**0.5-1 ft**	3/5/2014	**0.34**	0.011 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2	ND	ND	ND	0.32	0.3	0.18	0.71	5.6	ND	ND	ND	7.66
SS-19	**0.5-1 ft**	3/5/2014	0.053	ND	0.0036	ND	ND	ND	ND	ND	0.029	0.004	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.09
SS-20	**0.5-1 ft**	3/5/2014	**32**	ND	ND	ND	ND	0.29 J	ND	ND	ND	ND	ND	0.67	ND	ND	ND	0.19 J	ND	1.3	2	1.3	ND	ND	ND	37.8
SS-21	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ditch Samples																										
D-1	**0.5-1 ft**	1/30/2014	0.0013 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.052	ND	ND	ND	0.053
D-2	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
D-3	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	0.0011 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.001
D-3 (DUP)	**0.5-1 ft**	1/30/2014	0.0023 J	ND	ND	ND	ND	0.0008 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.003
D-4	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	ND	ND	ND	0.019	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0078 J	ND	0.003 J	ND	0.030
SS-22	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-23	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Units: mg/kg
NS = Not Sampled
ND = Concentration less than detection limit
J = Laboratory qualifier indicating the result is estimated between the method deteciton limit and reporting limits.
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in **bold**

Soil Analytical Results - January Through March 2014 Field Investigations (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Semi-Volatile Organic Compounds by USEPA Method 8270C																												
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Acenaphthene	Anthracene	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[g,h,i]perylene	Benzo[k]fluoranthene	Benzoic Acid	Benzyl Alcohol	Benzylbutyl Phthalate	Bis(2-Ethylhexyl) Phthalate	Carbazole	Chrysene	Dibenz[a,h]anthracene	2,4-Dichlorophenol	Diethyl Phthalate	Dimethyl Phthalate	Di-N-Butyl Phthalate	Di-N-Octyl Phthalate	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	Isophorone	1-Methylnaphthalene	2-Methylnaphthalene	2-Methyl pyridine	Naphthalene	Phenanthrene	Phenol	Pyrene	1,2,4-Trichlorobenzene
RAOs (mg/kg)			360	1,800	1.1	0.11	1.1	--	11	25,000	630	290	39	--	110	0.11	19	5,100	--	630	63	240	240	1.1	570	18	24	--	2	--	1,900	180	6
SS-1	**2-2.5 ft**	1/28/2014	ND	ND	0.02 J	ND	0.031 J	ND	ND	ND	0.33	ND	0.32	ND	0.025 J	ND	0.032	ND	ND	ND	ND	0.049 J	ND	ND	ND	0.38	0.54	ND	0.11 J	0.058 J	ND	0.035 J	ND
SS-1 (DUP)	**2-2.5 ft**	1/28/2014	0.020 J	0.018 J	0.033 J	0.022 J	0.044 J	ND	ND	ND	0.27	ND	0.35	ND	0.04 J	ND	0.034 J	ND	ND	ND	0.091 J	0.084 J	0.051 J	0.023 J	ND	0.51	0.74	ND	0.12 J	0.10 J	ND	0.054 J	ND
SS-2	**2-2.5 ft**	1/28/2014	ND	ND	ND	ND	ND	ND	ND	0.330 J	0.36	ND	0.073 J	ND	ND	ND	ND	ND	ND	ND	0.10 J	ND	ND	ND	ND	ND	ND	ND	ND	0.015 J	0.04 J	ND	0.002 J
SS-3	**0.5-1 ft**	1/28/2014	ND	0.018 J	0.051 J	0.025 J	0.047 J	ND	ND	ND	3.7	ND	0.071 J	ND	0.052 J	ND	ND	ND	ND	ND	0.14 J	0.18 J	0.032 J	ND	ND	0.48	0.73	ND	0.16 J	0.054 J	ND	0.2	0.026 J
SS-4	**0.5-1 ft**	1/28/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.46	ND	ND	ND	ND	ND	ND	ND	0.13 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-5	**0.5-1 ft**	1/28/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.049 J	0.120 J	ND	ND	ND	ND	ND	ND	ND	ND	0.039 J	ND	ND	ND	ND	ND	ND	ND	0.019 J	ND	0.029 J	ND
SS-6	**0.5-1 ft**	1/28/2014	ND	ND	ND	ND	ND	ND	ND	ND	3.2	0.055 J	0.24	ND	ND	ND	ND	ND	ND	ND	ND	0.021 J	0.025 J	ND	ND	0.45	0.63	ND	0.14 J	0.026 J	ND	0.019 J	ND
SS-7	**0.5-1 ft**	1/28/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.090 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-8	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	ND	ND	0.230 J	0.35	ND	0.061 J	ND	ND	ND	ND	ND	ND	ND	0.2	ND	ND	ND	ND	0.078	0.11 J	ND	0.025 J	0.018 J	ND	ND	ND
SS-9	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	ND	ND	0.230 J	0.4	ND	ND	ND	ND	ND	ND	0.22	ND	ND	0.11 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-10	**0.5-1 ft**	2/11/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.038 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-11	**0.5-1 ft**	2/11/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-12	**0.5-1 ft**	2/11/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.024 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-13	**0.5-1 ft**	2/11/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.550 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-14	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.91	7.6	ND	ND	ND	ND	ND	ND	0.24	0.074 J	ND	ND	ND	ND	ND	ND	ND	0.023 J	ND	ND	ND	ND
SS-15	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11 J	2.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.032 J	ND	ND	ND	ND	ND
SS-16	**0.5-1 ft**	3/5/2014	ND	0.0370 J	0.0340 J	ND	ND	ND	ND	ND	ND	11.00 J	**170**	0.02 J	ND	ND	ND	ND	ND	1.2	0.41	0.16 J	ND	ND	ND	0.26	0.43	ND	**3**	0.32	0.63	0.13 J	ND
SS-16 (DUP)	**0.5-1 ft**	3/5/2014	ND	0.0290 J	0.0230 J	ND	ND	ND	ND	ND	ND	11	**130**	ND	0.0028 J	ND	ND	ND	ND	1.5	0.39	0.13 J	ND	ND	ND	0.35	0.54	ND	**3.1**	0.31	0.67	0.12 J	ND
SS-17	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0720 J	2.9	ND	ND	ND	ND	ND	ND	0.076 J	0.15 J	ND	ND	ND	0.032 J	ND	ND	ND	ND	ND	ND	ND	ND
SS-18	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	0.0650 J	0.36	3.8	ND	ND	ND	ND	ND	ND	0.17 J	0.029 J	ND	ND	ND	0.048 J	0.019 J	0.023 J	0.05 J	0.021 J	ND	ND	ND	ND
SS-19	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0220 J	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-20	**0.5-1 ft**	3/5/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SS-21	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ditch Samples																																	
D-1	**0.5-1 ft**	1/30/2014	ND	0.13 J	0.48	**0.25**	0.34	0.14 J	0.22	ND	ND	ND	0.72 J	0.0320 J	0.53	0.05 J	ND	ND	ND	ND	ND	0.96	ND	0.18 J	ND	ND	ND	ND	ND	0.47	ND	0.92	ND
D-2	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	0.0220 J	ND	ND	0.38 J	ND	0.48	2.7	ND	0.02 J	ND	ND	0.0480 J	0.1300 J	0.0870 J	ND	0.0220 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.017 J	ND
D-3	**0.5-1 ft**	1/30/2014	ND	ND	0.0730 J	0.07	0.12 J	0.0480 J	0.0460 J	0.26 J	ND	0.12 J	5.7	ND	0.0880 J	ND	ND	ND	ND	0.0710 J	0.03 J	0.0940 J	ND	0.0550 J	ND	ND	ND	ND	ND	0.019 J	ND	0.082 J	ND
D-3 (DUP)	**0.5-1 ft**	1/30/2014	ND	ND	0.2000 J	**0.13**	0.20 J	0.0770 J	0.0110 J	0.27 J	ND	0.22	3.9	ND	0.22	0.0250 J	ND	ND	0.0460 J	0.0530 J	ND	0.31	ND	0.0920 J	ND	ND	ND	ND	ND	0.04 J	ND	0.26	ND
D-4	**0.5-1 ft**	1/30/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SS-22	**0.5-1 ft**	3/5/2014	ND	ND	0.0300 J	0.0290 J	0.0540 J	0.0240 J	0.0230 J	0.29 J	ND	ND	0.0780 J	ND		ND	ND	ND	0.0870 J	ND	ND	0.0500 J	ND	0.0240 J	ND	ND	ND	ND	ND	ND	ND	0.055 J	ND
SS-23	**0.5-1 ft**	3/5/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Units: mg/kg
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J = Laboratory qualifier indicating the result is estimated between the method deteciton limit and reporting limits.
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in **bold**

Soil Analytical Results - September 2015 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Volatile Organic Compounds (VOCs) by USEPA Method 8260B																									
			Chlorinated VOCs													Aromatic/Hydrocarbon VOCs								Ketones/Other					
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Chloroform	2-Chlorotoluene	4-Chlorotoluene	Cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,2-Dichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	Methylene Chloride	Tetrachloroethene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Benzene	Ethylbenzene	Isopropylbenzene	N-Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	Toluene	Acetone	2-Butanone	Carbon Disulfide	2-Hexanone	4-Methyl-2-Pentanone	Total VOCs
RAOs (mg/kg)			0.32	160	160	16	180	0.46	3.6	23	35	8.1	810	0.2	0.41	1.2	5.8	190	380	30	27	58	490	6,100	2,700	77	20	3,300	--
BSTF-1-1'	**0.5-1 ft**	9/9/2015	0.087	ND	ND	1.4	0.004	0.14	0.011	0.0079	0.16	**40**	0.071	0.0041	**31**	0.016	0.022	ND	0.0025 J	0.0046	ND	0.036	0.084	0.058	0.04	ND	ND	ND	73
BSTF-1-14'	**13-14 ft**	9/9/2015	0.016	ND	ND	0.015	ND	0.17	ND	ND	17.00 J	0.06	ND	ND	0.19	0.0025 J	0.0031 J	ND	ND	0.0015 J	ND	0.018	0.04	86	82	ND	0.068	11.00 J	197
BSTF-2-1.5'	**2-2.5 ft**	9/9/2015	**1.5**	ND	ND	ND	ND	**1.5**	ND	ND	13	**83**	2.2	ND	**130**	0.54 J	**48**	3.2	6.3	**39**	18	**320**	150	94	94	ND	ND	16	1020
BSTF-2-14'	**13-14 ft**	9/9/2015	ND	ND	ND	ND	ND	0.026	ND	ND	0.053	0.0073	ND	ND	0.011	ND	ND	ND	ND	ND	ND	0.0093 J	0.0062	ND	100 J	ND	0.07	ND	100
BSTF-3-1.5'	**0.5-1.5 ft**	9/9/2015	0.0059	0.022	0.022	0.28	ND	0.011	0.0056	ND	0.2	0.18	ND	ND	0.055	0.0023 J	0.023	ND	ND	0.012	ND	0.21	0.11	54	40	ND	0.028	5.6	101
BSTF-3-14'	**13-14 ft**	9/9/2015	ND	ND	ND	0.0045	ND	ND	ND	ND	0.022	0.0043 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0059 J	0.0029 J	49	31	0.0021 J	0.0099	ND	80
BSTF-4-1.5'	**0.5-1.5 ft**	9/9/2015	ND	ND	ND	0.39	ND	ND	ND	ND	ND	0.11 J	ND	ND	ND	ND	0.09 J	ND	ND	ND	ND	0.55	0.42	6.7	6.5	ND	ND	0.5	15
BSTF-4-14'	**13-14 ft**	9/9/2015	ND	ND	ND	0.25	ND	ND	ND	ND	0.14 J	0.72 J	ND	ND	0.0650 J	ND	ND	ND	ND	ND	ND	ND	0.0530 J	37	22	ND	ND	0.68	61
BSTF-5-1.5'	**0.5-1.5 ft**	9/9/2015	ND	ND	ND	0.87 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.7	0.9	ND	ND	ND	3.5
BSTF-5-12'	**11-12 ft**	9/9/2015	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.19	0.15	ND	ND	0.029	0.37

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RAO exceedances in **bold**

Soil Analytical Results - September 2015 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Semi-Volatile Organic Compounds by USEPA Method 8270C																						
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Acenaphthene	Acetophenone	Benzo[a]anthracene	Benzyl Alcohol	Benzylbutyl Phthalate	Bis(2-Ethylhexyl) Phthalate	Chrysene	Diethyl Phthalate	2,4-Dimethylphenol	Dimethyl Phthalate	Di-N-Butyl Phthalate	Di-N-Octyl Phthalate	Fluoranthene	Fluorene	Isophorone	1-Methylnaphthalene	2-Methylnaphthalene	2-Methylphenol	3&4 Methylphenol [2]	Naphthalene	Phenanthrene	Phenol	Pyrene	2,4,5-Trichlorophenol
	RAOs (mg/kg)		360	780	1.1	630	290	39	110	5,100	130	--	630	63	240	240	570	18	24	320	320	2	--	1,900	180	630
BSTF-1-1'	**0.5-1 ft**	9/9/2015	ND	ND	0.0069 J	0.0960 J	0.0460 J	15	0.012	ND	ND	ND	ND	0.048 J	0.02	ND	ND	0.016	0.016	ND	ND	0.075	ND	ND	0.24	ND
BSTF-1-14'	**13-14 ft**	9/9/2015	0.0059 J	ND	ND	6.3	ND	0.031 J	ND	ND	ND	0.029 J	ND	ND	ND	0.018	0.44	0.65	0.99	0.044 J	0.074 J	0.25	ND	ND	ND	ND
BSTF-2-1.5'	**2-2.5 ft**	9/9/2015	ND	1.7	ND	2.4	ND	18	ND	ND	ND	ND	0.074 J	ND	ND	ND	0.85	0.19	0.34	ND	ND	1.8	ND	ND	ND	ND
BSTF-2-14'	**13-14 ft**	9/9/2015	ND	ND	ND	0.37	ND	0.057 J	ND	ND	ND	0.077 J	ND	ND	ND	ND	ND	0.0034 J	0.0052 J	0.038 J	ND	ND	ND	0.27	ND	ND
BSTF-3-1.5'	**0.5-1.5 ft**	9/9/2015	ND	ND	ND	0.0520 J	0.42	6.2	ND	0.0200 J	0.0280 J	ND	0.48	0.058 J	ND	ND	ND	0.04	0.057	0.18 J	0.23 J	0.069	ND	0.95	ND	ND
BSTF-3-14'	**13-14 ft**	9/9/2015	ND	ND	ND	ND	0.45	6.0	ND	0.0240 J	ND	ND	0.54	0.059 J	ND	ND	0.14 J	0.015	0.028	0.041 J	0.050 J	0.04	ND	0.24	0.0045 J	ND
BSTF-4-1.5'	**0.5-1.5 ft**	9/9/2015	ND	ND	ND	0.0300 J	0.020 J	0.57	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.012	0.02	0.067 J	0.18 J	0.035	ND	0.45	ND	ND
BSTF-4-14'	**13-14 ft**	9/9/2015	ND	ND	ND	ND	ND	0.16 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.045 J	0.044 J	ND	ND	0.22	ND	ND
BSTF-5-1.5'	**0.5-1.5 ft**	9/9/2015	ND	ND	0.0059 J	ND	0.087 J	12	0.0058 J	ND	ND	ND	ND	0.35	0.012	ND	ND	0.015	0.017	0.036 J	ND	0.024	0.0085	ND	0.012	0.14 J
BSTF-5-12'	**11-12 ft**	9/9/2015	ND	ND	ND	ND	ND	1.7	ND	ND	ND	ND	ND	0.056 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
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Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in **bold**

Soil Analytical Results - February 2016 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

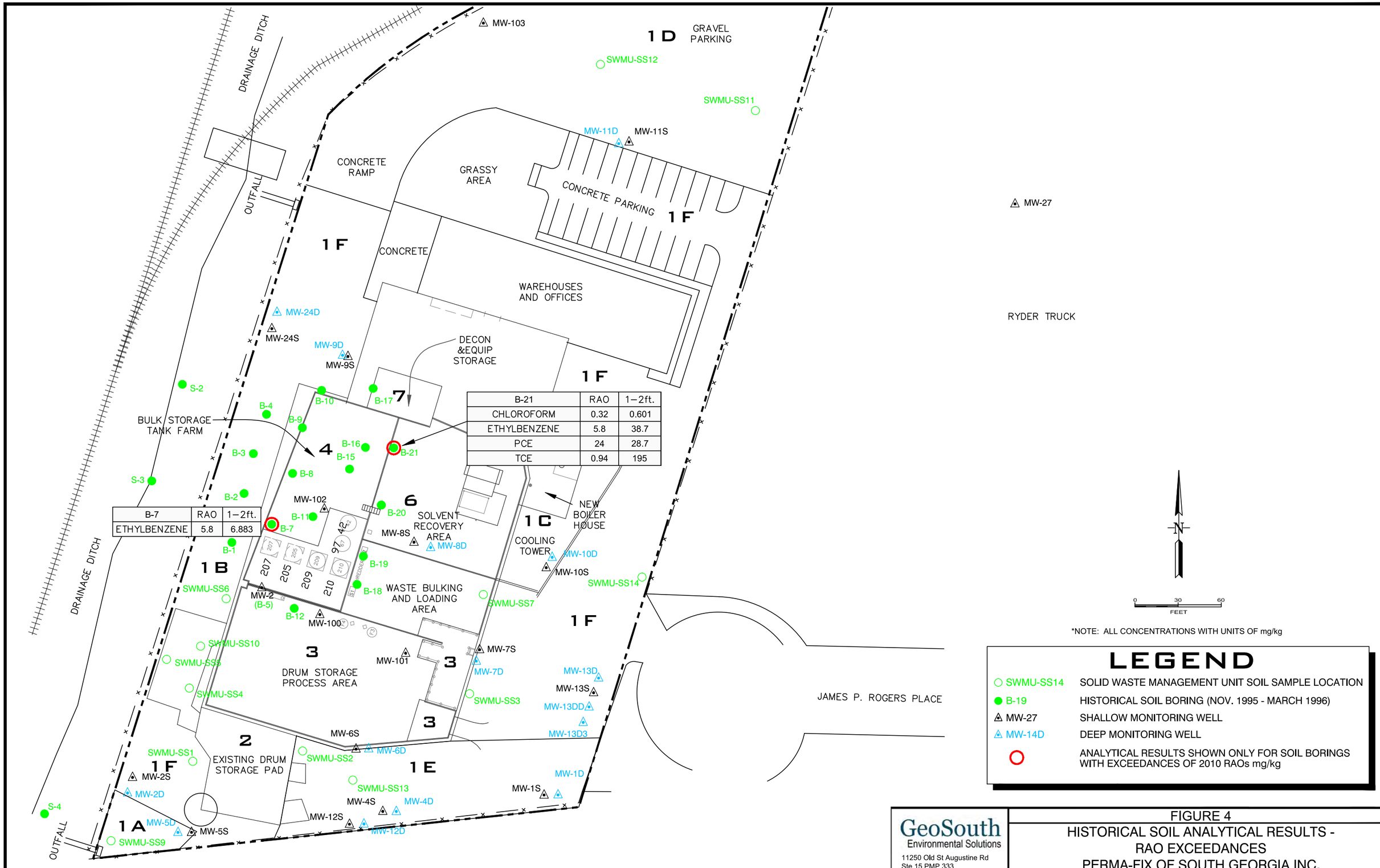
			Volatile Organic Compounds by USEPA Method 8260B																										
			Chlorinated VOCs											**Aromatic/Hydrocarbon VOCs**										**Ketones/Other**				
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Chloroform	2-Chlorotoluene	Cis-1,2-Dichloroethene	1,2-Dichlorobenzene	1,2-Dichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	Methylene Chloride	Tetrachloroethene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Benzene	Ethylbenzene	Isopropylbenzene	N-Propylbenzene	Styrene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	Toluene	Vinyl Chloride	Acetone	2-Butanone	2-Hexanone	4-Methyl-2-Pentanone	Total VOCs
RAOs (mg/kg)			**0.32**	**160**	**16**	**180**	**0.46**	**3.6**	**23**	**35**	**8.1**	**810**	**0.2**	**0.41**	**1.2**	**5.8**	**190**	**380**	**600**	**30**	**27**	**58**	**490**	**0.059**	**61,000**	**27,000**	**200**	**33,000**	-
DSA3-2(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	0.0024 J	ND	ND	0.002 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.5	1.5	ND	ND	4.0
DSA3-2(1.5) (Dup 1)	**13-14 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	0.42 J	0.18	ND	ND	0.14 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.062 J**	1.3	0.79	ND	ND	2.9
DSA3-2(13)	**12-13 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	63	89	ND	ND	152
DSA3-3(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.17	0.11	ND	ND	0.28
DSA3-3(11)	**10-11 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140	110	ND	ND	250
DSA3-4(1.5)	**0.5-1 ft**	2/8/2016	0.018	ND	0.049	ND	ND	0.027	0.031	0.0044 J	0.022	0.1	ND	**1.0**	0.025	0.0021 J	ND	ND	ND	ND	ND	0.02	0.044	ND	0.20 J	0.2	ND	0.0087	2
DSA3-4(7)	**6-7 ft**	2/8/2016	ND	ND	0.026	ND	0.0032 J	0.0034 J	ND	0.26	ND	0.01	ND	0.095	0.0052	0.0073	ND	ND	ND	ND	ND	0.035	0.13	ND	64	61	ND	ND	126
DSA3-5(1.5)	**0.5-1 ft**	2/8/2016	0.011	ND	0.016	ND	0.0095	0.007	0.015	0.085	0.036	0.094	ND	**0.46**	0.0091	0.0029 J	ND	ND	ND	ND	ND	0.018	0.014	ND	ND	0.12	ND	0.016	0.9
DSA3-5(13)	**12-13 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.012	ND	ND	ND	ND	49	29	ND	0.24	78
DSA3-1(1.5)	**0.5-1 ft**	2/8/2016	0.017	ND	0.018	ND	0.0025 J	0.0049	0.0044	0.017	0.81	0.0059	ND	ND	0.0042	ND	ND	ND	ND	ND	ND	0.0064 J	0.0059	ND	0.048	0.02	ND	ND	1.0
DSA3-1(13)	**12-13 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.21	5.81	0.0062 J	0.19	13
WBUA-1(0.5)	**0-0.5 ft**	2/9/2016	ND	ND	0.27	ND	ND	ND	ND	ND	1.6	ND	ND	**1.4**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.3
WBUA-1(0.5) (Dup 4)	**0-0.5 ft**	2/9/2016	ND	ND	0.2	ND	ND	ND	ND	ND	2.9	ND	ND	**1.4**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.57	ND	ND	5.1
WBUA-1(9)	**8-9 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.029	0.028	ND	ND	0.06
WBUA-2(0.5)	**0-0.5 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.29	ND	ND	ND	ND	ND	0.29
WBUA-2(13)	**12-13 ft**	2/10/2016	ND	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	17	2.6	ND	ND	20
WBUA-3(0.5)	**0-1 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	ND	**85**	ND	ND	**25**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110
WBUA-3(15)	**14-15 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	7.3	1.8	ND	ND	**1.20 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.5	6.1	ND	ND	24
WBUA-4(0.5)	**0-1 ft**	2/10/2016	ND	ND	14	ND	ND	ND	ND	16 J	**470**	ND	ND	**360**	ND	ND	ND	ND	ND	ND	ND	ND	5.60 J	ND	ND	ND	ND	ND	866
WBUA-4(13)	**12-13 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	6.6	0.97	ND	ND	**1.3**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.9
WBUA-5(0.5)	**0-0.5 ft**	2/10/2016	ND	ND	0.17	ND	ND	ND	ND	ND	1.5	ND	ND	**1.9**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.6
WBUA-5(5)	**4-5 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.022	ND	ND	0.02
SRA/DSPA2-1(1.5)	**0.5-1.5 ft**	2/8/2016	0.23	0.092	0.077	0.039	ND	0.053	0.025	28 J	**140**	0.38	0.011	**72**	0.071	**9 J**	ND	0.11	ND	0.53	0.29	6.4	24	ND	ND	0.22	0.059	0.4	282
SRA/DSPA2-1(5)	**4-5 ft**	2/8/2016	ND	ND	ND	ND	0.0035 J	ND	ND	ND	0.1	ND	ND	0.039	ND	0.022	ND	ND	ND	0.034	0.014	0.14	0.042	ND	26 J	22	0.059	ND	48
SRA/DSPA2-2(0.5)	**0-0.5 ft**	2/8/2016	0.094	ND	ND	ND	0.078	0.22	0.014	8 J	3.4	ND	ND	**3.30 J**	0.045	ND	0.075	0.046	0.036	0.12	0.068	12	1.70 J	ND	150	170	ND	6.8	356
SRA/DSPA2-2(15)	**14-15 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	0.03	0.015	0.006	ND	0.033	ND	0.021	ND	ND	ND	ND	ND	0.13	0.029	ND	130	200	0.048	16	346
SRA/DSPA2-3(1)	**0-1 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	0.0061 J	0.022	0.0039 J	ND	0.17	ND	0.0042 J	ND	ND	ND	0.0051 J	ND	0.022	0.017	ND	0.13	0.05	ND	ND	0.43
SRA/DSPA2-3(15)	**14-15 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	24	23	ND	0.18	47
SRA/DSPA2-4(1)	**0-1 ft**	2/9/2016	0.05	ND	ND	ND	0.12	ND	0.19	ND	ND	ND	ND	ND	0.12	ND	0.12	0.11	0.023	ND	0.24	16	7.20 J	0.04	280	290	0.049	17	611
SRA/DSPA2-4(1) (Dup 2)	**0-2 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	17	6.1	ND	ND	**5.6**	ND	ND	ND	ND	ND	ND	ND	14	22	ND	170	170	ND	11	416
SRA/DSPA2-4(11)	**10-11 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	130	ND	4.2	244
SRA/DSPA2-5(1)	**0-1 ft**	2/9/2016	ND	ND	0.062	ND	0.029	ND	ND	ND	**140**	0.023	ND	0.19	ND	ND	ND	ND	ND	0.026	0.013	ND	0.0075 J	ND	0.052	0.03	ND	ND	140
SRA/DSPA2-5(9)	**8-9 ft**	2/9/2016	ND	ND	0.013	ND	0.0068 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	610	490	ND	0.14	1100
SRA/DSPA2-6(1)	**0-1 ft**	2/9/2016	ND	ND	0.094	ND	ND	0.0051	ND	ND	**24**	0.017	ND	**3.50 J**	ND	ND	ND	ND	ND	ND	ND	ND	0.0023 J	ND	0.089	0.04	ND	ND	28
SRA/DSPA2-6(13)	**12-13 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	0.047	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	0.05	ND	ND	0.22
SRA/DSPA2-7(1)	**0-1 ft**	2/9/2016	ND	ND	0.035	ND	ND	ND	ND	ND	0.33	ND	ND	0.17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.018 J	0.03	ND	ND	0.6
SRA/DSPA2-7(15)	**14-15 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057	0.04	ND	ND	0.10
SRA/DSPA2-8(1)	**0-1 ft**	2/9/2016	0.096 J	ND	0.35	ND	0.11 J	0.44	0.16	26	3.7	1.9	ND	**16**	0.13 J	2.4	ND	ND	ND	0.15 J	0.072 J	13	16	ND	95	43	ND	6	225
SRA/DSPA2-8(11)	**10-11 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	5.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	130	ND	4	250
SSA-1(0.5)	**0-0.5 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.014 J	0.04	ND	ND	0.05
SSA-1(13)	**12-13 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	0.11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0045 J	ND	0.019 J	0.04	ND	ND	0.17
SSA-1(13) (Dup 3)	**12-14 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	0.36	12	ND	0.78	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.66	**4.3**	ND	1.4	ND	ND	20
SSA-2(0.5)	**0-0.5 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011 J	0.03	ND	ND	0.04
SSA-2(13)	**12-13 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	19	ND	1.30 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.6	**5.4**	5.9	15	ND	ND	48

Notes:
Units: mg/kg
NS = Not Sampled
ND = Concentration less than detection limit
J = Laboratory qualifier indicating the result is estimated between the method deteciton limit and reporting limits.
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in **bold**

Soil Analytical Results - February 2016 Field Investigation (mg/kg)
Post-Closure Care Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

			Semi-Volatile Organic Compounds by USEPA Method 8270C																				
Soil Boring/ Monitoring Well Designation	Depth (ft)	Date	Acetophenone	Benzoic Acid	Benzyl Alcohol	Benzylbutyl Phthalate	Bis(2-Ethylhexyl) Phthalate	Diethyl Phthalate	2,4-Dimethylphenol	Dimethyl Phthalate	Di-N-Butyl Phthalate	Di-N-Octyl Phthalate	Fluoranthene	Fluorene	Isophorone	1-Methylnaphthalene	2-Methylnaphthalene	2-Methylphenol	3&4 Methylphenol	Naphthalene	Phenanthrene	Phenol	Pyrene	2,4,5-Trichlorophenol
Preliminary RAOs (mg/kg)			**780**	**25,000**	**630**	**290**	**39**	**5,100**	**130**	**-**	**630**	**63**	**240**	**240**	**570**	**18**	**24**	**320**	**320**	**2**	**-**	**1,900**	**180**	**630**
DSA3-2(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DSA3-2(1.5) (Dup 1)	**13-14 ft**	2/8/2016	ND	ND	ND	ND	0.034 J	ND	ND	ND	ND	ND	ND	ND	0.043 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
DSA3-2(13)	**12-13 ft**	2/8/2016	ND	ND	0.11 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8	ND	ND	0.044 J	0.051 J	ND	ND	0.34	ND	0.35
DSA3-3(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	0.041 J	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.032 J
DSA3-3(11)	**10-11 ft**	2/8/2016	ND	ND	0.16 J	ND	0.027 J	ND	ND	ND	ND	ND	ND	ND	0.3	0.0025 J	0.0036 J	0.069 J	0.076 J	0.004 J	ND	0.32	ND	0.95
DSA3-4(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	ND	0.61	ND	ND	ND	ND	ND	ND	ND	0.021 J	ND	ND	ND	ND	ND	0.0078	ND	ND	ND
DSA3-4(7)	**6-7 ft**	2/8/2016	ND	ND	0.053 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.110 J	ND	ND	ND	ND	ND	ND	0.044 J	ND	0.025 J
DSA3-5(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	ND	0.67	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0037 J	ND	ND	ND	ND
DSA3-5(13)	**12-13 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0086	0.015	ND	0.017 J	0.039	ND	0.058 J	ND	ND
DSA3-1(1.5)	**0.5-1 ft**	2/8/2016	ND	ND	ND	ND	0.031 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DSA3-1(13)	**12-13 ft**	2/8/2016	ND	ND	0.021 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.088 J	ND	ND	0.051 J	0.035 J	ND	ND	ND	ND	ND
WBUA-1(0.5)	**0-0.5 ft**	2/9/2016	ND	ND	ND	ND	0.16 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBUA-1(0.5) (Dup 4)	**0-0.5 ft**	2/9/2016	ND	ND	ND	ND	0.15 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBUA-1(9)	**8-9 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBUA-2(0.5)	**0-0.5 ft**	2/10/2016	ND	ND	ND	ND	14	ND	ND	ND	ND	0.16 J	ND	ND	ND	ND	ND	ND	ND	0.0058 J	ND	ND	ND	ND
WBUA-2(13)	**12-13 ft**	2/10/2016	ND	0.43	0.43	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.023 J	ND	ND
WBUA-3(0.5)	**0-1 ft**	2/10/2016	ND	ND	ND	2.7	32	ND	ND	ND	0.48	1.2	0.0066 J	ND	ND	0.56	ND	ND	ND	0.32	0.032	ND	0.028	ND
WBUA-3(15)	**14-15 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.028 J	ND	0.027 J	ND	ND	ND	ND	ND
WBUA-4(0.5)	**0-1 ft**	2/10/2016	ND	ND	2.9	59	**260**	ND	ND	ND	0.67 J	1.5	0.073	ND	ND	0.83	ND	ND	ND	1.3	0.21	ND	0.066	ND
WBUA-4(13)	**12-13 ft**	2/10/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBUA-5(0.5)	**0-0.5 ft**	2/10/2016	ND	ND	0.065 J	ND	0.045 J	ND	ND	ND	ND	ND	ND	ND	ND	0.18	ND	ND	ND	0.13	ND	ND	ND	ND
WBUA-5(5)	**4-5 ft**	2/10/2016	ND	ND	ND	ND	0.038 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SRA/DSPA2-1(1.5)	**0.5-1.5 ft**	2/8/2016	ND	ND	ND	1.6	12	ND	0.048 J	ND	1.2	ND	ND	0.0065 J	0.57	0.079	0.12	ND	ND	0.36	0.028	0.086 J	0.0045 J	ND
SRA/DSPA2-1(5)	**4-5 ft**	2/8/2016	ND	ND	ND	5.7	**110**	0.091 J	ND	1.2	5.2	ND	0.013	ND	0.76	0.12	0.19	ND	0.037 J	0.83	0.04	0.38	0.018	ND
SRA/DSPA2-2(0.5)	**0-0.5 ft**	2/8/2016	0.14 J	ND	0.24	ND	0.8	ND	ND	ND	ND	ND	ND	ND	ND	0.0078	0.01	ND	0.031 J	0.01	ND	0.091 J	ND	ND
SRA/DSPA2-2(15)	**14-15 ft**	2/8/2016	ND	0.10 J	0.2	0.035 J	0.37	ND	ND	ND	ND	ND	ND	ND	ND	0.0098	0.015	ND	ND	0.0084	ND	ND	ND	ND
SRA/DSPA2-3(1)	**0-1 ft**	2/8/2016	ND	ND	ND	ND	0.35	ND	ND	ND	ND	ND	0.012	ND	ND	ND	ND	ND	ND	ND	0.0096	ND	0.013	ND
SRA/DSPA2-3(15)	**14-15 ft**	2/8/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SRA/DSPA2-4(1)	**0-1 ft**	2/9/2016	0.10 J	ND	ND	0.17 J	1.8	ND	ND	ND	ND	0.26	ND	ND	ND	ND	ND	ND	ND	0.019	ND	ND	ND	ND
SRA/DSPA2-4(1) (Dup 2)	**0-2 ft**	2/9/2016	ND	ND	ND	ND	3.9	ND	ND	ND	ND	0.64 J	ND	ND	ND	ND	ND	ND	ND	0.039 J	ND	ND	ND	ND
SRA/DSPA2-4(11)	**10-11 ft**	2/9/2016	ND	ND	0.3	ND	0.36	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.49	ND	ND
SRA/DSPA2-5(1)	**0-1 ft**	2/9/2016	ND	ND	ND	ND	37	ND	ND	ND	ND	ND	0.016	ND	0.57	ND	ND	ND	ND	0.043	ND	ND	0.031	ND
SRA/DSPA2-5(9)	**8-9 ft**	2/9/2016	ND	ND	ND	ND	0.11 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SRA/DSPA2-6(1)	**0-1 ft**	2/9/2016	ND	ND	ND	0.44	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SRA/DSPA2-6(13)	**12-13 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0051 J	ND	ND	ND	ND
SRA/DSPA2-7(1)	**0-1 ft**	2/9/2016	ND	ND	ND	ND	0.89	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SRA/DSPA2-7(15)	**14-15 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SRA/DSPA2-8(1)	**0-1 ft**	2/9/2016	ND	ND	ND	0.17 J	13	ND	ND	ND	0.25	ND	ND	ND	ND	0.0064 J	0.02	ND	ND	0.082	ND	0.34	ND	ND
SRA/DSPA2-8(11)	**10-11 ft**	2/9/2016	ND	ND	ND	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12 J	ND	ND
SSA-1(0.5)	**0-0.5 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SSA-1(13)	**12-13 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SSA-1(13) (Dup 3)	**12-14 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SSA-2(0.5)	**0-0.5 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SSA-2(13)	**12-13 ft**	2/9/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Units: mg/kg
NS = Not Sampled
ND = Concentration less than detection limit
J = Laboratory qualifier indicating the result is estimated between the method deteciton limit and reporting limits.
Remedial Action Objectives (RAOs) are based on U.S. EPA Regional Screening Level (RSL) for Residential Soil. TR=1E-06 and THQ=0.1 (Updated November 2020)
RAO exceedances in bold



*NOTE: ALL CONCENTRATIONS WITH UNITS OF mg/kg

LEGEND

SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION
B-19	HISTORICAL SOIL BORING (NOV. 1995 - MARCH 1996)
MW-27	SHALLOW MONITORING WELL
MW-14D	DEEP MONITORING WELL
	ANALYTICAL RESULTS SHOWN ONLY FOR SOIL BORINGS WITH EXCEEDANCES OF 2010 RAOs mg/kg

Ref: Cameron-Cole 2022

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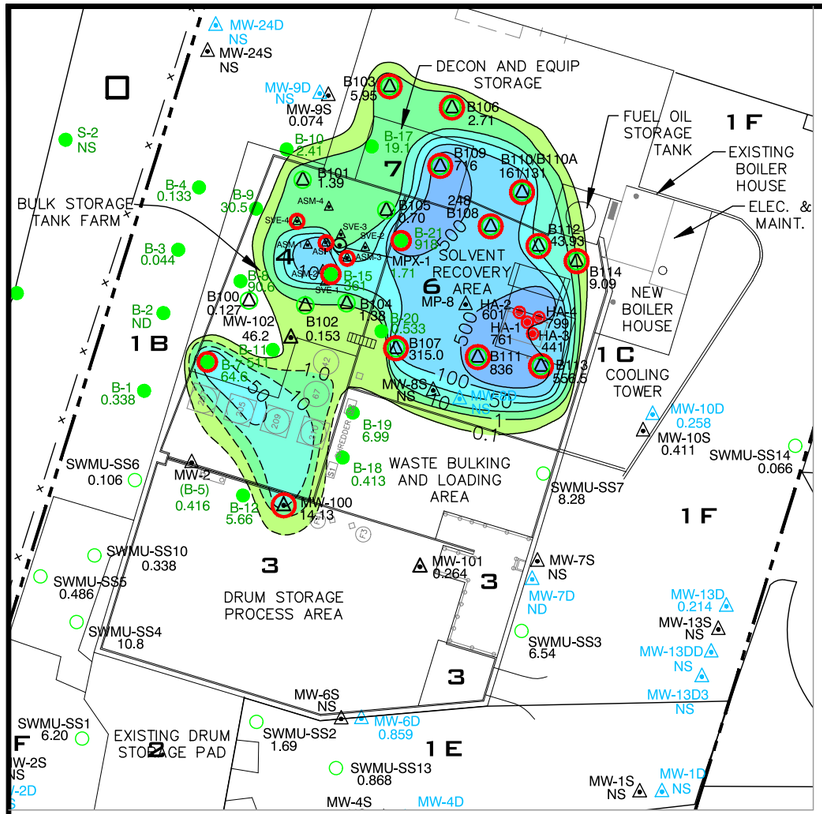
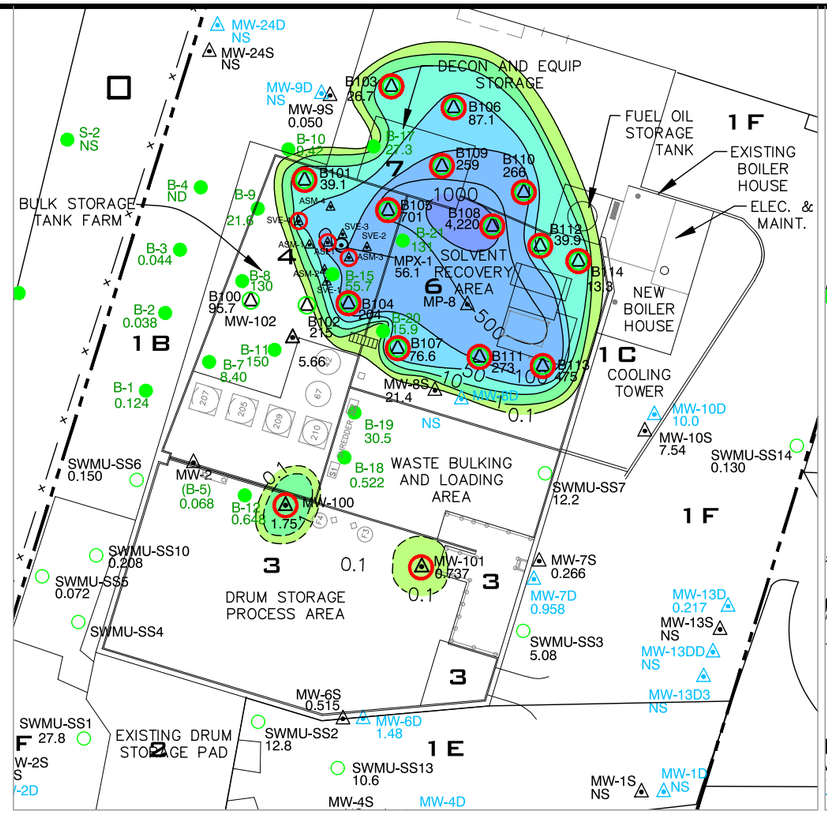
FIGURE 4
HISTORICAL SOIL ANALYTICAL RESULTS - RAO EXCEEDANCES
PERMA-FIX OF SOUTH GEORGIA INC.

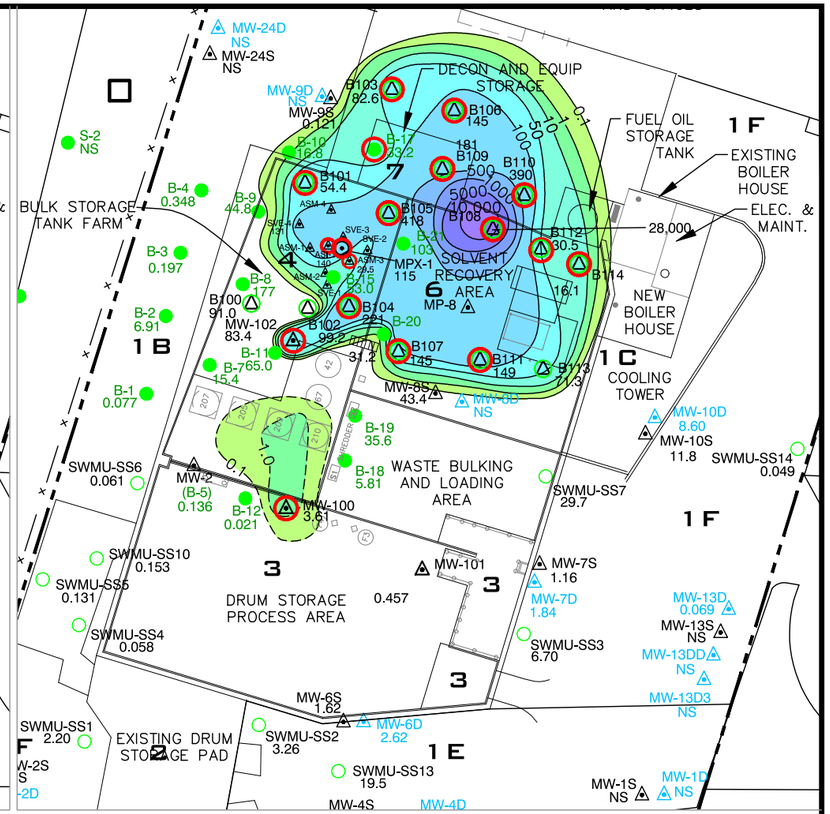
SCALE: 1" = 60'



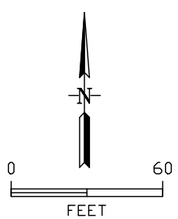
1-2 ft BGS



5-7 ft BGS



10-12 ft BGS



LEGEND

SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION (MARCH, 1996)
B-19	HISTORICAL SOIL BORING (OCT 1995, MARCH 1996, JUNE 1997)
B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
MW-27	SHALLOW MONITORING WELL
MW-5D	DEEP MONITORING WELL
MPX-1	MPX SHALLOW TEST WELL
	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)
SVE-1	SVE SHALLOW TEST WELL
ASI-1	AS SHALLOW TEST WELL
HA-1	HAND-AUGER SOIL BORING
19.1	TOTAL VOCs SOIL CONCENTRATION IN mg/kg
NS	NOT SAMPLED
ND	NO VOC's DETECTED
	TOTAL VOCs CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)
	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

Ref: Cameron-Cole 2022

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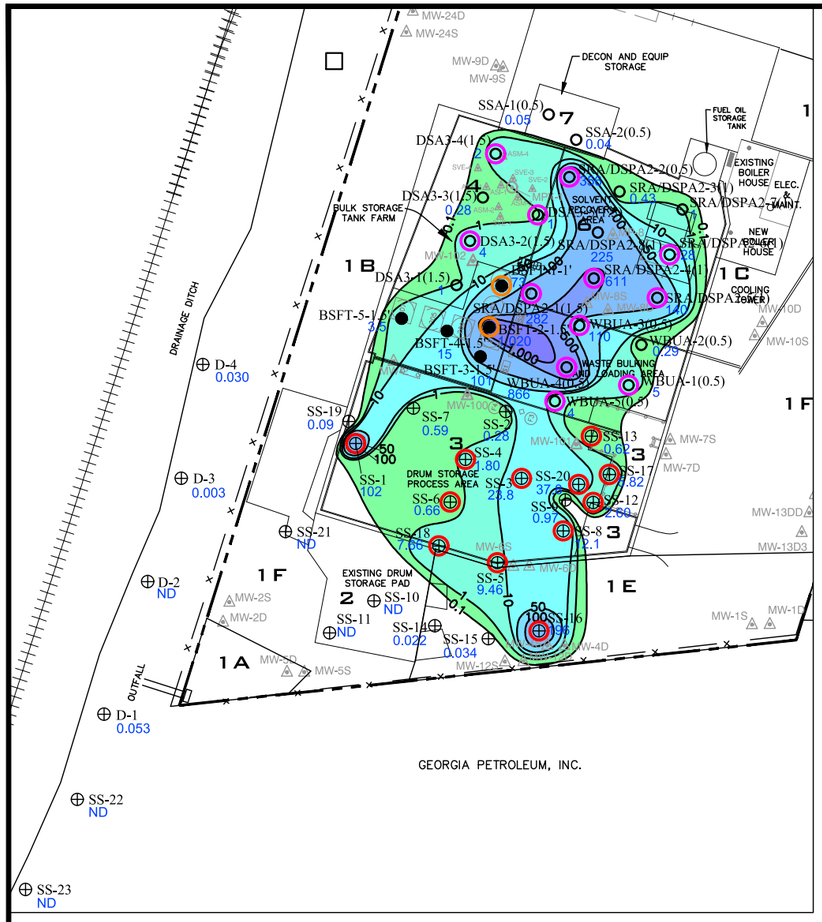
FIGURE 5

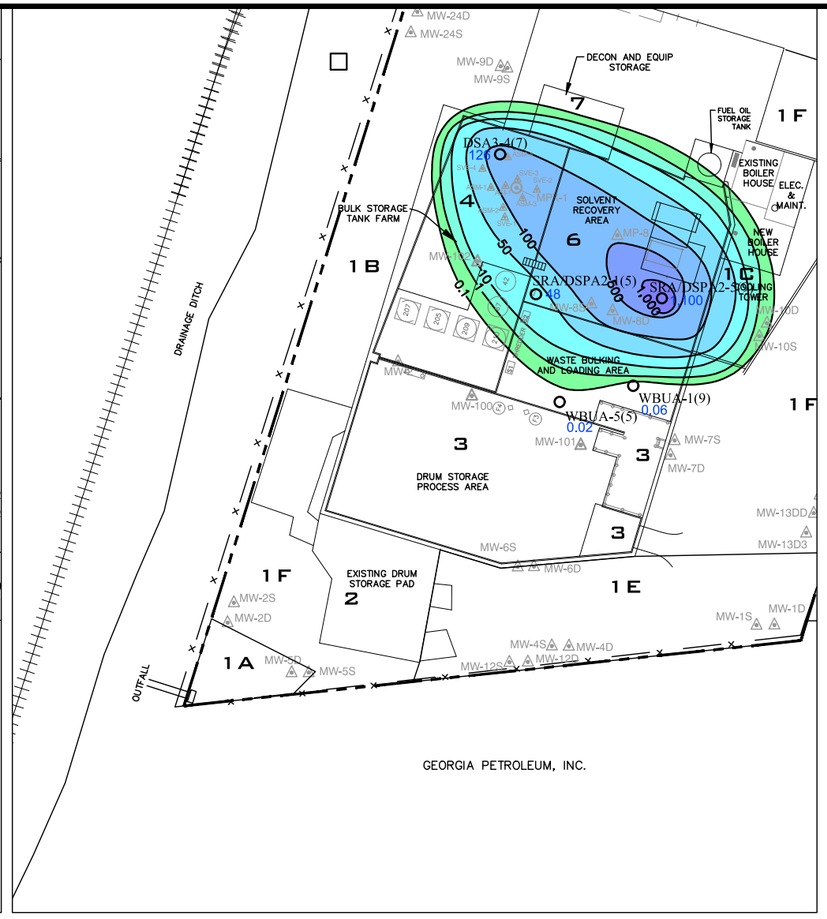
TOTAL VOCs IN SOIL - JUNE 2006
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: 1" = 60'



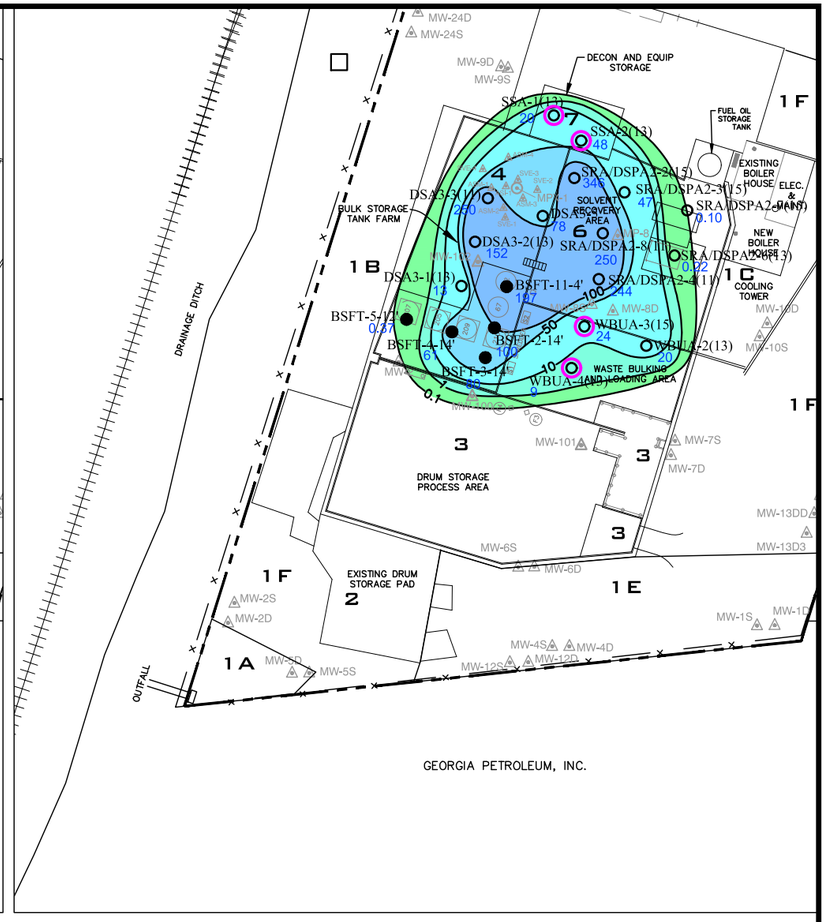
GEORGIA PETROLEUM, INC.

0-2.5 ft BGS



GEORGIA PETROLEUM, INC.

4-9 ft BGS



GEORGIA PETROLEUM, INC.

10-15 ft BGS

NOTE: WHERE DUPLICATES WERE COLLECTED THE HIGHER OF THE PRIMARY OR DUPLICATE RESULT WERE USED FOR CONTOURING

LEGEND

MW-27	SHALLOW MONITORING WELL	⊕	SURFICIAL SOIL SAMPLE (2014)
MW-5D	DEEP MONITORING WELL	●	SOIL BORING LOCATION (2015)
MPX-1	MPX SHALLOW TEST WELL	○	SOIL BORING LOCATION (2016)
SVE-1	SVE SHALLOW TEST WELL	19.1	TOTAL VOVs SOIL CONCENTRATION IN mg/kg
ASI-1	AS SHALLOW TEST WELL	ND	NO TOTAL VOCs DETECTED
○○○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)	J	RESULT IS ESTIMATED BELOW THE REPORTING LIMIT
			TOTAL VOCs CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)
○ DATA COLLECTED 2014 (JAN-MAR) ○ DATA COLLECTED 2015 (SEPT) ○ DATA COLLECTED 2016 (FEB)			CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

Ref: Cameron-Cole 2022

N

0 75

FEET

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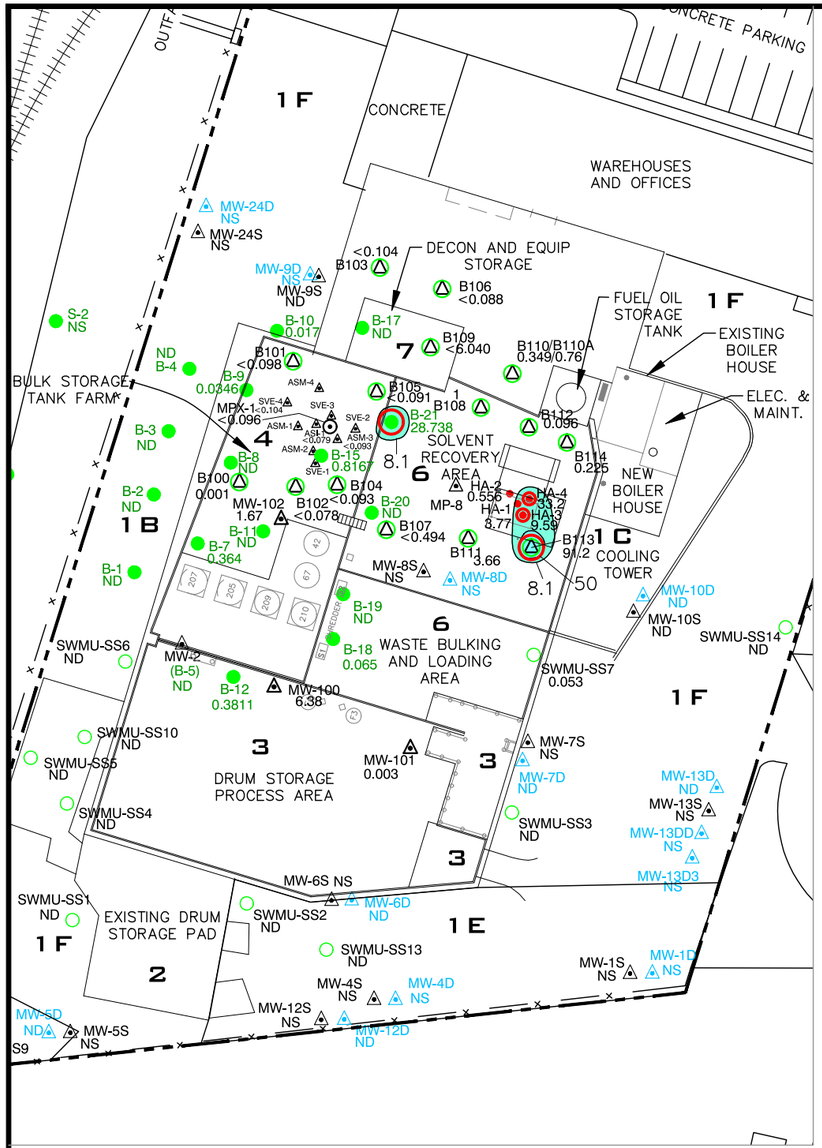
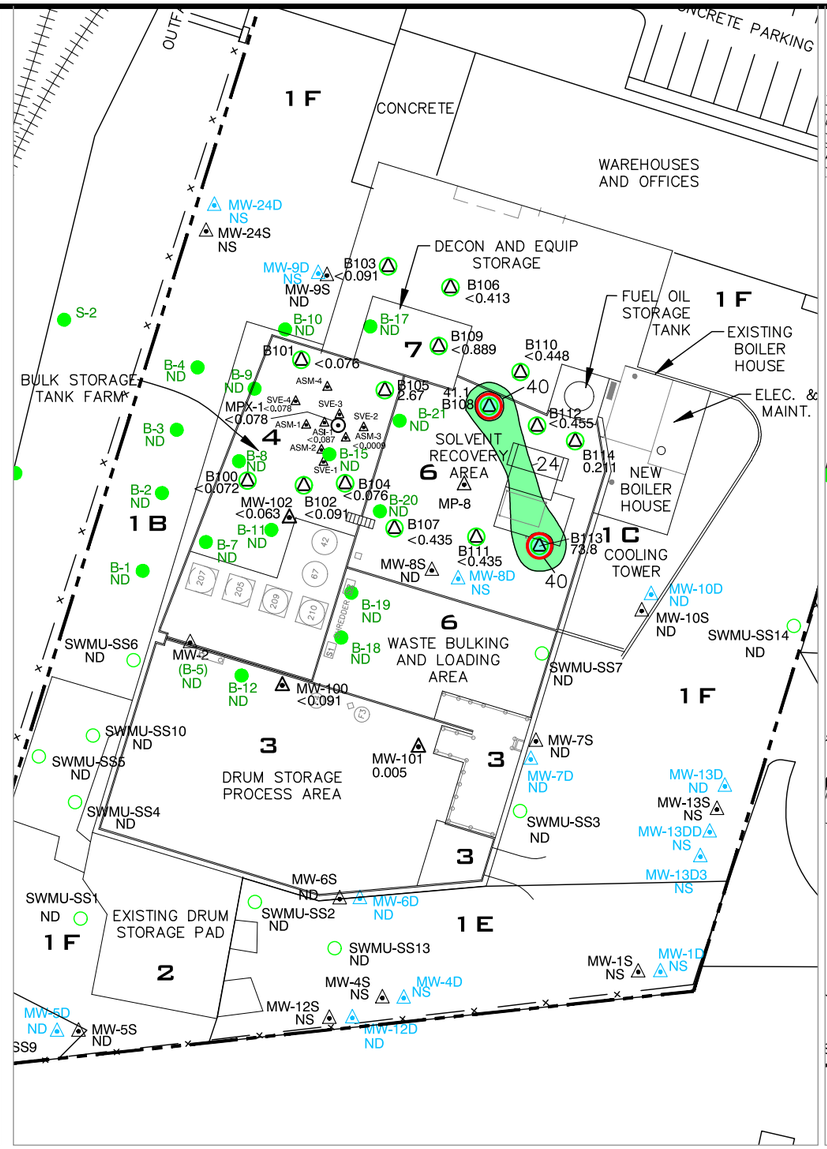
FIGURE 6

TOTAL VOCs IN SOIL (mg/Kg)
JANUARY - MARCH 2014, SEPTEMBER 2015, FEBRUARY 2016
PERMA-FIX OF SOUTH GEORGIA, INC.

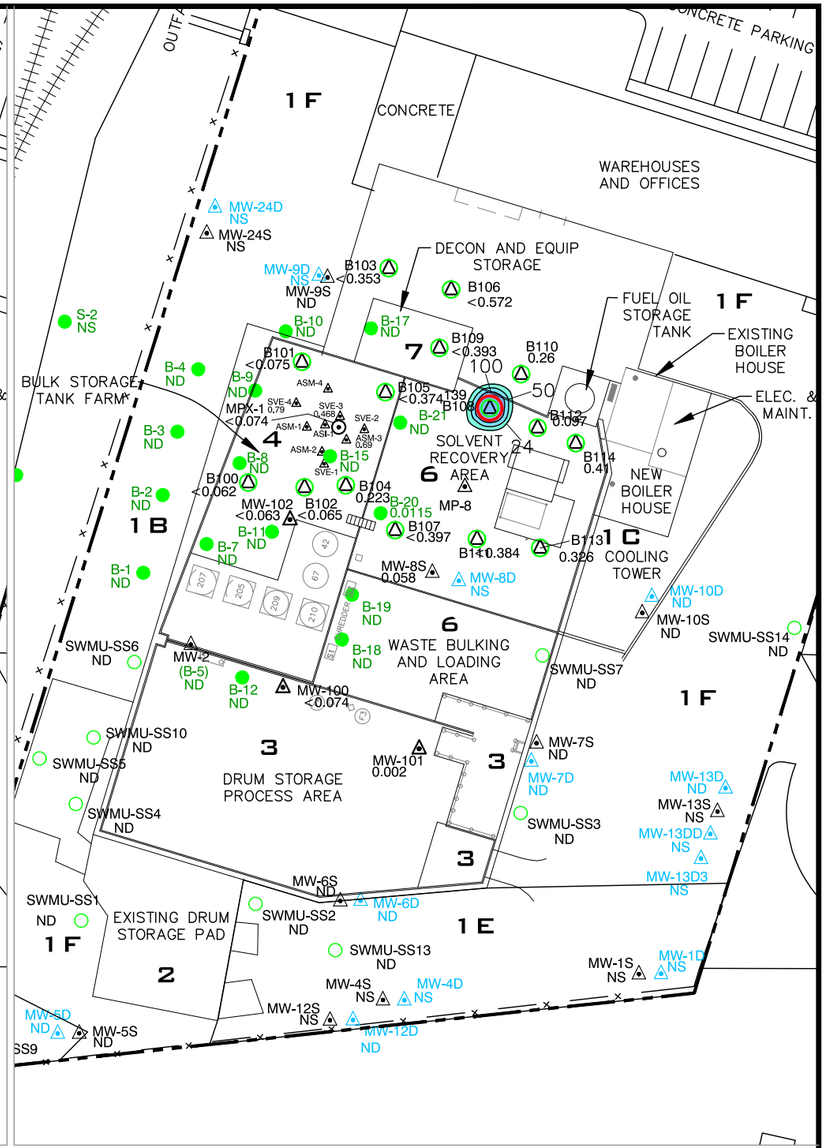
SCALE: 1" = 60'



1-2 ft BGS



5-7 ft BGS



10-12 ft BGS

LEGEND

○ SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION (MARCH, 1996)
● B-19	HISTORICAL SOIL BORING (OCT 1995, MARCH 1996, JUNE 1997)
△ B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
◬ MW-27	SHALLOW MONITORING WELL
◬ MW-5D	DEEP MONITORING WELL
⊙ MPX-1	MPX SHALLOW TEST WELL
◯	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)
◬ SVE-1	SVE SHALLOW TEST WELL
◬ ASI-1	AS SHALLOW TEST WELL
• HA-1	HAND-AUGER SOIL BORING
6.38	PCE SOIL CONCENTRATION IN mg/kg
NS	NOT SAMPLED
ND	NO PCE DETECTED
	PCE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED
	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

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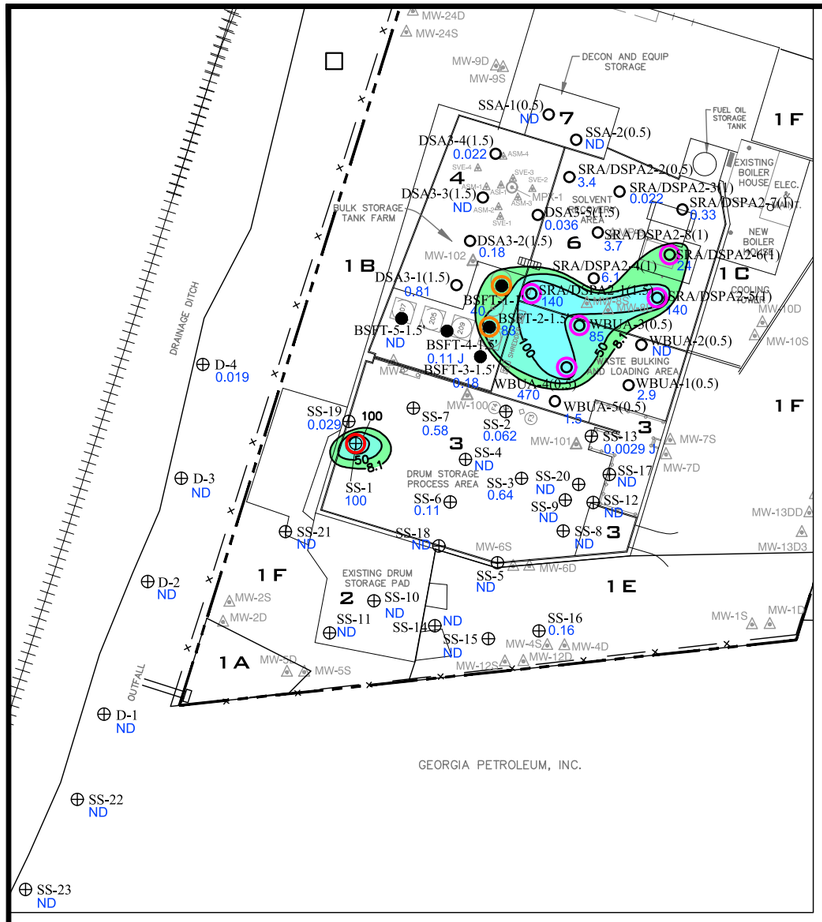
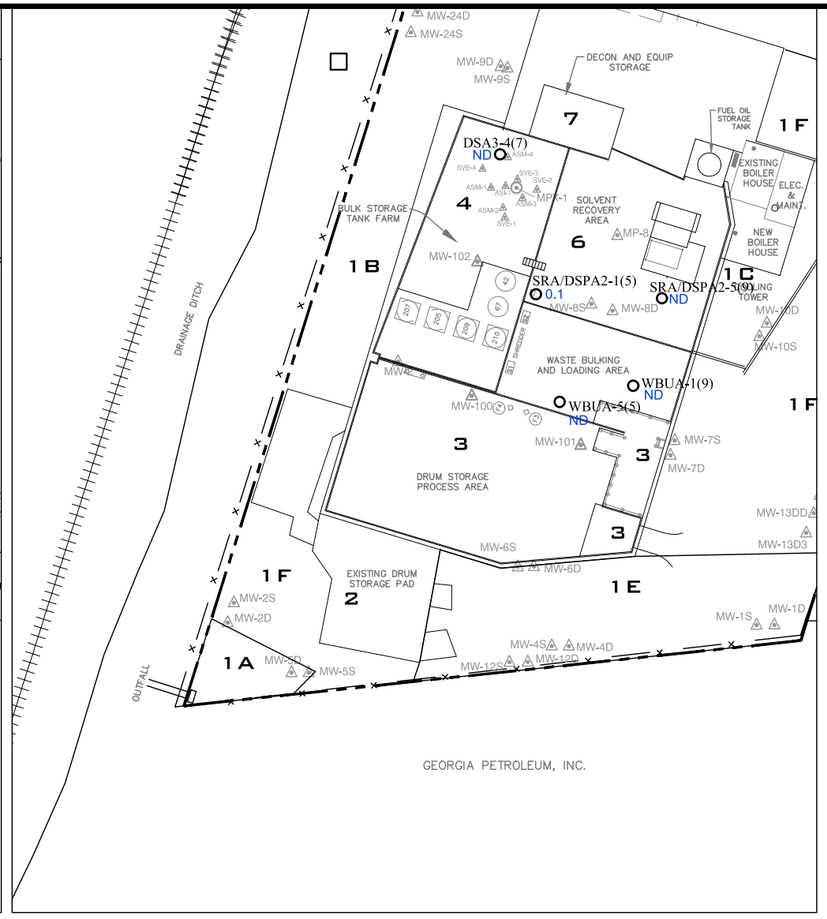
FIGURE 7

TETRACHLOROETHENE IN SOIL - JUNE 2006
PERMA-FIX OF SOUTH GEORGIA, INC.

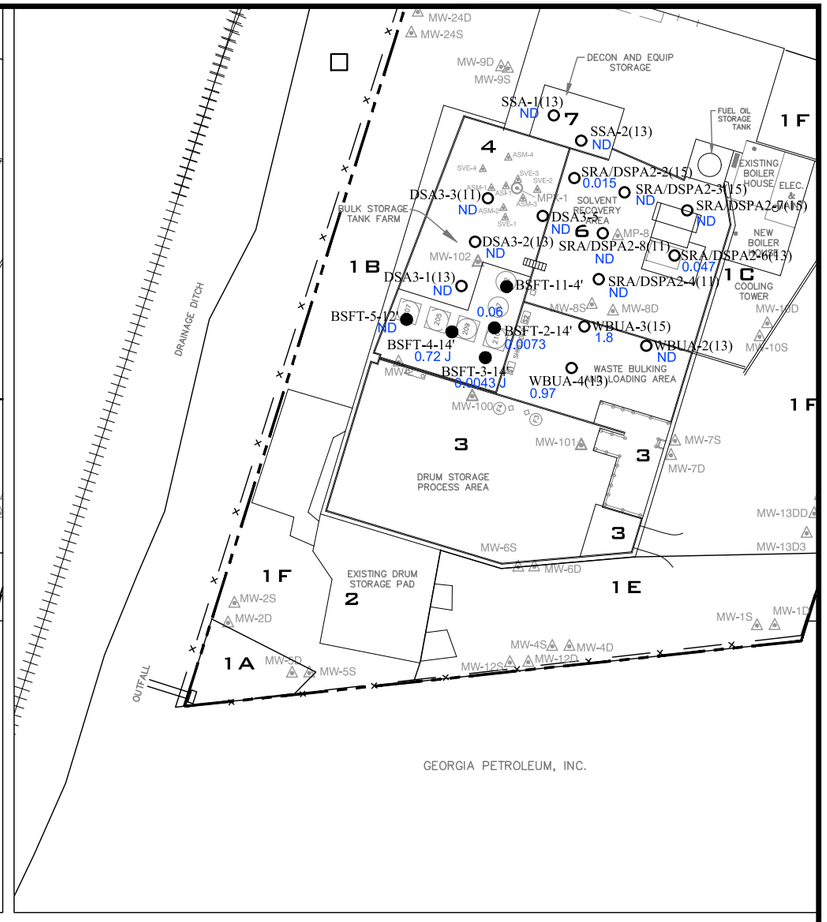
SCALE: 1" = 60'



0-2.5 ft BGS



4-9 ft BGS



10-15 ft BGS

NOTE: WHERE DUPLICATES WERE COLLECTED THE HIGHER OF THE PRIMARY OR DUPLICATE RESULT WERE USED FOR CONTOURING

LEGEND

MW-27	SHALLOW MONITORING WELL	⊕	SURFICIAL SOIL SAMPLE (2014)
MW-5D	DEEP MONITORING WELL	●	SOIL BORING LOCATION (2015)
MPX-1	MPX SHALLOW TEST WELL	○	SOIL BORING LOCATION (2016)
SVE-1	SVE SHALLOW TEST WELL	19.1	PCE SOIL CONCENTRATION IN mg/kg
ASI-1	AS SHALLOW TEST WELL	ND	NO PCE DETECTED
○○○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)	J	RESULT IS ESTIMATED BELOW THE REPORTING LIMIT
			PCE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)
			CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

○ DATA COLLECTED 2014 (JAN-MAR) ○ DATA COLLECTED 2015 (SEPT) ○ DATA COLLECTED 2016 (FEB)

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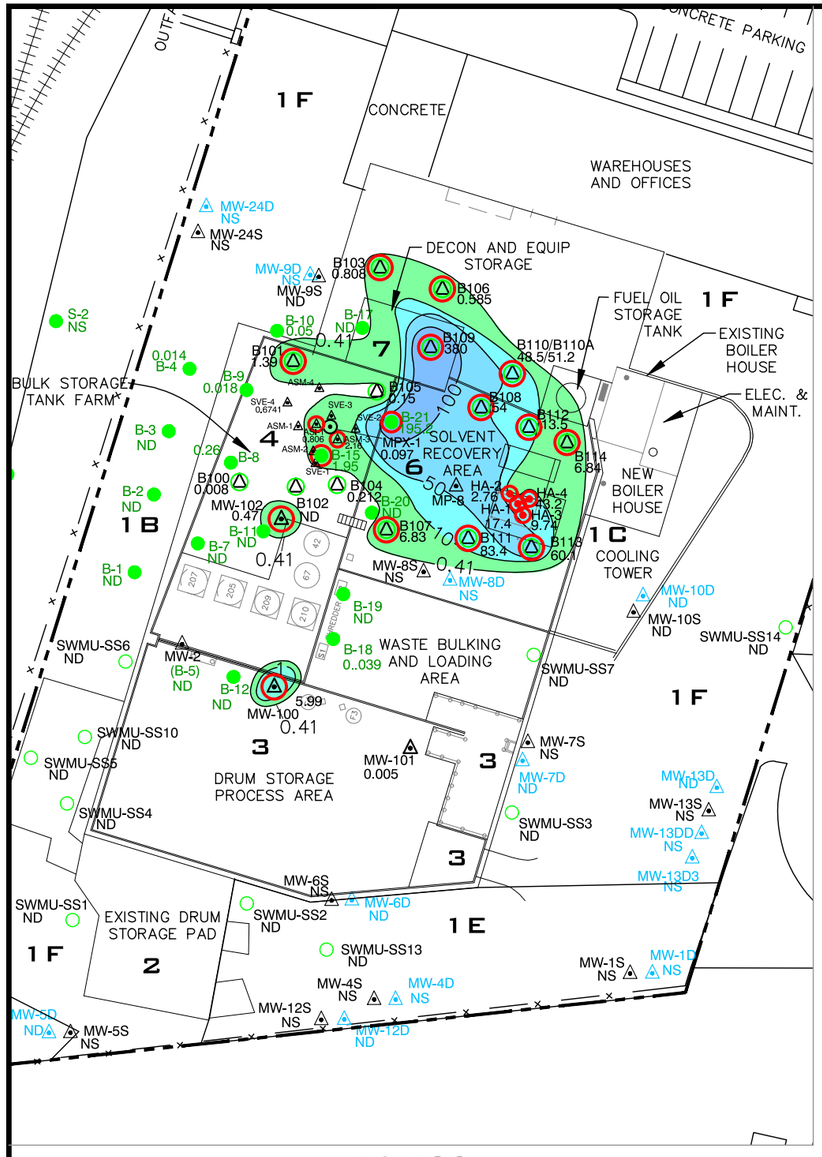
FIGURE 8

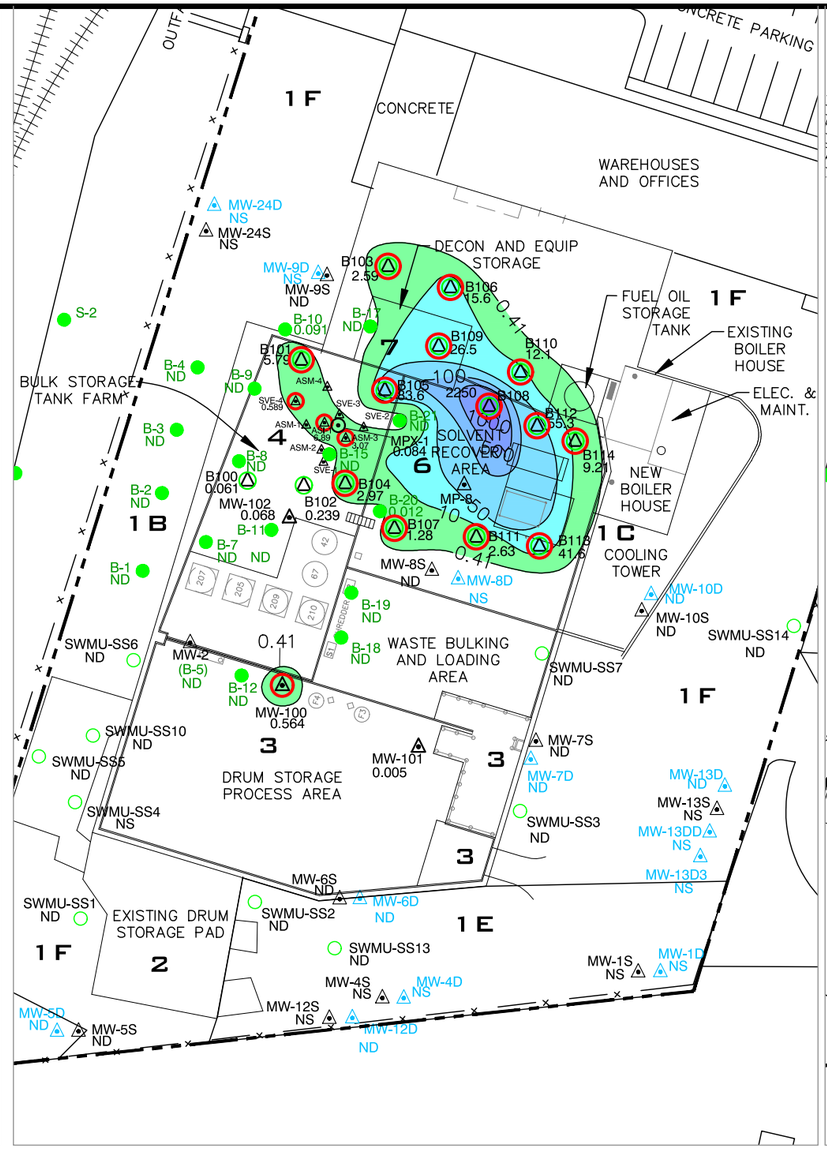
TETRACHLOROETHENE IN SOIL
JANUARY - MARCH 2014, SEPTEMBER 2015, FEBRUARY 2016
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: 1" = 60'

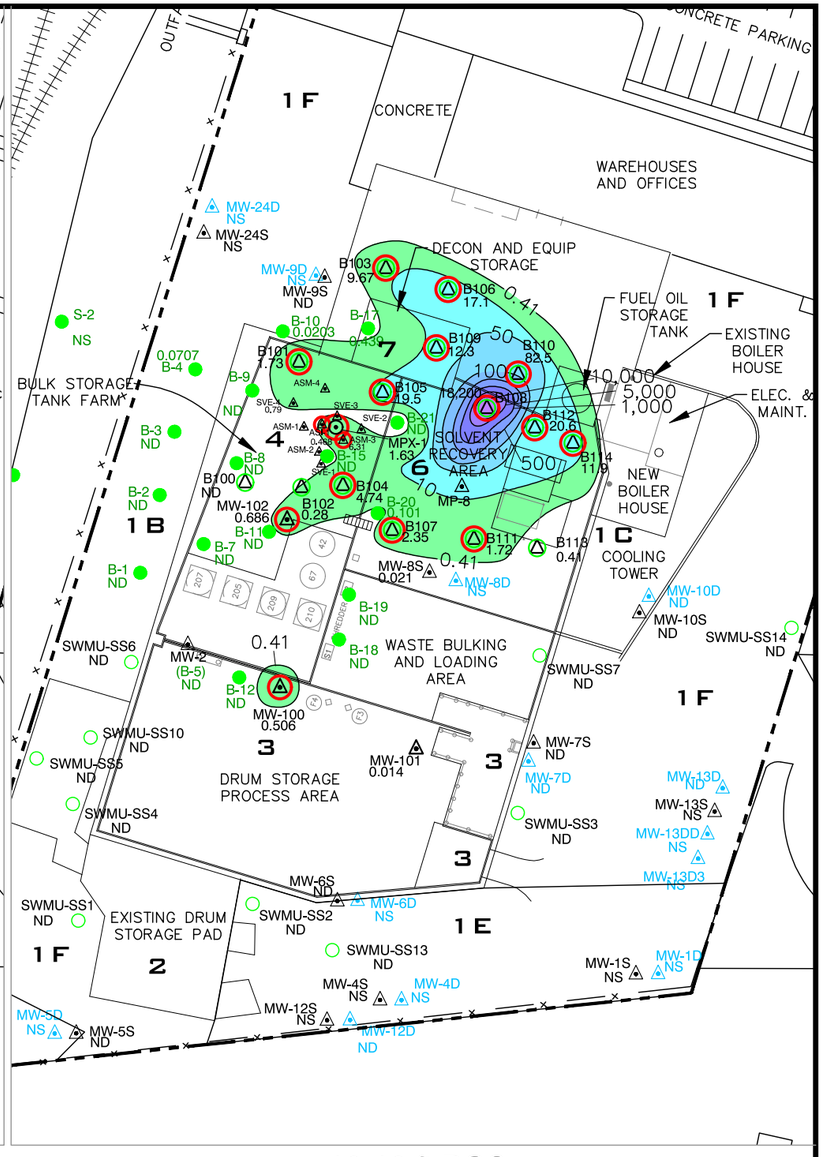
PROJECT:



1-2 ft BGS



5-7 ft BGS



10-12 ft BGS

LEGEND

○ SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION (MARCH, 1996)
● B-19	HISTORICAL SOIL BORING (OCT 1995, MARCH 1996, JUNE 1997)
△ B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
◬ MW-27	SHALLOW MONITORING WELL
◬ MW-5D	DEEP MONITORING WELL
⊙ MPX-1	MPX SHALLOW TEST WELL
○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)
◬ SVE-1	SVE SHALLOW TEST WELL
◬ ASI-1	AS SHALLOW TEST WELL
● HA-1	HAND-AUGER SOIL BORING
19.1	TCE SOIL CONCENTRATION IN mg/kg
NS	NOT SAMPLED
ND	NO TCE DETECTED
	TCE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED
	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

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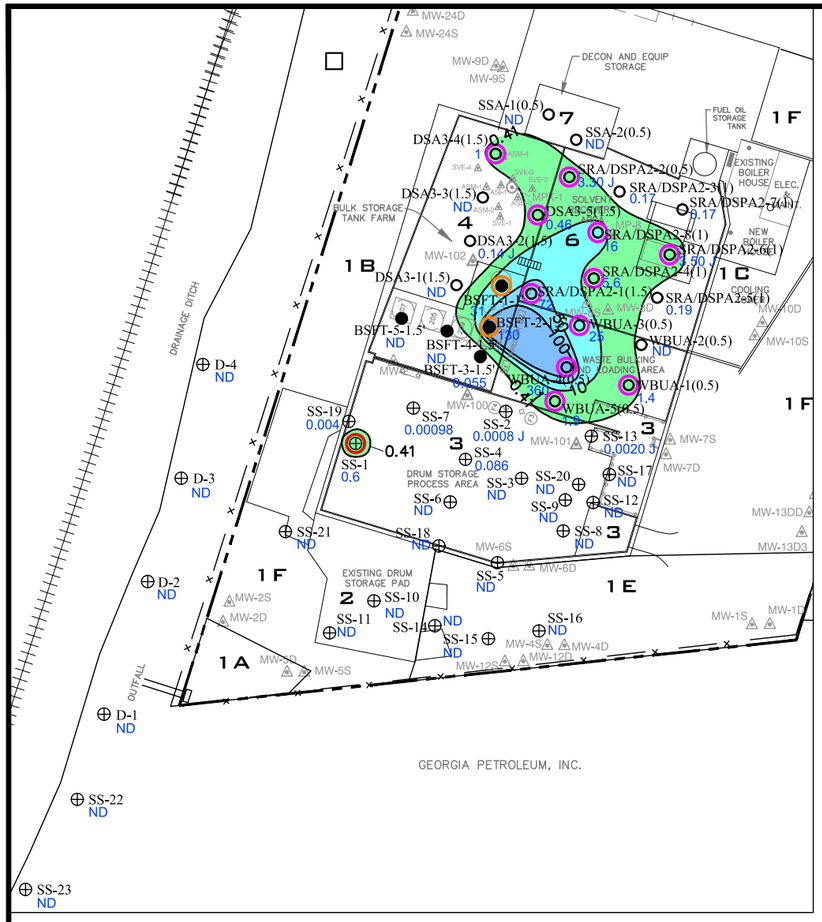
FIGURE 9

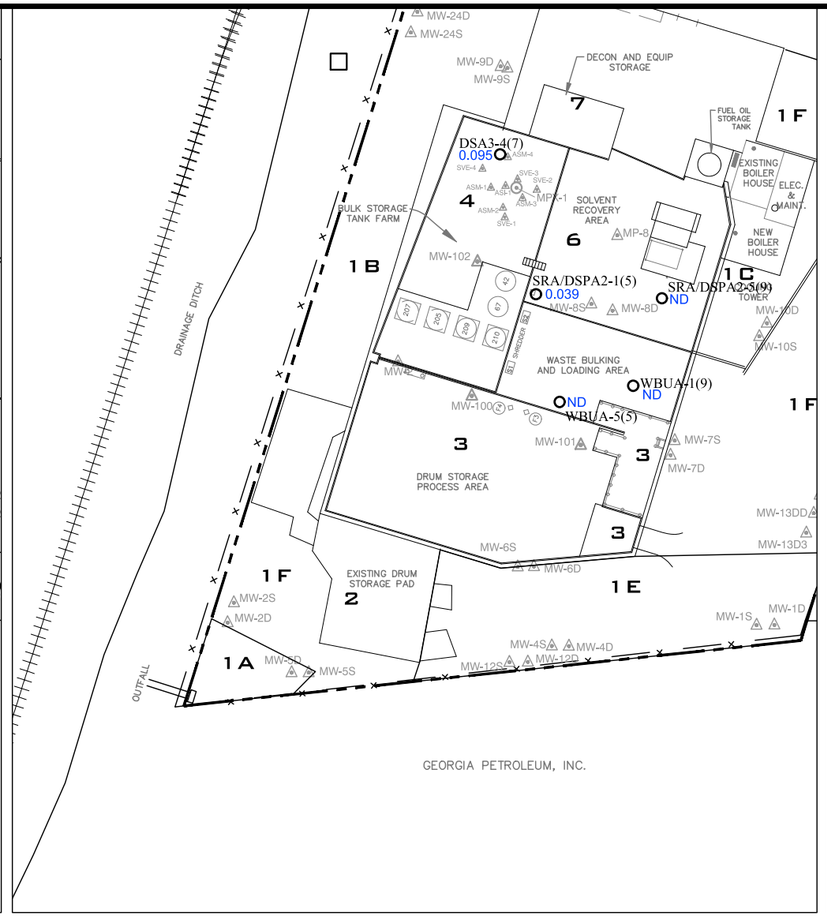
TRICHLOROETHENE IN SOIL - JUNE 2006
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: 1" = 60'



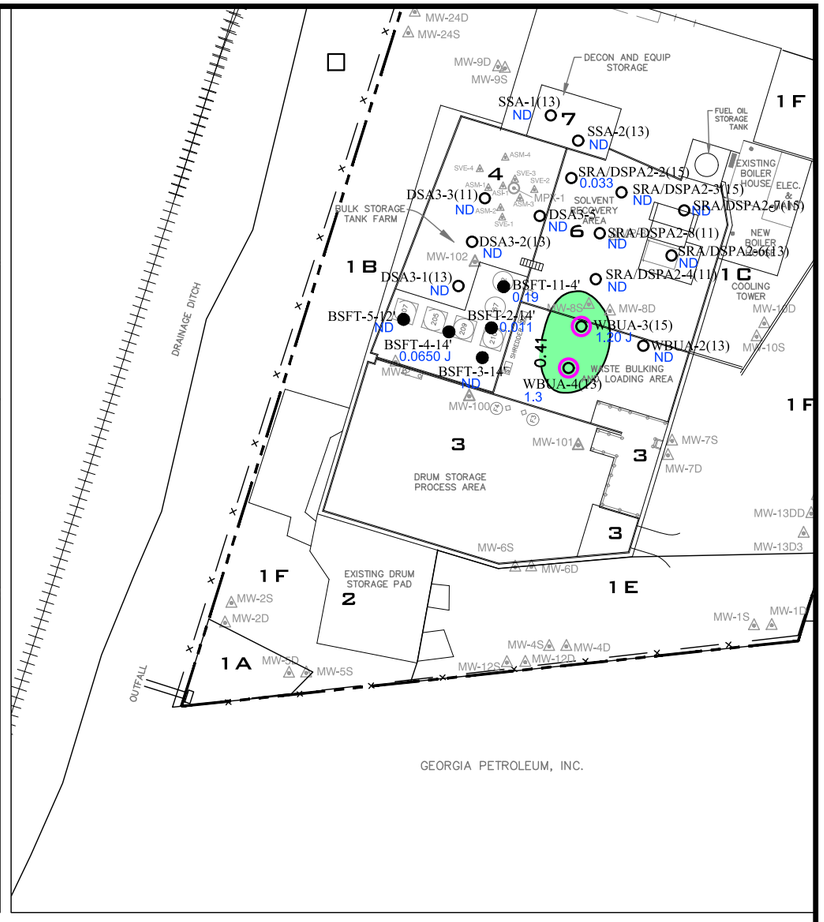
GEORGIA PETROLEUM, INC.

0-2.5 ft BGS



GEORGIA PETROLEUM, INC.

4-9 ft BGS



GEORGIA PETROLEUM, INC.

10-15 ft BGS

NOTE: WHERE DUPLICATES WERE COLLECTED THE HIGHER OF THE PRIMARY OR DUPLICATE RESULT WERE USED FOR CONTOURING

LEGEND

MW-27	SHALLOW MONITORING WELL	⊕	SURFICIAL SOIL SAMPLE (2014)
MW-5D	DEEP MONITORING WELL	●	SOIL BORING LOCATION (2015)
MPX-1	MPX SHALLOW TEST WELL	○	SOIL BORING LOCATION (2016)
SVE-1	SVE SHALLOW TEST WELL	19.1	TCE SOIL CONCENTRATION IN mg/kg
ASI-1	AS SHALLOW TEST WELL	ND	NO TCE DETECTED
○○○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)	J	RESULT IS ESTIMATED BELOW THE REPORTING LIMIT
			TCE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)

○ DATA COLLECTED 2014 (JAN-MAR) ○ DATA COLLECTED 2015 (SEPT) ○ DATA COLLECTED 2016 (FEB)

CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

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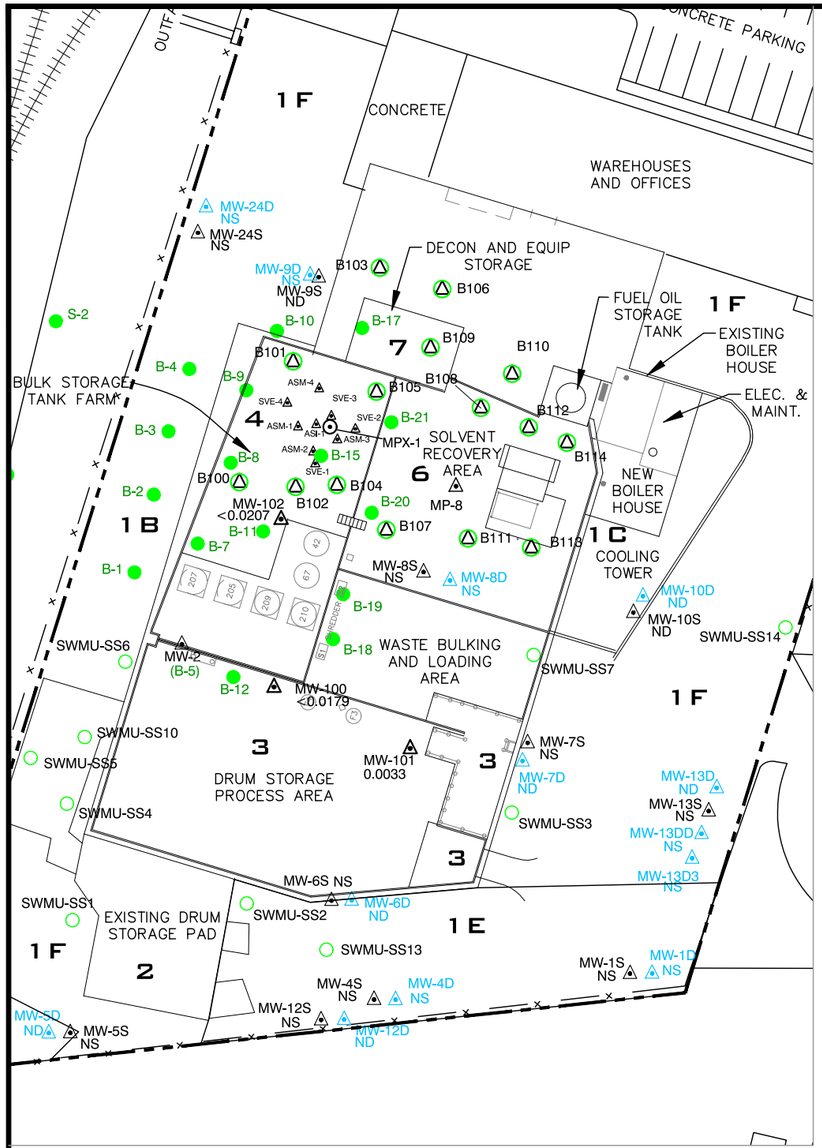
FIGURE 10

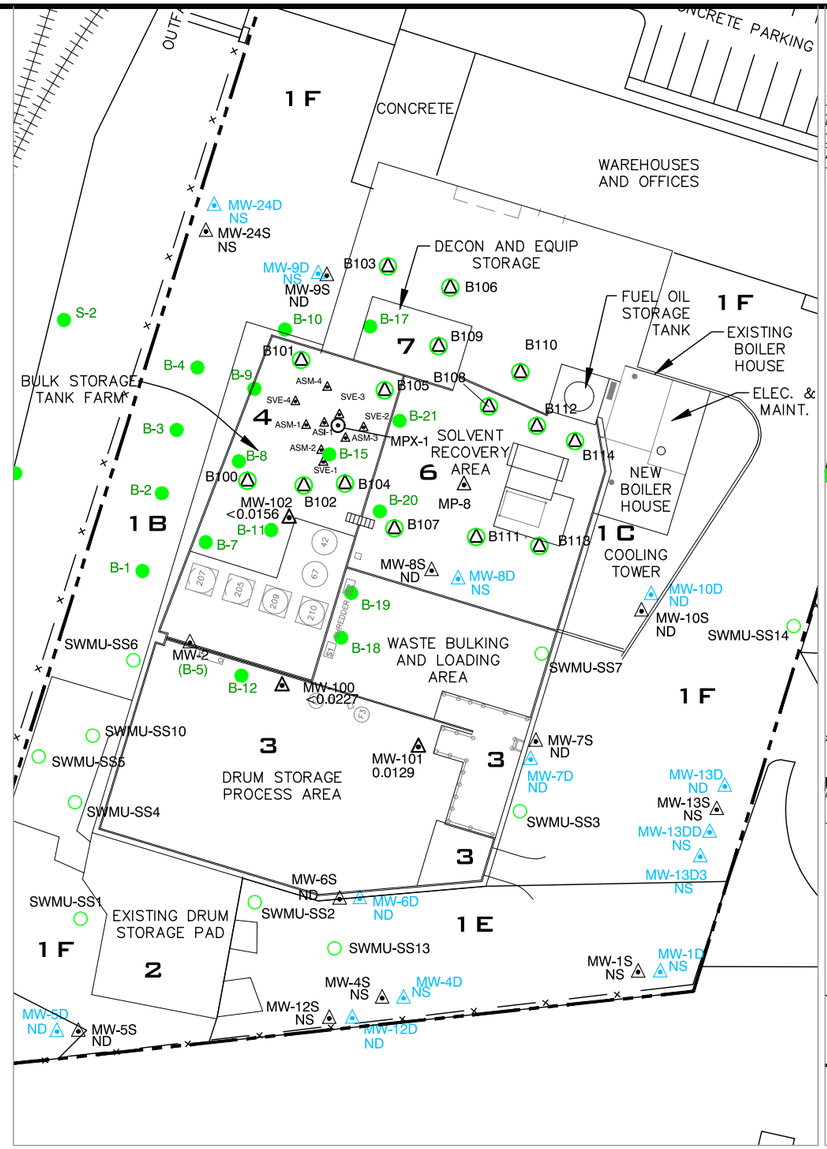
TRICHLOROETHENE IN SOIL
JANUARY - MARCH 2014, SEPTEMBER 2015, FEBRUARY 2016
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: 1" = 60'

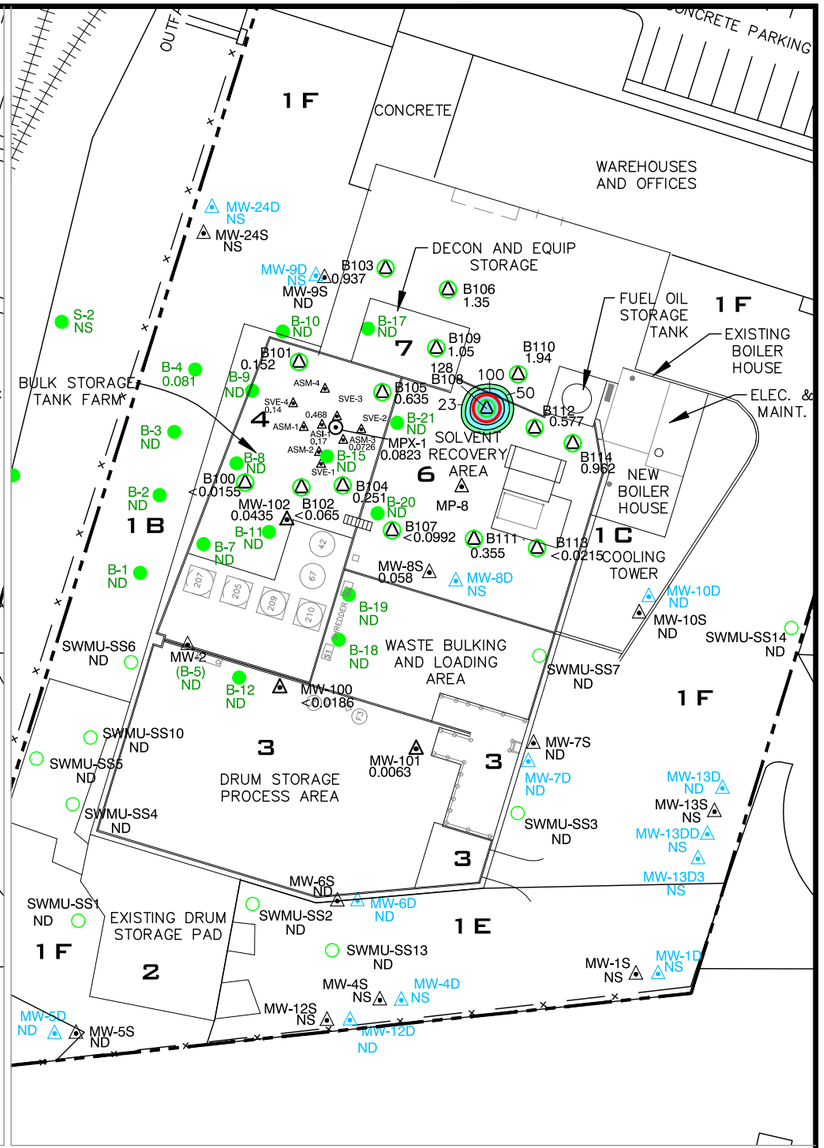
PROJECT:



1-2 ft BGS



5-7 ft BGS



10-12 ft BGS

LEGEND

SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION (MARCH, 1996)
B-19	HISTORICAL SOIL BORING (OCT 1995, MARCH 1996, JUNE 1997)
B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
MW-27	SHALLOW MONITORING WELL
MW-5D	DEEP MONITORING WELL
MPX-1	MPX SHALLOW TEST WELL
	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)
SVE-1	SVE SHALLOW TEST WELL
ASI-1	AS SHALLOW TEST WELL
HA-1	HAND-AUGER SOIL BORING
6.38	1,1-DCE SOIL CONCENTRATION IN mg/kg
NS	NOT SAMPLED
ND	NO 1,1-DCE DETECTED
	1,1-DCE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED
	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

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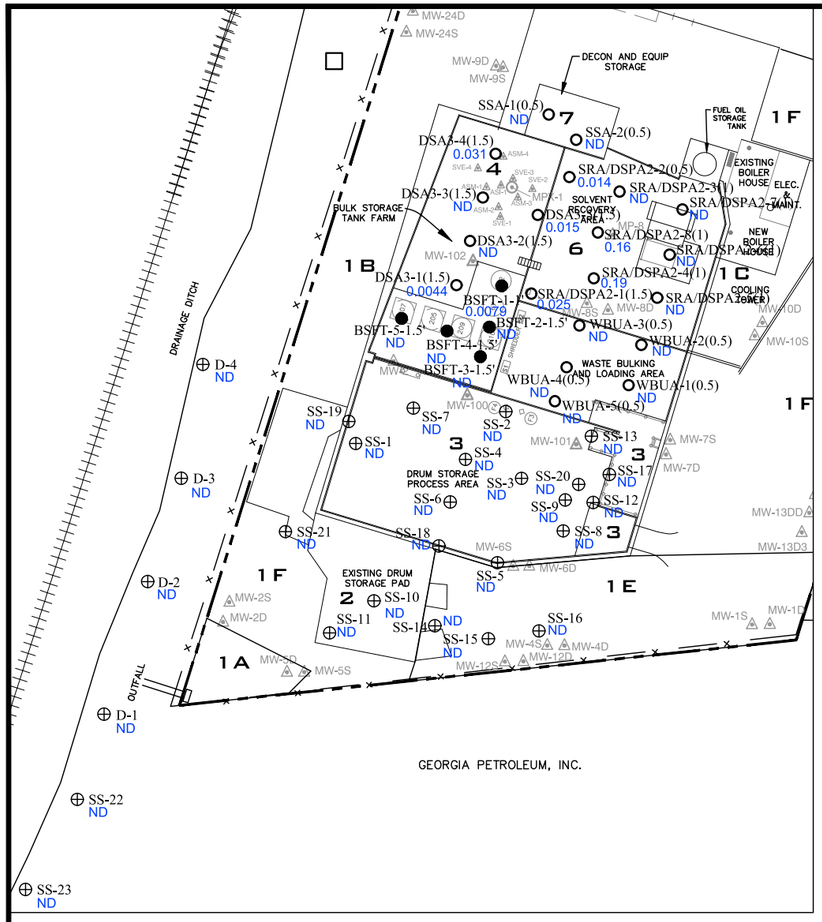
FIGURE 11

1,1-DICHLOROETHENE IN SOIL - JUNE 2006
PERMA-FIX OF SOUTH GEORGIA, INC.

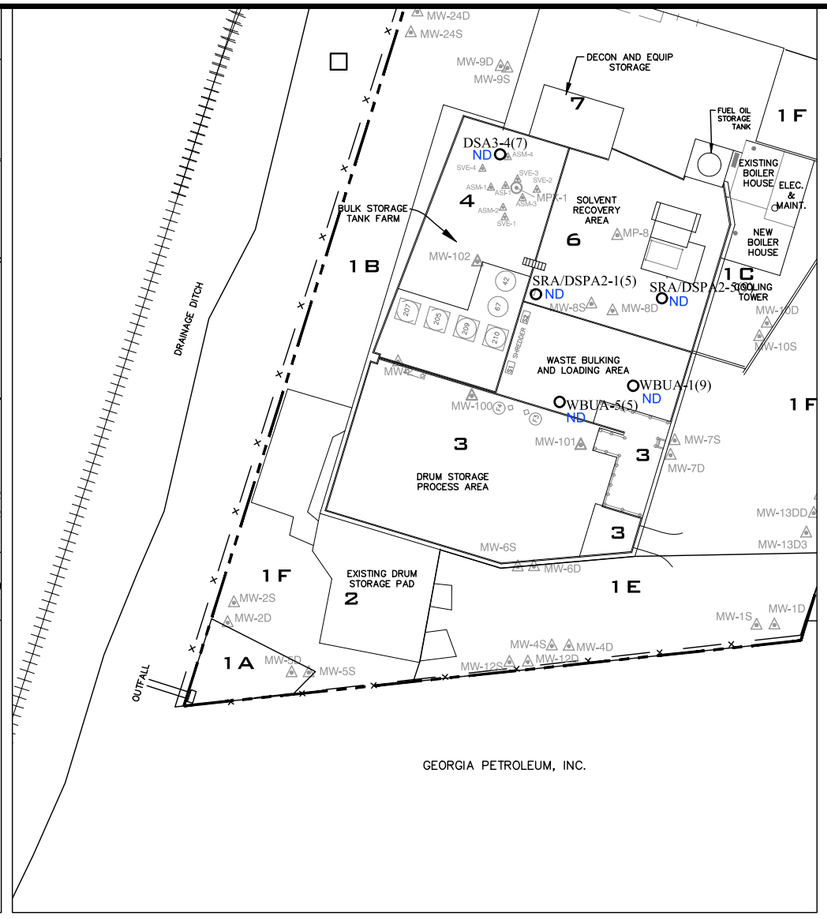
SCALE: 1" = 60'

PROJECT:



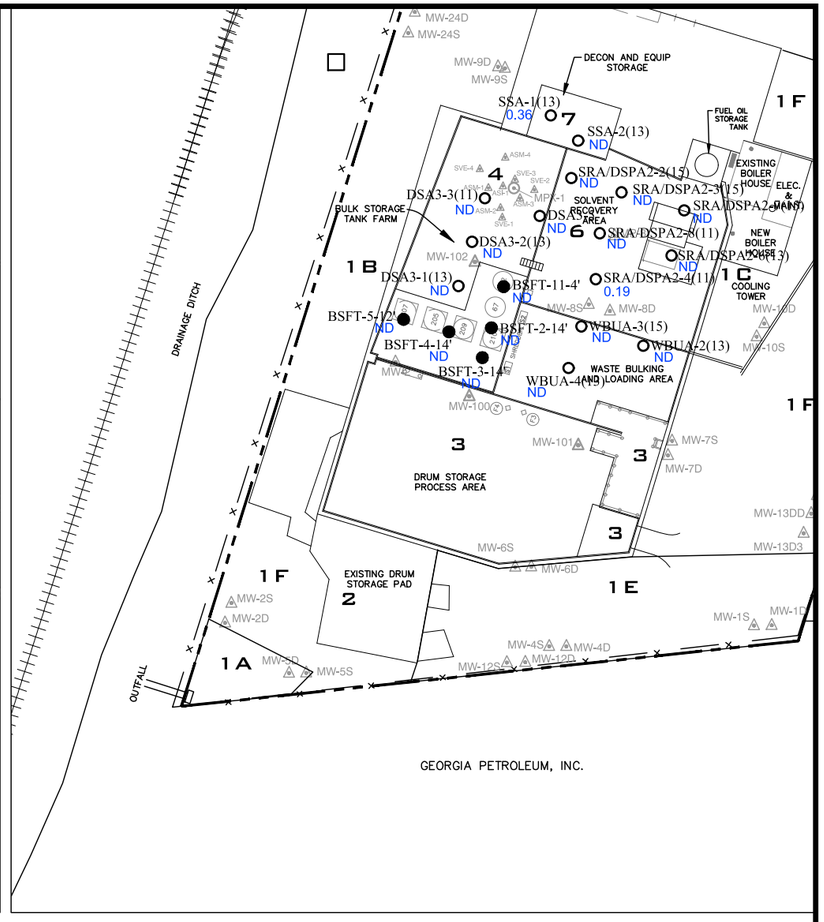
GEORGIA PETROLEUM, INC.

0-2.5 ft BGS



GEORGIA PETROLEUM, INC.

4-9 ft BGS



GEORGIA PETROLEUM, INC.

10-15 ft BGS

NOTE: WHERE DUPLICATES WERE COLLECTED THE HIGHER OF THE PRIMARY OR DUPLICATE RESULT WERE USED FOR CONTOURING

LEGEND

MW-27	SHALLOW MONITORING WELL	⊕	SURFICIAL SOIL SAMPLE (2014)
MW-5D	DEEP MONITORING WELL	●	SOIL BORING LOCATION (2015)
MPX-1	MPX SHALLOW TEST WELL	○	SOIL BORING LOCATION (2016)
SVE-1	SVE SHALLOW TEST WELL	19.1	DCE SOIL CONCENTRATION IN mg/kg
ASI-1	AS SHALLOW TEST WELL	ND	NO 1,1-DCE DETECTED
○○○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)	J	RESULT IS ESTIMATED BELOW THE REPORTING LIMIT
			1,1-DCE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)

○ DATA COLLECTED 2014 (JAN-MAR) ○ DATA COLLECTED 2015 (SEPT) ○ DATA COLLECTED 2016 (FEB)

CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

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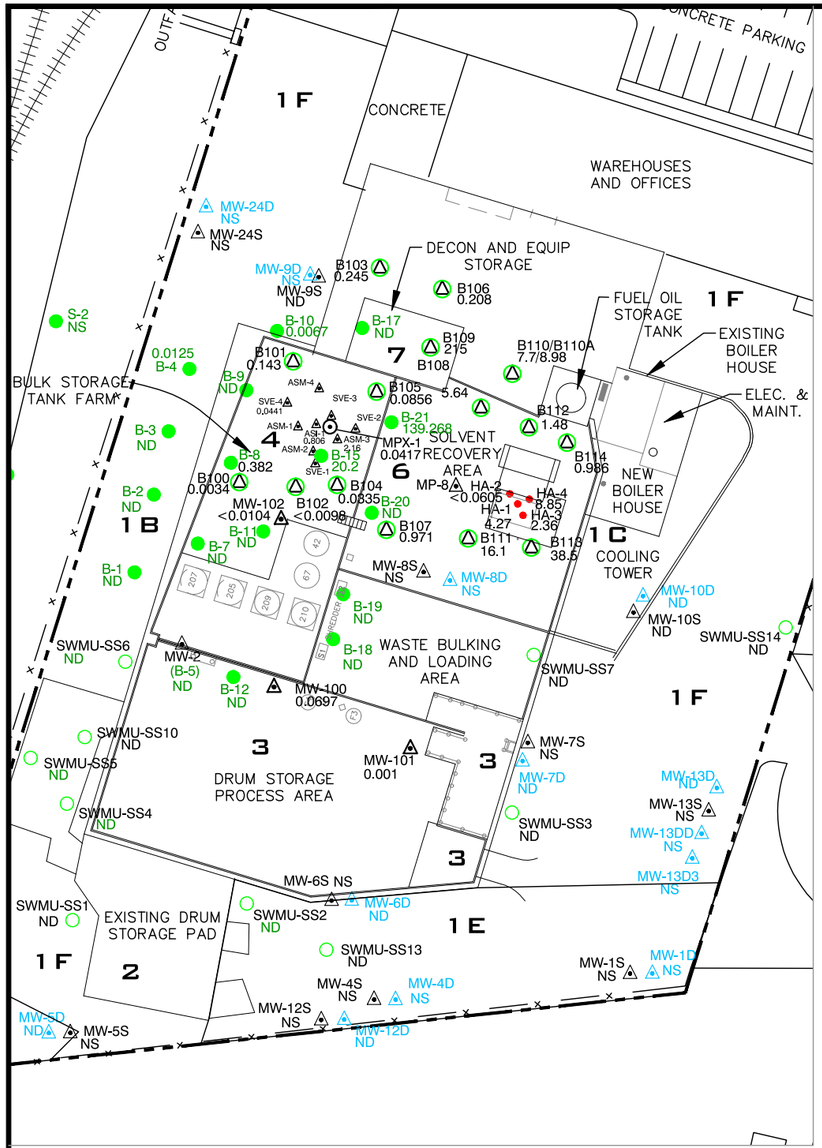
FIGURE 12

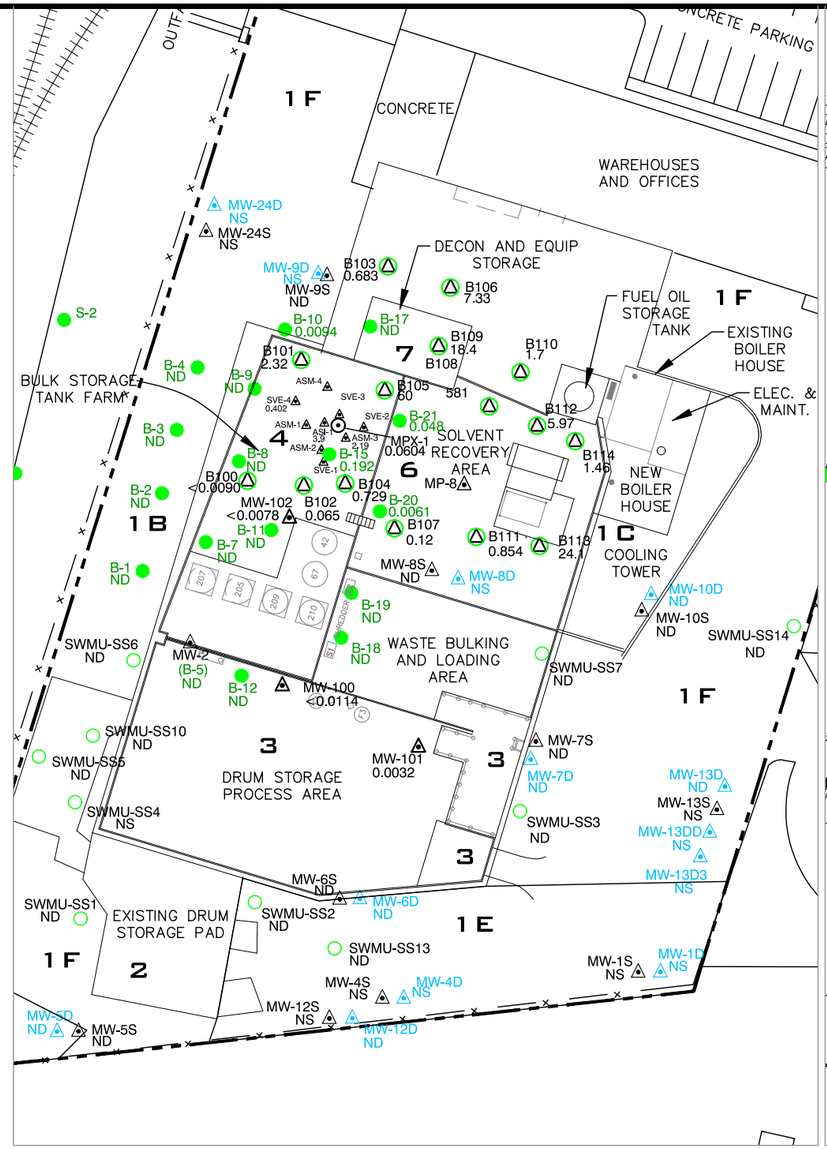
1,1-DICHLOROETHENE IN SOIL
JANUARY - MARCH 2014, SEPTEMBER 2015, FEBRUARY 2016
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: 1" = 60'

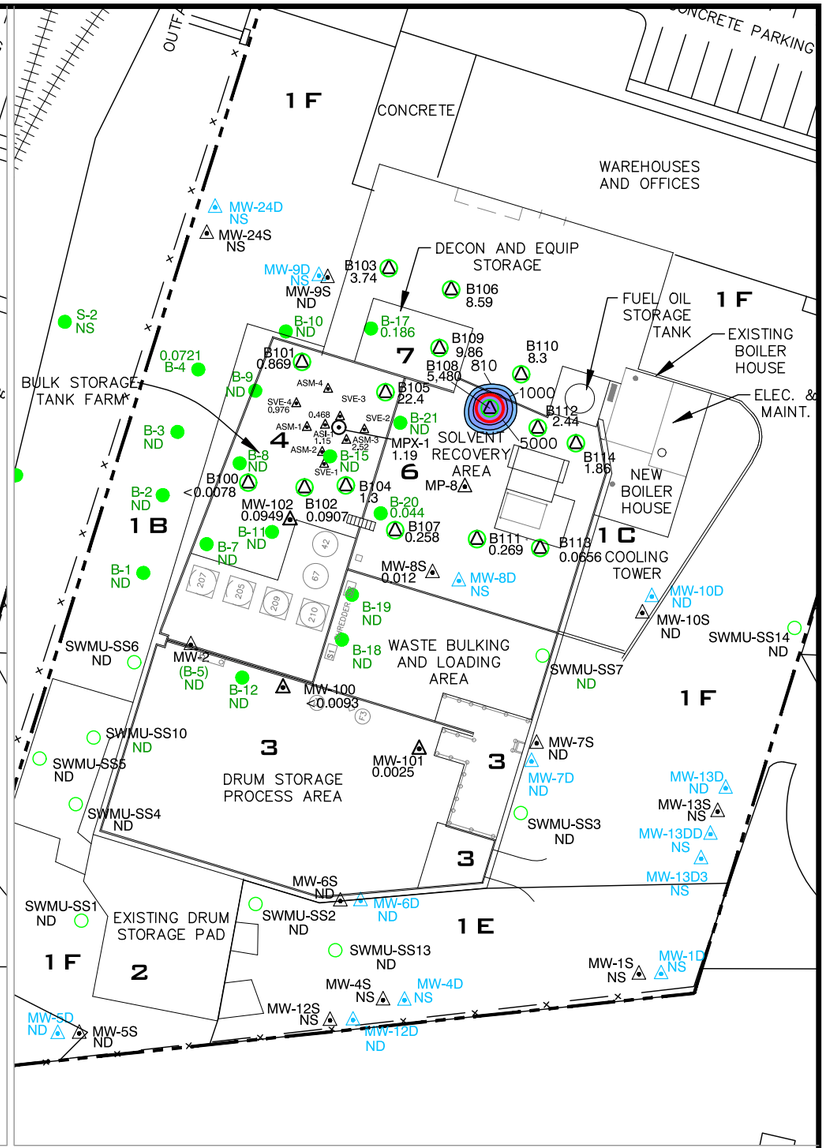
PROJECT:



1-2 ft BGS



5-7 ft BGS



10-12 ft BGS

LEGEND

SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION (MARCH, 1996)
B-19	HISTORICAL SOIL BORING (OCT 1995, MARCH 1996, JUNE 1997)
B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
MW-27	SHALLOW MONITORING WELL
MW-5D	DEEP MONITORING WELL
MPX-1	MPX SHALLOW TEST WELL
	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)
SVE-1	SVE SHALLOW TEST WELL
ASI-1	AS SHALLOW TEST WELL
HA-1	HAND-AUGER SOIL BORING
19.1	1,1,1-TCA SOIL CONCENTRATION IN mg/kg
NS	NOT SAMPLED
ND	NO 1,1,1-TCA DETECTED
	1,1,1-TCA CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED
	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

Ref: Cameron-Cole 2022

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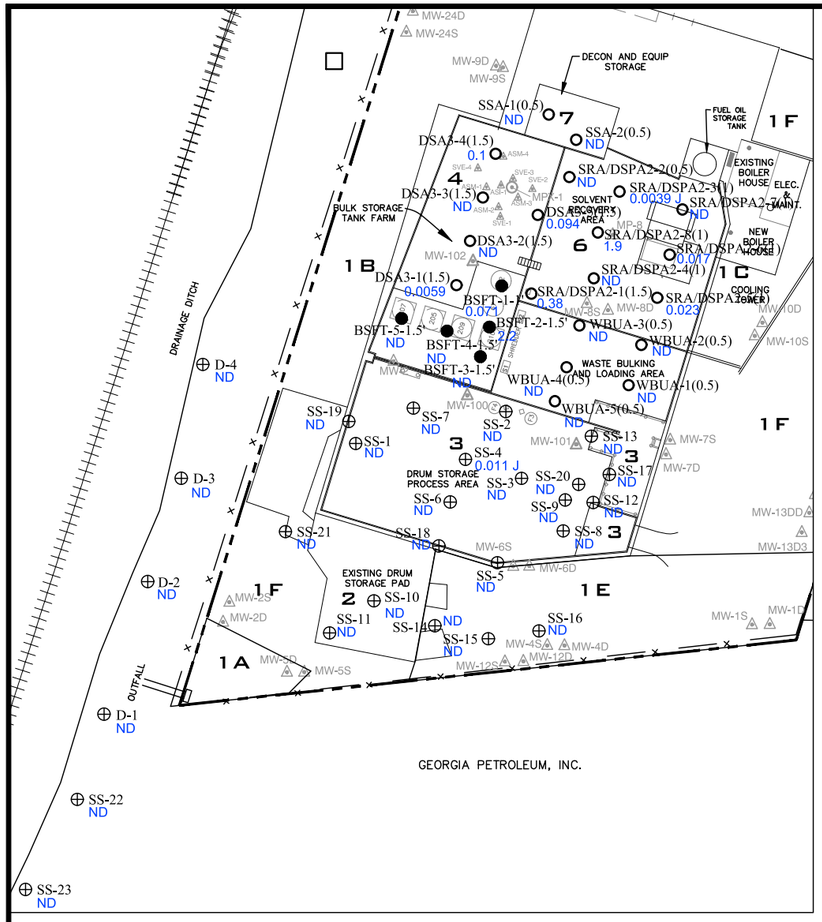
FIGURE 13

1,1,1-TRICHLOROETHANE IN SOIL - JUNE 2006
PERMA-FIX OF SOUTH GEORGIA, INC.

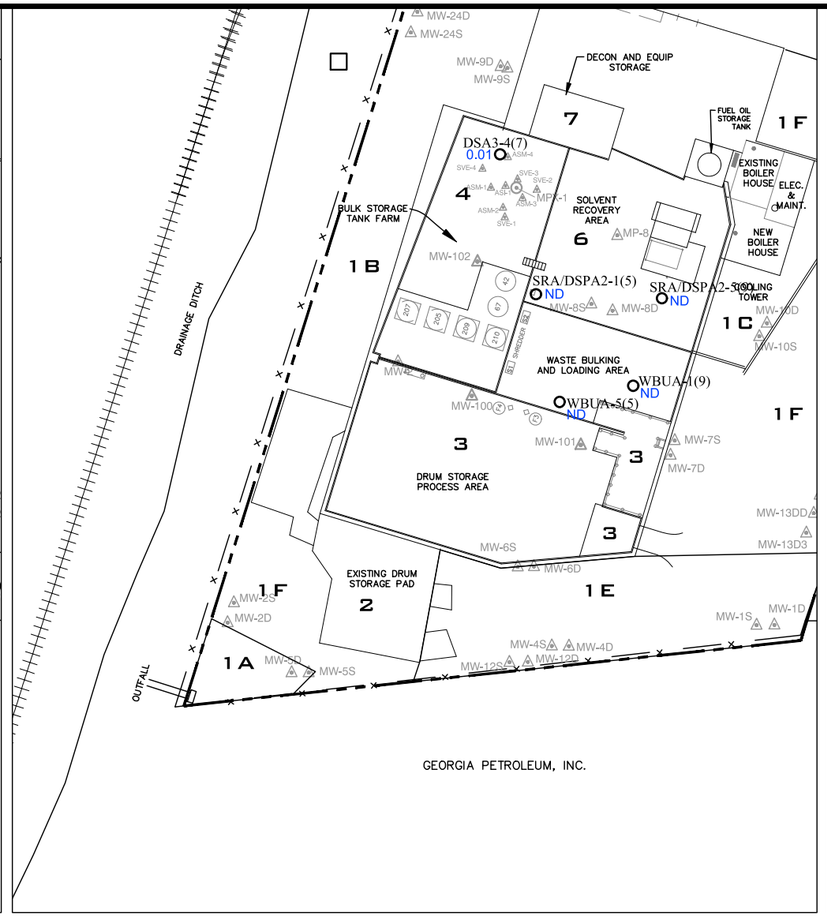
SCALE: 1" = 60'

PROJECT:



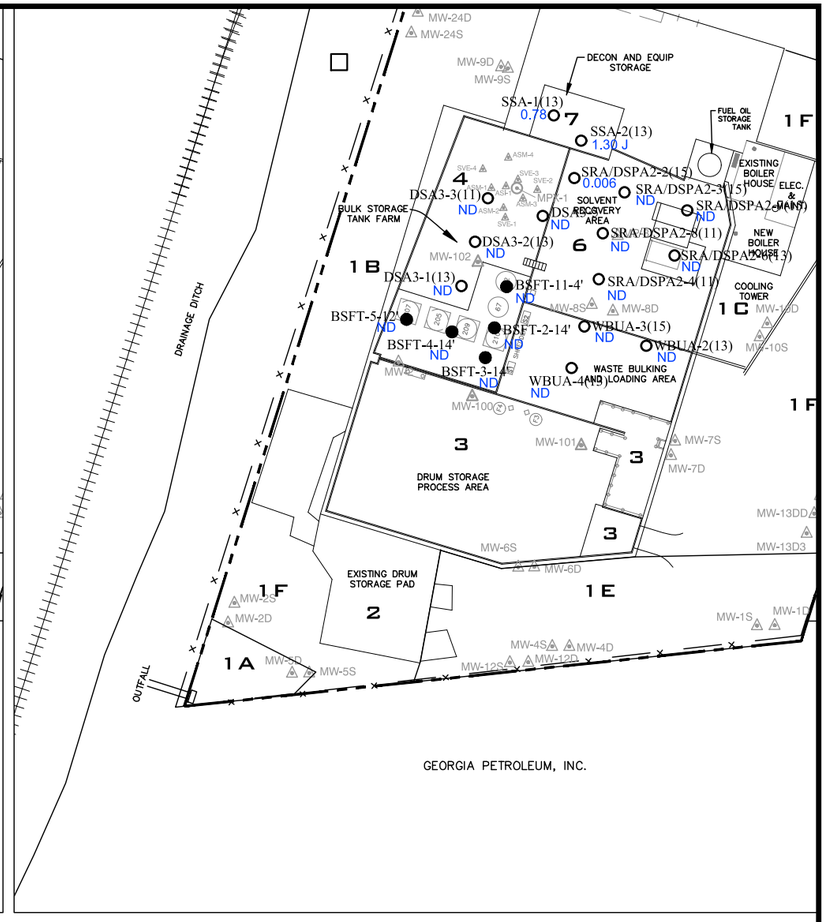
GEORGIA PETROLEUM, INC.

0-2.5 ft BGS



GEORGIA PETROLEUM, INC.

4-9 ft BGS



GEORGIA PETROLEUM, INC.

10-15 ft BGS

NOTE: WHERE DUPLICATES WERE COLLECTED THE HIGHER OF THE PRIMARY OR DUPLICATE RESULT WERE USED FOR CONTOURING

LEGEND

MW-27	SHALLOW MONITORING WELL	⊕	SURFICIAL SOIL SAMPLE (2014)
MW-5D	DEEP MONITORING WELL	●	SOIL BORING LOCATION (2015)
MPX-1	MPX SHALLOW TEST WELL	○	SOIL BORING LOCATION (2016)
SVE-1	SVE SHALLOW TEST WELL	19.1	1,1,1-TCA SOIL CONCENTRATION IN mg/kg
ASI-1	AS SHALLOW TEST WELL	ND	NO 1,1,1-TCA DETECTED
○○○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)	J	RESULT IS ESTIMATED BELOW THE REPORTING LIMIT
			1,1,1-TCA CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)

○ DATA COLLECTED 2014 (JAN-MAR) ○ DATA COLLECTED 2015 (SEPT) ○ DATA COLLECTED 2016 (FEB)

CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

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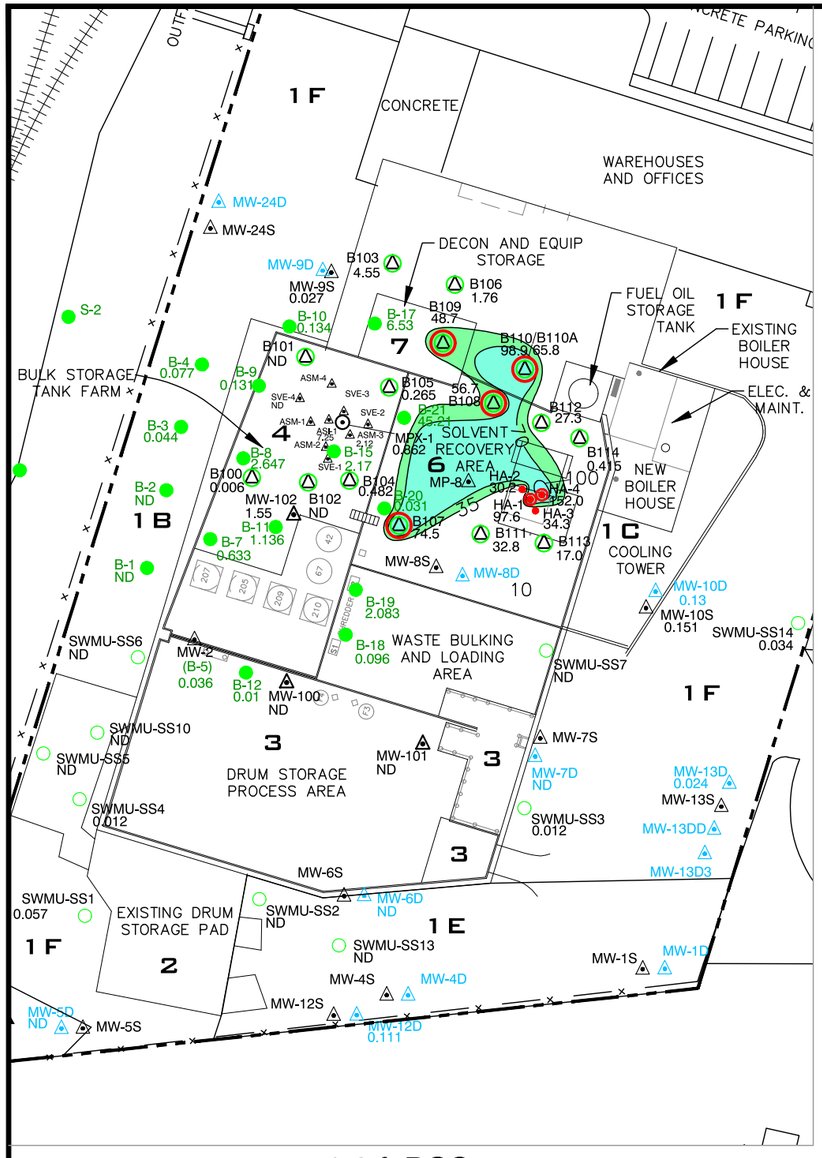
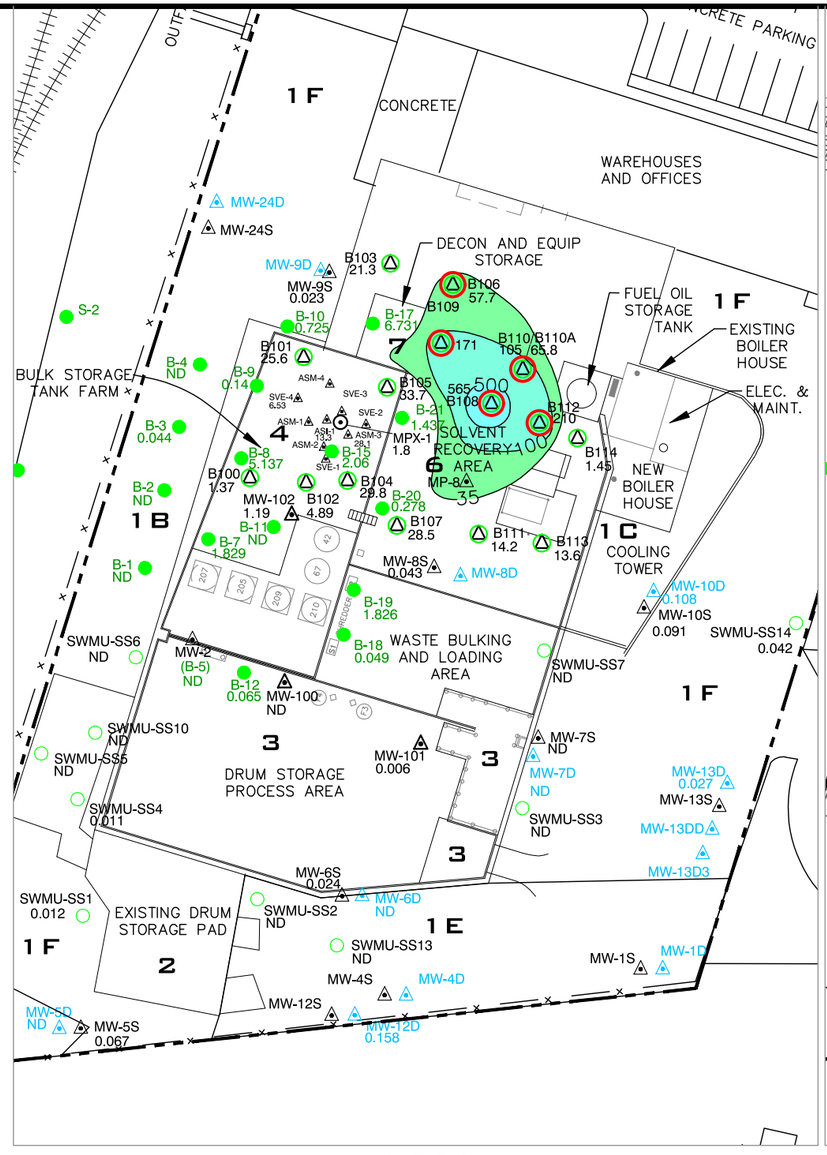
FIGURE 14

1,1,1-TRICHLOROETHANE IN SOIL
JANUARY - MARCH 2014, SEPTEMBER 2015, FEBRUARY 2016
PERMA-FIX OF SOUTH GEORGIA, INC.

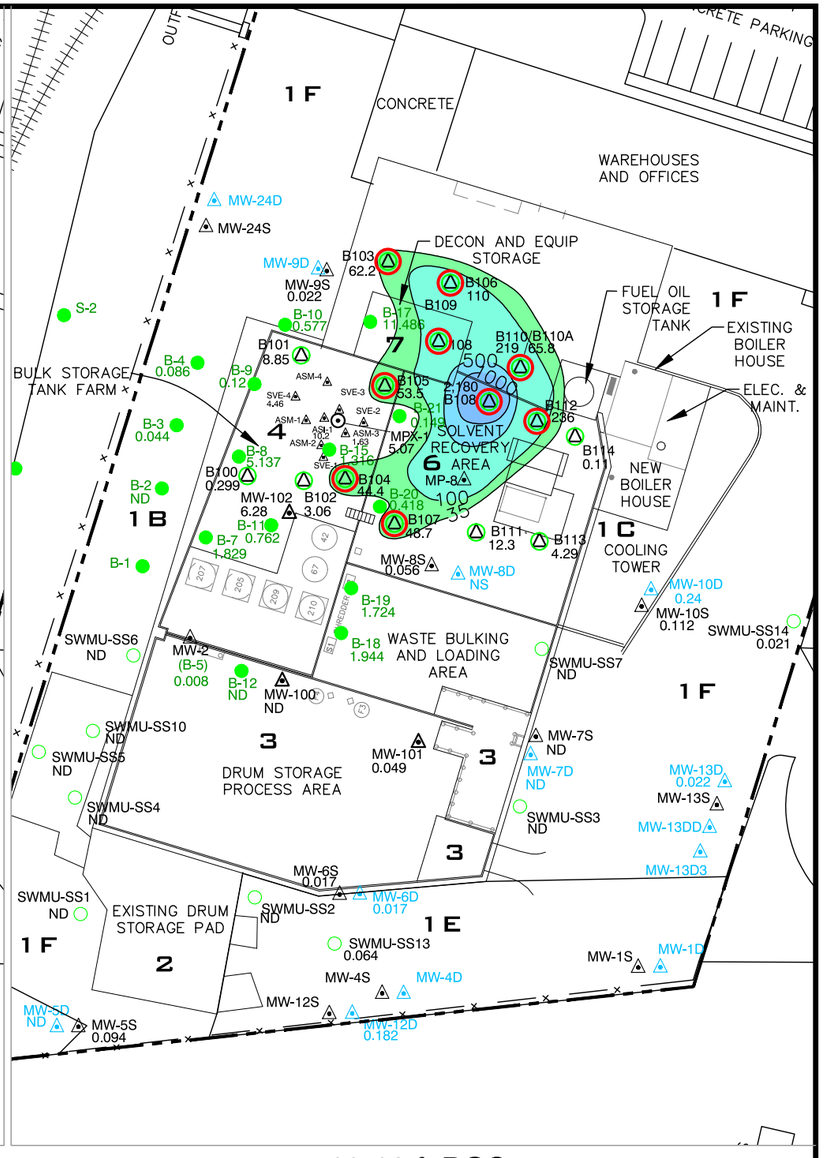
SCALE: 1" = 60'



1-2 ft BGS



5-7 ft BGS



10-12 ft BGS

LEGEND

○ SWMU-SS14	SOLID WASTE MANAGEMENT UNIT SOIL SAMPLE LOCATION (MARCH, 1996)
● B-19	HISTORICAL SOIL BORING (OCT 1995, MARCH 1996, JUNE 1997)
△ B103	SOIL BORING TEMPORARY SHALLOW MONITORING WELL
◬ MW-27	SHALLOW MONITORING WELL
◬ MW-5D	DEEP MONITORING WELL
⊙ MPX-1	MPX SHALLOW TEST WELL
○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)
◬ SVE-1	SVE SHALLOW TEST WELL
◬ ASI-1	AS SHALLOW TEST WELL
• HA-1	HAND-AUGER SOIL BORING
19.1	METHYLENE CHLORIDE SOIL CONCENTRATION IN mg/kg
NS	NOT SAMPLED
ND	NO METHYLENE CHLORIDE DETECTED
	METHYLENE CHLORIDE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED
	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

Ref: Cameron-Cole 2022

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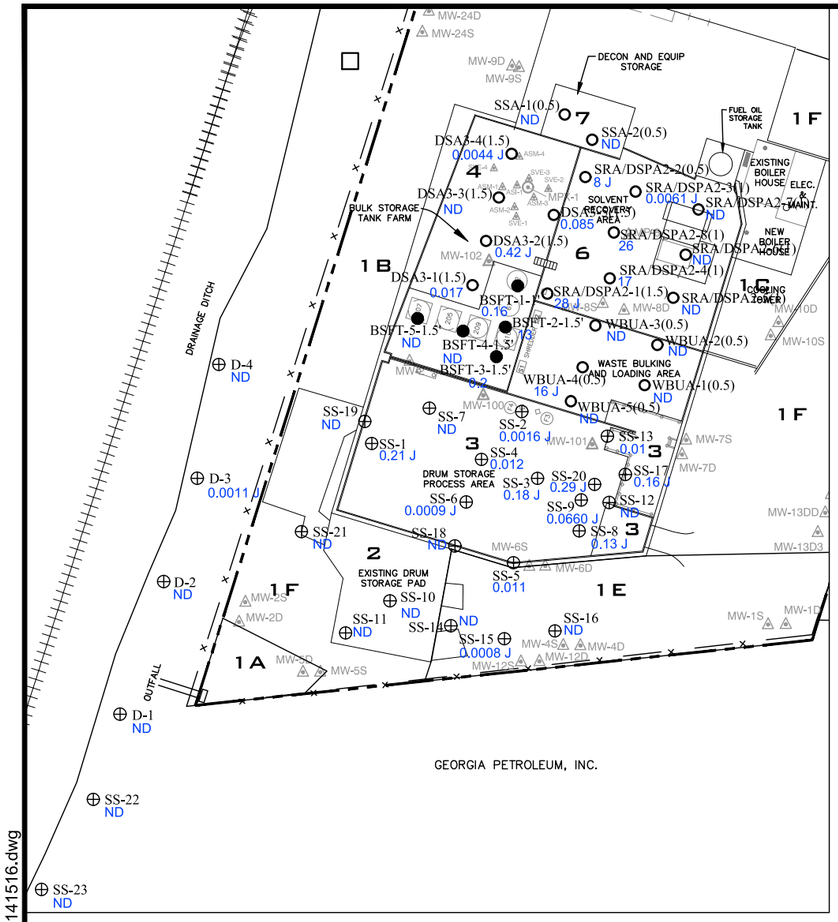
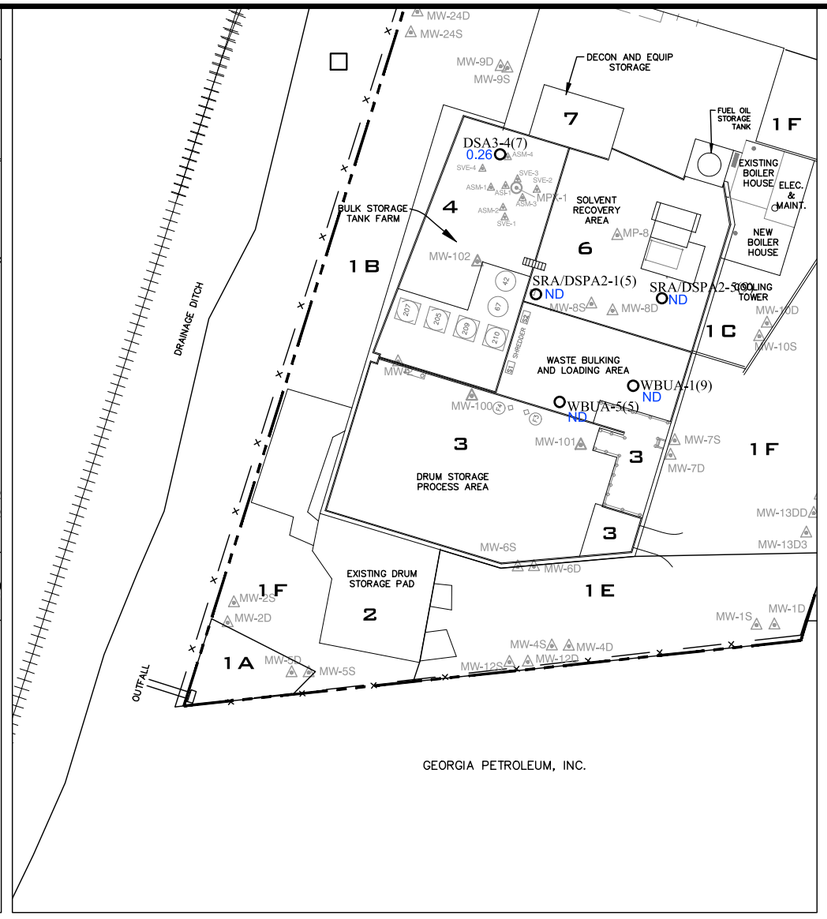
FIGURE 15

METHYLENE CHLORIDE IN SOIL - JUNE 2006
PERMA-FIX OF SOUTH GEORGIA, INC.

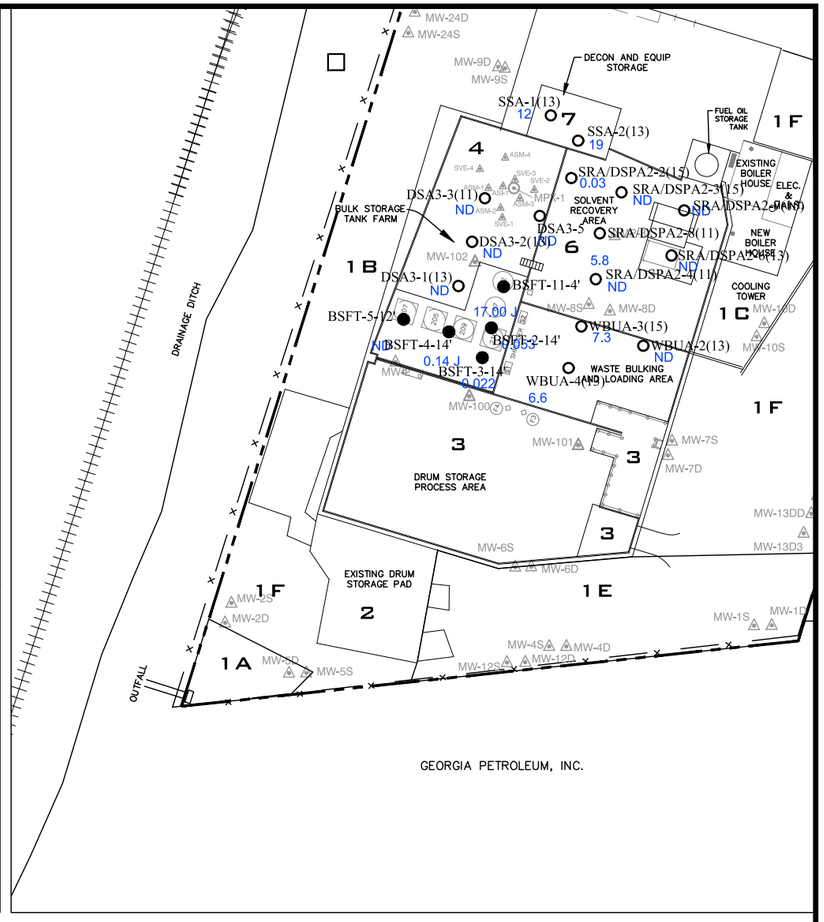
SCALE: 1" = 60'



0-2.5 ft BGS



4-9 ft BGS



10-15 ft BGS

LEGEND

MW-27	SHALLOW MONITORING WELL	⊕	SURFICIAL SOIL SAMPLE (2014)
MW-5D	DEEP MONITORING WELL	●	SOIL BORING LOCATION (2015)
MPX-1	MPX SHALLOW TEST WELL	○	SOIL BORING LOCATION (2016)
SVE-1	SVE SHALLOW TEST WELL	19.1	METHYLENE CHLORIDE SOIL CONCENTRATION IN mg/kg
ASI-1	AS SHALLOW TEST WELL	ND	NO METHYLENE CHLORIDE DETECTED
○○○	EXCEEDANCES OF THE NOVEMBER 2020 RSL (HQ=0.1)	J	RESULT IS ESTIMATED BELOW THE REPORTING LIMIT
			METHYLENE CHLORIDE CONCENTRATION CONTOUR IN mg/kg, DASHED WHERE INFERRED (RAO EXCEEDANCES ONLY)
○ DATA COLLECTED 2014 (JAN-MAR)	○ DATA COLLECTED 2015 (SEPT)	○ DATA COLLECTED 2016 (FEB)	CONTOURS FIT TO 2006 SOIL BORING CONCENTRATIONS

N

0 75

FEET

Ref: Cameron-Cole 2022

GeoSouth Environmental Solutions
11250 Old St Augustine Rd
Sie 15 PMB 333
Jacksonville, FL 32257
904.328.0585

FIGURE 16

METHYLENE CHLORIDE IN SOIL
JANUARY - MARCH 2014, SEPTEMBER 2015, FEBRUARY 2016
PERMA-FIX OF SOUTH GEORGIA, INC.

SCALE: 1" = 60'

M:\clients\Cameron-Cole\1004-Perma-Fix-Valdosta\2020\Closure\Val-FIG 16-MC-Soil-141516.dwg

APPENDIX B2

SUMMARY OF 2024 GROUNDWATER ANALYTICAL DATA AND DISTRIBUTION OF TOTAL VOC IN GROUNDWATER MAP

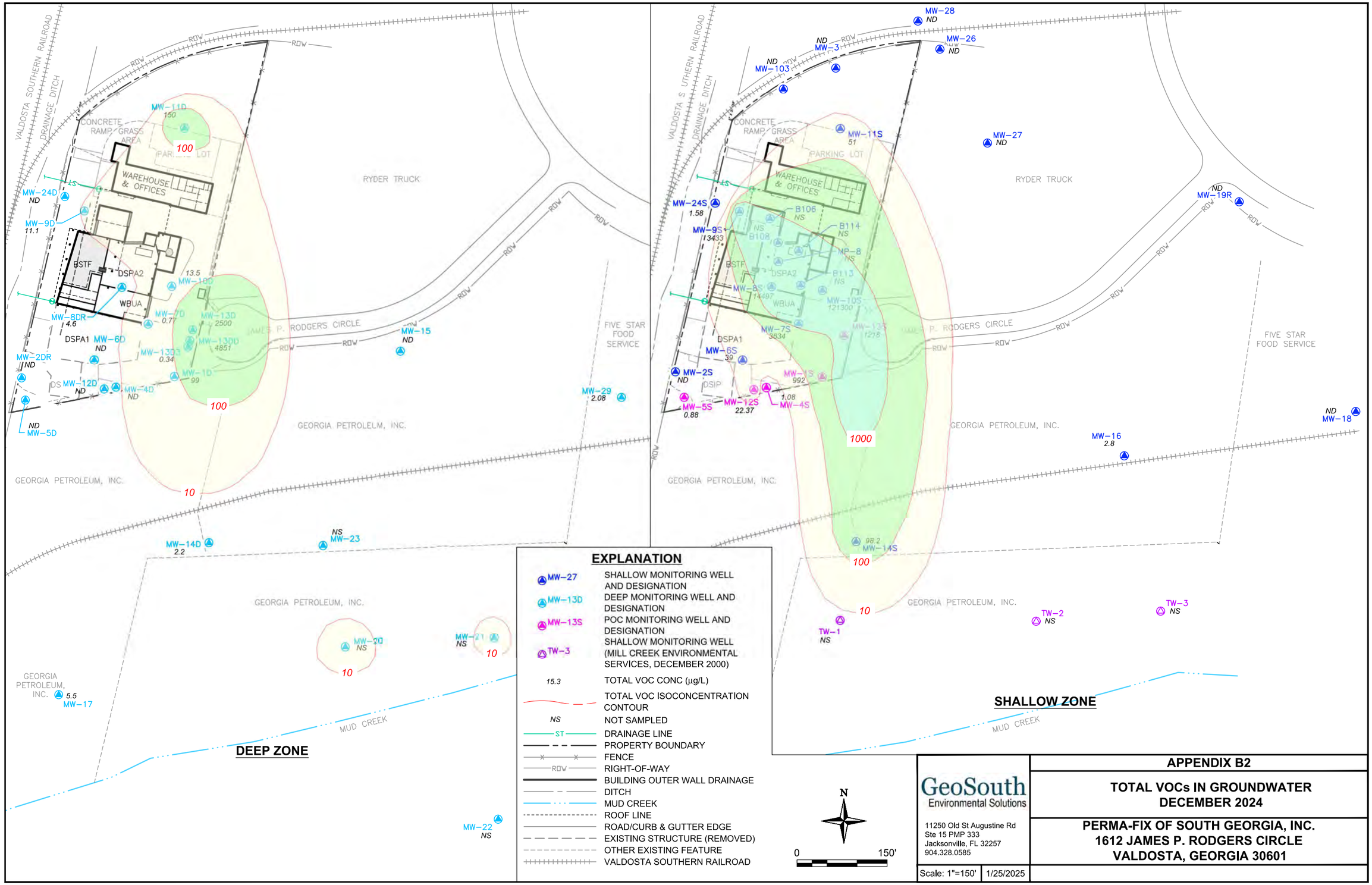
APPENDIX B2. SUMMARY OF 2024 GROUNDWATER CONTAMINATION AND ANALYTICAL DATA
PERMA-FIX OF SOUTH GEORGIA, INC. VALDOSTA, GEORGIA

Parameter			Chlorinated and Non-Chlorinated VOCs (µg/L)																								Aromatic/Hydrocarbon VOCs (µg/l)					Method 8081B			
			1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2,4-Trimethylbenzene	1,2-Dichlorobenzene	1,2-Dichloroethane	1,3,5-Trimethylbenzene	2-Butanone	2-Chlorotoluene	4-Isopropyltoluene (p-Isopropyltoluene)	4-Methyl-2-Pentanone	Acetone	Carbon Tetrachloride	Chloroethane	Chloroform	Chloromethane	Cis-1,2-Dichloroethene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	N-Propylbenzene	Naphthalene	Tetrachloroethene (PCE)	Trans-1,2-Dichloroethene	Trichloroethene (TCE)	Vinyl Chloride	Benzene	Toluene	Ethylbenzene	Methyl Tert-Butyl Ether	Xylenes, Total	Heptachlor	Total Chlorinated and Non-Aromatic VOCs (µg/l)	Total Aromatic/Hydrocarbon VOCs (µg/l)	TOTAL VOCs (µg/l)
Groundwater Protection Standard	Well ID	Sample Date	200 [a]	1 [b]	7 [a]	1 [b]	600 [a]	5 [a]	1 [b]	10 [b]	1 [b]	1 [b]	10 [b]	10 [b]	5 [a]	5 [b]	80 [a]	1 [b]	70 [a]	50 [a]	1 [b]	5 [a]	1 [b]	5 [b]	5 [a]	100 [a]	5 [a]	2 [a]	5 [a]	1000 [a]	700 [a]	5 [b]	10,000 [a]	0.4 [a]	—	—	—
1% Solubility			12,900	50,400	24,200	570	1,560	86,000	482	2,200,000	3,740	234	190,000	10,000,000	7,930	67,100	79,500	530	64,100	32	613	130,000	522	310	2,060	45,200	12,800	88,000	17,900	5,260	1,690	510,000	1,060	1.8	—	—	—
10% Solubility			129,000	504,000	242,000	5,700	15,600	860,000	4,820	22,000,000	37,400	2,340	1,900,000	100,000,000	79,300	671,000	795,000	5,300	641,000	320	6,130	1,300,000	5,220	3,100	20,600	452,000	128,000	880,000	179,000	52,600	16,900	5,100,000	10,600	18	—	—	—
On-Site Wells	MW-1S	12/10/2024	**330**	**44**	**92**	<1.0	<1.0	1.5	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	2.4	<1.0	**180**	<5.0	<1.0	<5.0	<1.0	<5.0	**120**	<1.0	**120**	**80**	<1.0	2.1	6.8	<5.0	12	<0.048	970	21.4	991
Shallow	MW-2S	12/10/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.048	ND	ND	ND
	MW-3	12/6/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.048	ND	ND	ND
	MW-4S	12/9/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.049	0.70	0.38	1.08
	MW-5S	12/9/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.046	0.47	ND	0.47
	Dup 1 (MW-5S)	12/9/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	NA	0.51	0.37	0.88
	MW-6S	12/10/2024	<1.0	**3.5**	1.3	**3.7**	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	2.6	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	3.2	**8.4**	**11**	<1.0	1.2	<5.0	2.1	<0.052	24.3	15	39
	Dup 2 (MW-6S)	12/10/2024	<1.0	**3.2**	<1.0	**3.7**	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	1.9	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	2.8	**4.2**	**10**	<1.0	1.4	<5.0	2.3	NA	17.7	14	32
	MW-7S	12/10/2024	**240**	**120**	**130**	*<5.0*	*<5.0*	**13**	*<5.0*	*<50*	*<5.0*	*<5.0*	*<50*	**210**	<5.0	*<25*	45	*<5.0*	**1000**	*<25*	*<5.0*	**620**	*<5.0*	*<25*	**12**	<5.0	**200**	**930**	**20**	71	<5.0	*<25*	19	<0.047	3520	114.6	3635
	MW-8S	12/10/2024	<5.0	**100**	*<50*	**5.1**	8.6	**300**	*<5.0*	**2100**	*<5.0*	**5.9**	**230**	**4600**	<5.0	**39**	**130**	*<5.0*	**970**	<25	*<5.0*	**2500**	*<5.0*	*<25*	**860**	<5.0	**650**	**840**	**120**	620	65	*<25*	310	<0.047	13382	1115	14497
	MW-9S	12/10/2024	120	**47**	**580**	*<10*	<10	*<10*	*<10*	*<100*	*<10*	*<10*	*<100*	**280**	*<10*	*<50*	<10	*<10*	33	<50	*<10*	*<50*	*<10*	*<50*	**130**	<10	**2200**	*<10*	*<10*	<10	<10	*<50*	*<10*	<0.049	3430	2.7	3433
	MW-10S	12/10/2024	**83000**	**530**	**5200**	*<500*	<500	*<500*	*<500*	*<5000*	*<500*	*<500*	*<5000*	*<5000*	*<500*	*<2500*	*<500*	*<500*	**930**	*<2500*	*<500*	*<2500*	*<500*	*<2500*	**7900**	*<500*	**4600**	*<500*	*<500*	**17000**	<500	*<2500*	*1700*	<0.048	102160	19140	121300
	MW-11S	12/10/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<0.25	<5.0	<1.0	<5.0	<1.0	<5.0	**51**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.049	51	ND	51
	MW-12S	12/10/2024	<1.0	1.0	2.8	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	5.1	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	**5.1**	**6.0**	2.0	<1.0	<1.0	<5.0	<1.0	<0.051	20.37	2.0	22.37
	MW-13S	12/10/2024	**720**	**180**	**130**	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	**110**	<5.0	<1.0	<5.0	<1.0	<5.0	**5.7**	<1.0	**8.9**	**41**	<1.0	14	2.5	<5.0	6.3	<0.054	1196	22.8	1218
	MW-24S	12/9/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.050	1.58	ND	1.58
	MW-103	12/6/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.048	ND	ND	ND
Deep	MW-1D	12/10/2024	<1.0	<1.0	4.2	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	**94**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.048	99	ND	99
	MW-2DR	12/6/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.049	ND	ND	ND
	MW-4D	12/9/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.058	ND	ND	ND
	MW-5D	12/9/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.050	ND	ND	ND
	MW-6D	12/9/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.048	ND	ND	ND
	MW-7D	12/9/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.049	0.77	ND	0.77
	MW-8DR	12/9/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	1.8	<1.0	2.8	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.049	4.6	ND	4.6
	MW-9D	12/9/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.047	1.11	ND	1.11
	MW-10D	12/9/2024	<1.0	<1.0	2.5	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	**11**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.049	13.5	ND	13.5
	MW-11D	12/10/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	**150**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.053	150	ND	150
	MW-12D	12/9/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.048	ND	ND	ND
	MW-13D	12/10/2024	**1200**	**7.3**	**590**	*<5.0*	<5.0	<5.0	*<5.0*	*<50*	*<5.0*	*<5.0*	*<50*	**200**	<5.0	*<25*	<5.0	*<5.0*	<5.0	<25	*<5.0*	**23 J**	*<5.0*	*<25*	**210**	<5.0	**120**	*<5.0*	<5.0	140	2.2 J	*<25*	8.9	<0.049	2350	151	2501
	Dup 3 (MW-13D)	12/10/2024	**1100**	**4.3**	**580**	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	1.4	<5.0	<1.0	<5.0	<1.0	<5.0	**200**	<1.0	**110**	<1.0	<1.0	130	2.0	<5.0	8.2	NA	1997	140.6	2138
	MW-13D3	12/9/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.047	0.34	ND	0.34
	MW-13DD	12/10/2024	<5.0	**20**	**2700**	*<5.0*	<5.0	**5.2**	*<5.0*	*<50*	*<5.0*	*<5.0*	*<50*	**200**	<5.0	*<25*	<5.0	*<5.0*	30	<25	*<5.0*	**55**	*<5.0*	*<25*	**950**	<5.0	**880**	*<5.0*	5.0	<5.0	<5.0	*<25*	*<5.0*	<0.047	4843	7.1	4850
	MW-24D	12/6/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.049	ND	ND	ND

APPENDIX B2. SUMMARY OF 2024 GROUNDWATER CONTAMINATION AND ANALYTICAL DATA
PERMA-FIX OF SOUTH GEORGIA, INC. VALDOSTA, GEORGIA

Parameter			Chlorinated and Non-Chlorinated VOCs (µg/L)																								Aromatic/Hydrocarbon VOCs (µg/l)					Method 8081B			
			1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2,4-Trimethylbenzene	1,2-Dichlorobenzene	1,2-Dichloroethane	1,3,5-Trimethylbenzene	2-Butanone	2-Chlorotoluene	4-Isopropyltoluene (p-Isopropyltoluene)	4-Methyl-2-Pentanone	Acetone	Carbon Tetrachloride	Chloroethane	Chloroform	Chloromethane	Cis-1,2-Dichloroethene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	N-Propylbenzene	Naphthalene	Tetrachloroethene (PCE)	Trans-1,2-Dichloroethene	Trichloroethene (TCE)	Vinyl Chloride	Benzene	Toluene	Ethylbenzene	Methyl Tert-Butyl Ether	Xylenes, Total	Heptachlor	Total Chlorinated and Non-Aromatic VOCs (µg/l)	Total Aromatic/Hydrocarbon VOCs (µg/l)	TOTAL VOCs (µg/l)
Groundwater Protection Standard	Well ID	Sample Date	200 [a]	1 [b]	7 [a]	1 [b]	600 [a]	5 [a]	1 [b]	10 [b]	1 [b]	1 [b]	10 [b]	10 [b]	5 [a]	5 [b]	80 [a]	1 [b]	70 [a]	50 [a]	1 [b]	5 [a]	1 [b]	5 [b]	5 [a]	100 [a]	5 [a]	2 [a]	5 [a]	1000 [a]	700 [a]	5 [b]	10,000 [a]	0.4 [a]	—	—	—
1% Solubility			12,900	50,400	24,200	570	1,560	86,000	482	2,200,000	3,740	234	190,000	10,000,000	7,930	67,100	79,500	530	64,100	32	613	130,000	522	310	2,060	45,200	12,800	88,000	17,900	5,260	1,690	510,000	1,060	1.8	—	—	—
10% Solubility			129,000	504,000	242,000	5,700	15,600	860,000	4,820	22,000,000	37,400	2,340	1,900,000	100,000,000	79,300	671,000	795,000	5,300	641,000	320	6,130	1,300,000	5,220	3,100	20,600	452,000	128,000	880,000	179,000	52,600	16,900	5,100,000	10,600	18	—	—	—
Off-Site Wells	MW-14S	12/6/2024	2.2	**22**	4.7	<1.0	<1.0	1.2	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	13	<5.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	3.1	**43**	**6.3**	<1.0	<1.0	<5.0	1.7	<0.049	90.03	8.2	98.2
Shallow	MW-16	12/5/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<1.0	<5.0	2.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.049	2.8	ND	2.8
	MW-18	12/4/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.048	ND	ND	ND
	MW-19R	12/4/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.049	ND	ND	ND
	MW-26	12/4/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.048	ND	ND	ND
	MW-27	12/4/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.047	ND	ND	ND
	MW-28	12/4/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.051	ND	ND	ND
Deep	MW-14D	12/6/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<1.0	<5.0	2.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.048	2.2	ND	2.2
	MW-15	12/5/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.049	ND	ND	ND
	MW-17	12/6/2024	<1.0	<1.0	2.7	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<5.0	<1.0	<5.0	1.5	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.047	5.5	ND	5.5
	MW-20	12/4/2024	Cannot reach well due to post Hurricane Helene tree and brush debris obstructing area access																																			
	MW-21	12/4/2024	Cannot reach well due to post Hurricane Helene tree and brush debris obstructing area access																																			
	MW-22	12/4/2024	Cannot reach well due to post Hurricane Helene tree and brush debris obstructing area access																																			
	MW-23	12/5/2024	Obstruction in well at depth 35 ft prevented well sampling due to insufficient water column.																																			
	MW-29	12/4/2024	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<0.048	2.08	ND	2.08

Notes:
VOC - Volatile Organic Compound
COC - Constituent of Concern
µg/L=microgram per liter
ND = non-detect
NA = not analyzed
— Indicates the parameter does not have an MCL or RSL.
J = The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.
E = Indicates value exceeds calibration range
[a]: Groundwater Protection Standard (GWPS): Groundwater Maximum Contaminant Level (MCL) as established in the Georgia Hazardous Waste Facility Permit No. HW-020(D)
[b]: Background Well MW-3 most recent reporting limit. There were no detections in the historical background and any detection will be considered above background.
Solubilities from Table 2-2 of EPA 542-R-04-010 (March 2004), EPA Chemical Summary Sheet (1994-EPA-749-022a), EPA Online Tools for Site Assessment Calculator, Fetter (1994) and ChemIDplus (2006)
Bolded values indicate results above the GWPS for a COC
Yellow shading indicates exceedances of the 1% solubility concentration
Italic value indicates the reporting limit exceeds the lowest standard shown.
< = Value was not detected at the reporting limit shown.



EXPLANATION

- MW-27 — SHALLOW MONITORING WELL AND DESIGNATION
- MW-13D — DEEP MONITORING WELL AND DESIGNATION
- MW-13S — POC MONITORING WELL AND DESIGNATION
- TW-3 — SHALLOW MONITORING WELL (MILL CREEK ENVIRONMENTAL SERVICES, DECEMBER 2000)
- 15.3 — TOTAL VOC CONC (µg/L)
- TOTAL VOC ISOCONCENTRATION CONTOUR
- NS — NOT SAMPLED
- ST — DRAINAGE LINE
- PROPERTY BOUNDARY
- FENCE
- ROW — RIGHT-OF-WAY
- BUILDING OUTER WALL DRAINAGE
- DITCH
- MUD CREEK
- ROOF LINE
- ROAD/CURB & GUTTER EDGE
- EXISTING STRUCTURE (REMOVED)
- OTHER EXISTING FEATURE
- VALDOSTA SOUTHERN RAILROAD

N

0 150'

GeoSouth Environmental Solutions
11250 Old St Augustine Rd
Ste 15 PMP 333
Jacksonville, FL 32257
904.328.0585

Scale: 1"=150' | 1/25/2025

APPENDIX B2

TOTAL VOCs IN GROUNDWATER DECEMBER 2024

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

APPENDIX C

REMEDIATION SYSTEM EQUIPMENT SPEC SHEETS

REMEDIATION EQUIPMENT SERVICES, LLC

SYSTEM ID: RES-002

Air Sparge (AS) / Soil Vapor Extraction (SVE) System
AS (190 cfm / 26 psi) / SVE (370 cfm / 10" Hg vac)
230 Volt, 3 Phase, 150 Amp

- 8' x 14' Tandem axle enclosed trailer
- UL listed control panel with PLC logic and wireless telemetry, hour meters, HOA switches, fault alarms and emergency stop

AIR SPARGING:

- **Rietschle DLR-301**, 20 hp Rotary Claw compressor
- American Industrial ACA-4302 heat exchanger
- Flow control and measurement with 22 leg manifold

SVE:

- **Roots URAI 47,** 10 hp Rotary Lobe (PD) vacuum blower
- 140-gallon moisture separator with Moyno 34401 progressive cavity pump, auto pumpout and totalizer/flowmeter
- Flow control and measurement with custom manifold configurations

This system is available for long term, short term and episodic soil and groundwater remediation and pilot tests. Generator and carbon vapor emissions treatment available separately.

For more equipment rental information, please contact:

Remediation Equipment Services, LLC
290 Dempsey Road
Palm Harbor, Florida 34683

Phone (727) 458-6808 **Fax (727) 683-9166** **Email: ddennis@resflorida.com**

Visit: www.resflorida.com for equipment information

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Blower Selection

PDAnalysis 2013 Version 4.30

Monday, Feb 5, 2018

CONTACT: Jeff Brunsman
pdblowers, Inc.
770-538-0020 / 770-538-0022

AMBIENT CONDITIONS:

Gas	Air	
Relative Humidity	80%	
Molecular Weight	28.646	
k-Value (ratio of specific heats)	1.398	
Specific Gravity	0.989	
Ambient Temperature	75	deg F
Ambient Pressure	14.66	PSIA
Elevation	60	Feet

INPUT CONDITIONS:

Actual Volume	370	ICFM
Standard Volume	284	SCFM
Mass/Weight Flow	21	lb/min
System Inlet Vacuum	10.	in HgVac
Inlet Pressure Drop	0.1	PSI
Blower Inlet Pressure	11.62	PSIA
System Discharge Pressure	14.66	PSIA
Discharge Pressure Drop	0.2	PSI
Blower Discharge Pressure	14.86	PSIA
Inlet Temperature	75	deg F

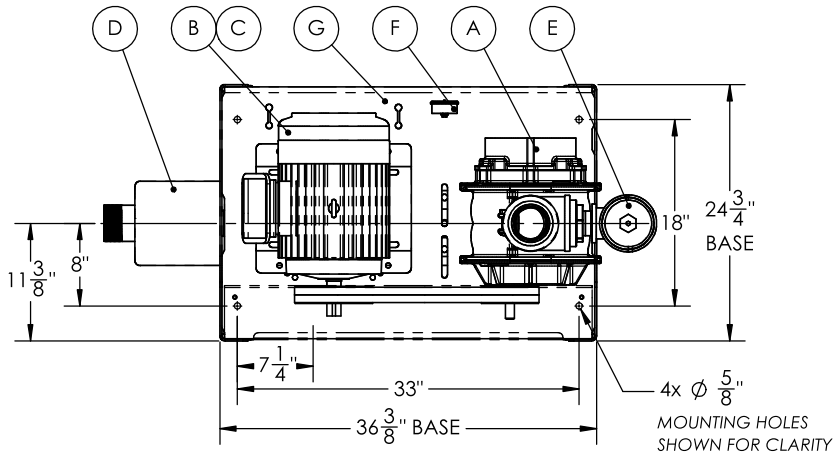
STANDARD CONDITIONS:

Pressure	14.7	PSIA
Temperature	68	deg F
Relative Humidity	36	%

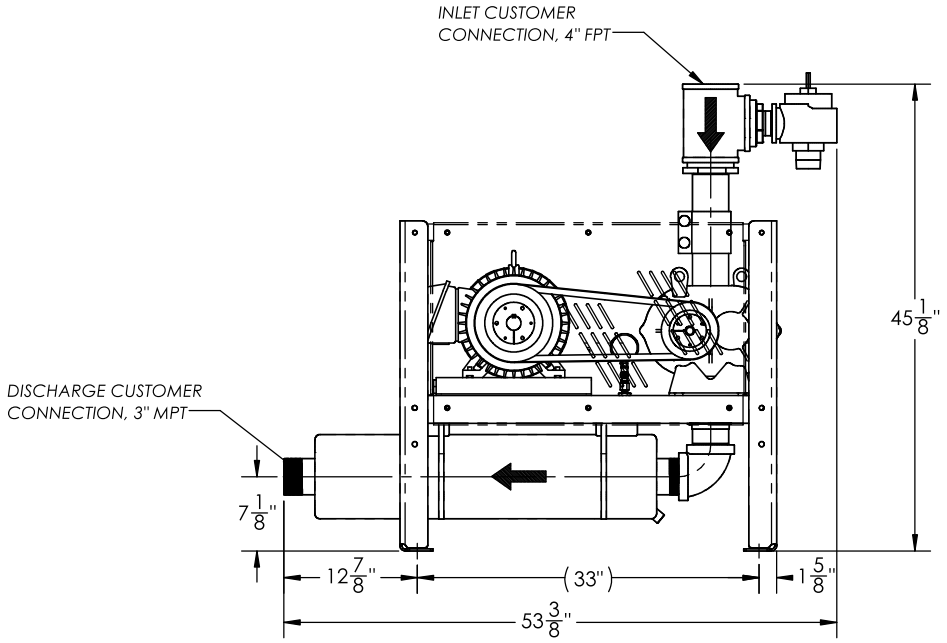
BLOWER PERFORMANCE:

Blower Model	47	URAI	
Blower Operating Speed	2,727	RPM	(76% of maximum)
Blower Shaft Horsepower	7.0	HP	
Differential Pressure across Blower	3.25	PSI	(44% of maximum)
Temperature Rise across Blower	52	deg. F	(23% of maximum)
Blower Discharge Temperature	127	deg. F	
Estimated Noise @ 1 Meter	85.7	dBA	
Blower Discharge Volume	317	ACFM	
Estimated Bearing Life (V-Belt)	6,974,598	Hours	
Estimated Bearing Life (Coupling)	6,974,598	Hours	
Gear Tip Speed	2,858	Feet/Minute	
Connection Sizes (Inlet/Outlet)	3T / 3T		

DWG. NO. 75145

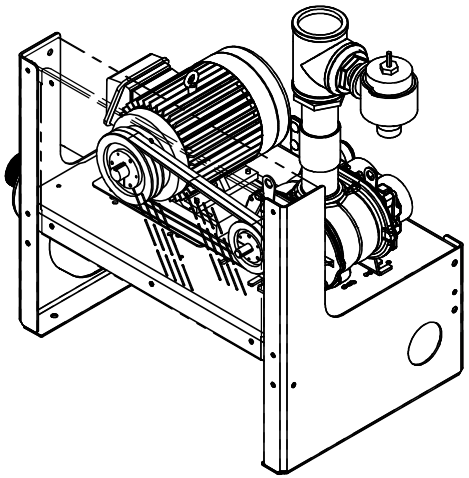


PLAN VIEW



ELEVATION VIEW

ITEM	PART	DESCRIPTION	QTY.
A	21459	BLOWER, ROOTS 47 URAI	1
B	56544.P	MOTOR, 10HP, TEFC, MAX-PE, 215T	1
C	56489	MOTOR BASE, 215T	1
D	22126	SILENCER, SD-3", 3" MPT, UNIVERSAL	1
E	31175.E	VALVE, VACUUM, RELIEF, 215V, 9" HGG SET POINT	1
F	55197	VACUUM GAUGE ASSY, 30-0" HGG, 2-1/2" DIA	1
G	50107	BASE WELDMENT, VB34	1



JOB NUMBER	PARENT P/N

PROPRIETARY AND CONFIDENTIAL
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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL
THICKNESS:
FINISH
WEIGHT: 635.2362

	DRAWN	DATE	NAME
	AUTHOR	5/26/2017	JB
	CHECKED BY		
	MFG APPR.		

COMMENTS:

pdblowers inc
2280 Chicopee Mill Road SW • Gainesville, GA • 30504
800-536-9933

TITLE: PACKAGE, VACUUM
47 URAI, 10 HP, 215T FR
V1 CONFIGURATION

SIZE B | DWG. NO. 75145 | REV

SCALE: 1:12 | SHEET 1 OF 3

DRESSER Roots

The original ROOTS blower still leads the way™

ROOTS™ UNIVERSAL RAI® Rotary Positive Displacement Blowers

Specifications Frames 22 thru 718

DESIGN AND CONSTRUCTION FEATURES

- Steel detachable mounting feet
- Rigid one-piece cast iron casing
- Anti-friction bearings
- Thrust control
- Splash oil lubricated spur timing gears
- Connections in standard pipe sizes
- Balanced, precision machined bi-lobe impellers
- Ground steel shafts

Basic Blower Description

Universal RAI blowers are heavy duty blowers designed with detachable rugged steel mounting feet that permit easy in-field adaptability to either vertical or horizontal installation requirements.

Because of the detachable mounting feet, these units can be easily adapted to any of four drive shaft positions - right hand, left hand, bottom or top. The compact, sturdy design is engineered for continuous service when operated in accordance with speed and pressure ratings.

The basic model consists of a cast iron casing and cast iron involute impellers. Carburized and ground alloy steel spur timing gears are secured to the steel shafts with a taper mounting and locknut. Oversized antifriction bearings are used, with a cylindrical roller bearing at the drive shaft to withstand V-belt pull. The Universal RAI features thrust control, with splash oil lube on the gear end and grease lube on the drive end.

Available accessories include driver, relief valve, inlet and discharge silencers, inlet filter, check valve, extended base, v-belt or flexible coupling and drive guards.

Strongest Warranty in the Industry

ROOTS™ Universal RAI® blowers are warranted for two years plus an additional 6 months for shipping and construction where required. ROOTS synthetic oil is recommended for longer lubricant life.

Vertical Gear End

Horizontal Gear End

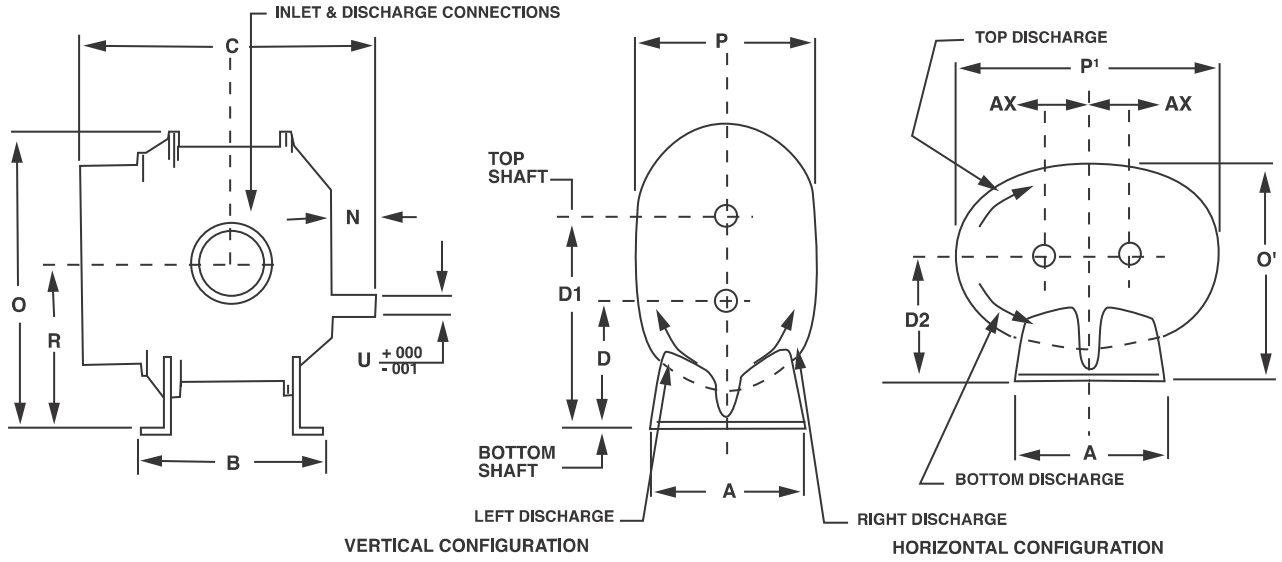
Horizontal Drive End

URAI Blower Performance

Frame Size	Speed RPM	1 PSI		6 PSI		7 PSI		10 PSI		12 PSI		13 PSI		14 PSI		15 PSI		Maximum Vacuum		
		CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	"HGV	CFM	BHP
	1160	10	0.1															4	6	0.2
22	3600	49	0.3	38	1.6	36	1.8	32	2.6	29	3.1							14	28	1.8
	5275	76	0.5	64	2.4	63	2.7	59	3.8	56	4.6							15	53	2.8
	1160	24	0.2															6	12	0.5
24	3600	102	0.6	83	3.1	81	3.6											14	69	3.5
	5275	156	0.9	137	4.6	135	5.4											15	119	5.5
	1160	40	0.2	21	1.4	19	1.6											10	18	1.1
32	2800	113	0.6	95	3.4	93	3.9	86	5.6	82	6.7	81	7.2	79	7.8	77	8.3	15	78	4.1
	3600	149	0.9	131	4.4	129	5.2	122	7.3	118	8.7	117	9.4	115	10.1	113	10.8	16	110	5.3
	1160	55	0.3	31	1.9	28	2.2											10	27	1.5
33	2800	156	0.9	132	4.6	129	5.4	120	7.7	116	9.2							14	113	5.2
	3600	205	1.2	181	6.1	178	7	170	9.9	165	11.9							15	159	7.3
	1160	95	0.5	61	3.1	57	3.6											10	55	2.5
36	2800	262	1.5	229	7.7	224	8.9											12	213	7.5
	3600	344	2.1	310	10.1	306	11.7											15	278	12.1
	860	38	0.2	18	1.4	15	1.6											8	19	0.9
42	1760	92	0.5	72	2.8	69	3.3	62	4.7	58	5.6							14	56	3.2
	3600	204	1.4	183	6.1	181	7.1	173	9.9	169	11.8	167	12.8	165	13.7	163	14.7	16	160	7.7
	860	79	0.5	42	2.7	37	3.2											8	46	1.8
45	1760	188	1	151	5.7	146	6.6	133	9.4									12	134	5.5
	3600	410	2.7	374	12.2	369	14.1	356	19.8									16	332	15.4
	860	105	0.6	59	3.6	53	4.2											8	63	2.4
47	1760	249	1.3	203	7.5	196	8.7											12	181	7.3
	3600	542	3.5	496	16.1	490	18.6											15	452	19.1
	700	72	0.4	42	2.4	38	2.8											10	36	2
53	1760	211	1.2	181	6.3	177	7.3	167	10.3	160	12.3	157	13.3	155	14.4			14	158	7.1
	2850	355	2.5	325	10.7	321	12.3	310	17.2	304	20.5	301	22.1	298	23.8	295	25.4	16	291	13.4
	700	123	0.7	78	4.1	72	4.7											10	70	3.3
56	1760	358	2	312	10.5	306	12.2	290	17.3	280	20.6	276	22.3					14	276	11.8
	2850	598	4	553	17.7	547	20.5	531	28.7	521	34.2	517	37					16	501	22.4
	700	187	1	130	5.9													8	135	3.9
59	1760	529	2.9	472	15.3	464	17.8											12	445	14.9
	2850	881	5.9	824	26	816	30											15	770	30.8
	700	140	0.8	93	4.5	86	5.3	70	7.5									12	71	4.4
65	1760	400	2.4	353	11.9	347	13.8	330	19.4	320	23.2	316	25.1	311	27	307	28.9	16	300	15.2
	2350	546	3.8	499	16.4	492	19	475	26.5	466	31.6	461	34.1	457	36.6	452	39.1	16	445	25.6
	700	224	1.2	149	7.3	139	8.5											10	135	5.9
68	1760	643	3.7	567	18.9	557	21.9	530	31	515	37	507	40.1	500	43.1			15	495	22.7
	2350	876	5.6	801	25.9	790	29.9	763	42.1	748	50.2	740	54.2	733	58.3			16	715	32.8
	700	420	2.3	279	13.6	260	15.9											8	292	8.9
615	1760	1205	6.6	1063	34.9	1044	40.6											12	997	33.9
	2350	1641	9.7	1500	47.6	1481	55.2											14	1389	53.4
	575	192	1.1	134	6.1	126	7.1	105	10.2									12	117	6
76	1400	527	3	468	15.4	460	17.8	439	25.3	427	30.2	421	32.7	415	35.1	410	37.6	16	413	19.7
	2050	790	5.3	731	23.4	723	27	702	37.9	690	45.1	684	48.7	679	52.4	673	56	16	674	29.5
	575	362	1.9	271	11.1	258	13	226	18.6									12	228	10.9
711	1400	970	5.2	880	27.7	867	32.2	835	45.7									15	793	33.5
	2050	1450	8.8	1359	41.8	1347	48.4	1315	68.2									16	1256	53.1
	575	600	3.1	470	18.1													10	446	14.8
718	1400	1590	8.1	1460	44.8													12	1398	43.6
	2050	2370	13.3	2240	66.9													12	2178	64.7

Notes: 1. Performance based on inlet air at standard pressure of 14.7 psia, standard temperature of 68° F, and specific gravity of 1.0.
2. Vacuum ratings based on inlet air at standard temperature of 68°F, discharge pressure of 30" Hg and specific gravity of 1.0.

Outline Drawing and Dimensions



Universal RAI® Blower Dimensions

Frame Size	A	B	C	Drive Shaft Location			N	O	O¹	P	P¹	R	U	Keyway	Inlet & Disch. Dia.	AX	Approx Net Wt. (lbs.)
				D	D1	D2											
22	5.13	5.00	9.75	3.75	6.25	3.75	2.50	9.63	6.88	6.25	9.25	5.00	.625	.188 x .094	1.0 NPT	1.25	32
24	5.13	7.00	11.75	3.75	6.25	3.75	2.50	9.63	6.88	6.25	9.25	5.00	.625	.188 x .094	2.0 NPT	1.25	43
32	7.25	6.75	11.25	5.00	8.50	5.00	2.44	12.81	8.88	7.75	12.13	6.75	.750	.188 x .094	1.25 NPT	1.75	69
33	7.25	7.63	12.13	5.00	8.50	5.00	2.44	12.81	8.88	7.75	12.13	6.75	.750	.188 x .094	2.0 NPT	1.75	74
36	7.25	10.00	14.63	5.00	8.50	5.00	2.56	12.81	8.88	7.75	12.13	6.75	.750	.188 x .094	2.5 NPT	1.75	102
42	8.00	7.25	13.00	6.25	10.25	6.25	3.18	15.06	10.63	8.75	13.63	8.25	.875	.188 x .094	1.5 NPT	2.00	88
~~45~~	~~8.00~~	~~10.00~~	~~15.50~~	~~6.25~~	~~10.25~~	~~6.25~~	~~2.94~~	~~15.06~~	~~10.63~~	~~8.75~~	~~13.63~~	~~8.25~~	~~.875~~	~~.188 x .094~~	~~2.5 NPT~~	~~2.00~~	~~109~~
47	8.00	11.75	17.63	6.25	10.25	6.25	3.31	15.06	10.50	8.50	13.63	8.25	.875	.188 x .094	3.0 NPT	2.00	128
~~53~~	~~10.50~~	~~8.38~~	~~15.38~~	~~6.25~~	~~11.25~~	~~6.75~~	~~3.68~~	~~17.38~~	~~11.88~~	~~10.25~~	~~17.25~~	~~8.75~~	~~1.125~~	~~.250 x .125~~	~~2.5 NPT~~	~~2.50~~	~~143~~
56	10.50	11.00	18.00	6.25	11.25	6.75	3.38	17.38	12.25	11.00	17.25	8.75	1.125	.250 x .125	4.0 NPT	2.50	170
59	10.50	14.00	21.18	6.25	11.25	6.75	3.88	17.38	12.25	11.00	17.25	8.75	1.125	.250 x .125	4.0 NPT	2.50	204
65	11.00*	10.00	18.38	8.75	14.75	8.75	3.56	21.63	15.13	12.75	19.75	11.75	1.375	.312 x .156	3.0 NPT	3.00	245
68	11.00*	13.00	21.38	8.75	14.75	8.75	3.69	21.63	15.13	12.75	19.75	11.75	1.375	.312 x .156	5.0 NPT	3.00	285
615	11.00*	20.00	28.38	8.75	14.75	8.75	3.69	21.63	16.25	15.00	19.75	11.75	1.375	.312 x .156	6.0 FLG	3.00	425
76	14.00**	11.75	19.94	11.00	18.00	11	4.06	26.13	20.69	19.38	23.25	14.50	1.562	.375 x .188	4.0 NPT	3.50	400
711	14.00**	16.75	25.19	11.00	18.00	11	4.31	26.13	19.50	17.00	23.25	14.50	1.562	.375 x .188	6.0 FLG	3.50	530
718	14.00**	23.75	32.19	11.00	18.00	11	4.31	26.13	19.50	17.00	23.25	14.50	1.562	.375 x .188	8.0 FLG	3.50	650

*17.00 in horizontal configuration
**21.00 in horizontal configuration

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Monday, Feb 5, 2018

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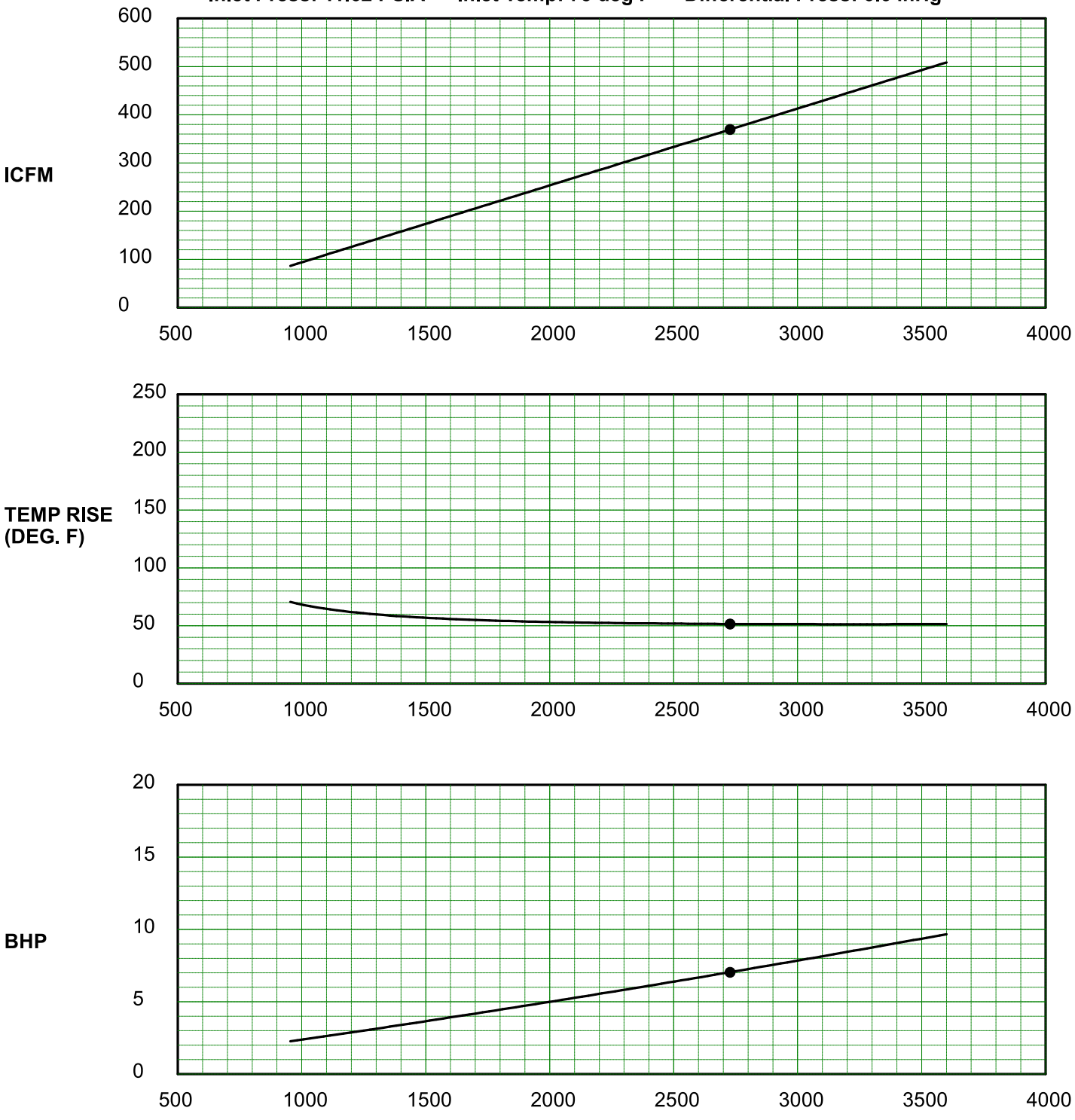
Inlet Press: 11.62 PSIA Inlet Temp: 75 deg F Differential Press: 6.6 inHg



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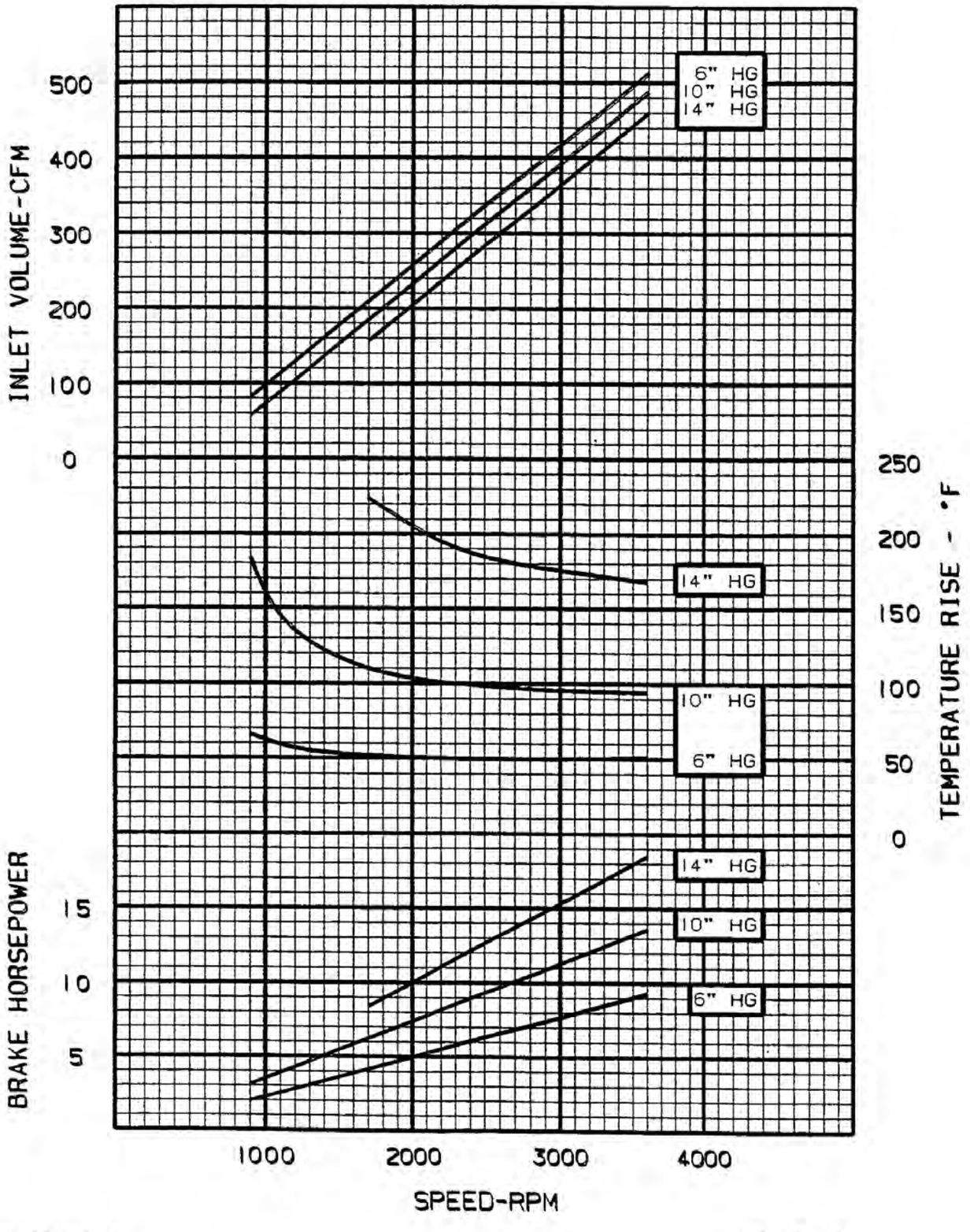
INLET AIR = 68°F
DISCHARGE PRESSURE = 30" HG ABS.
JULY, 1994

VACUUM PERFORMANCE
FRAME 47 UNIVERSAL RAI BLOWER
MAXIMUM VACUUM=15 IN. HG
MAXIMUM SPEED=3600 RPM



/PARTS2/CRVE

VC-12-47

C-DLR

zephyr

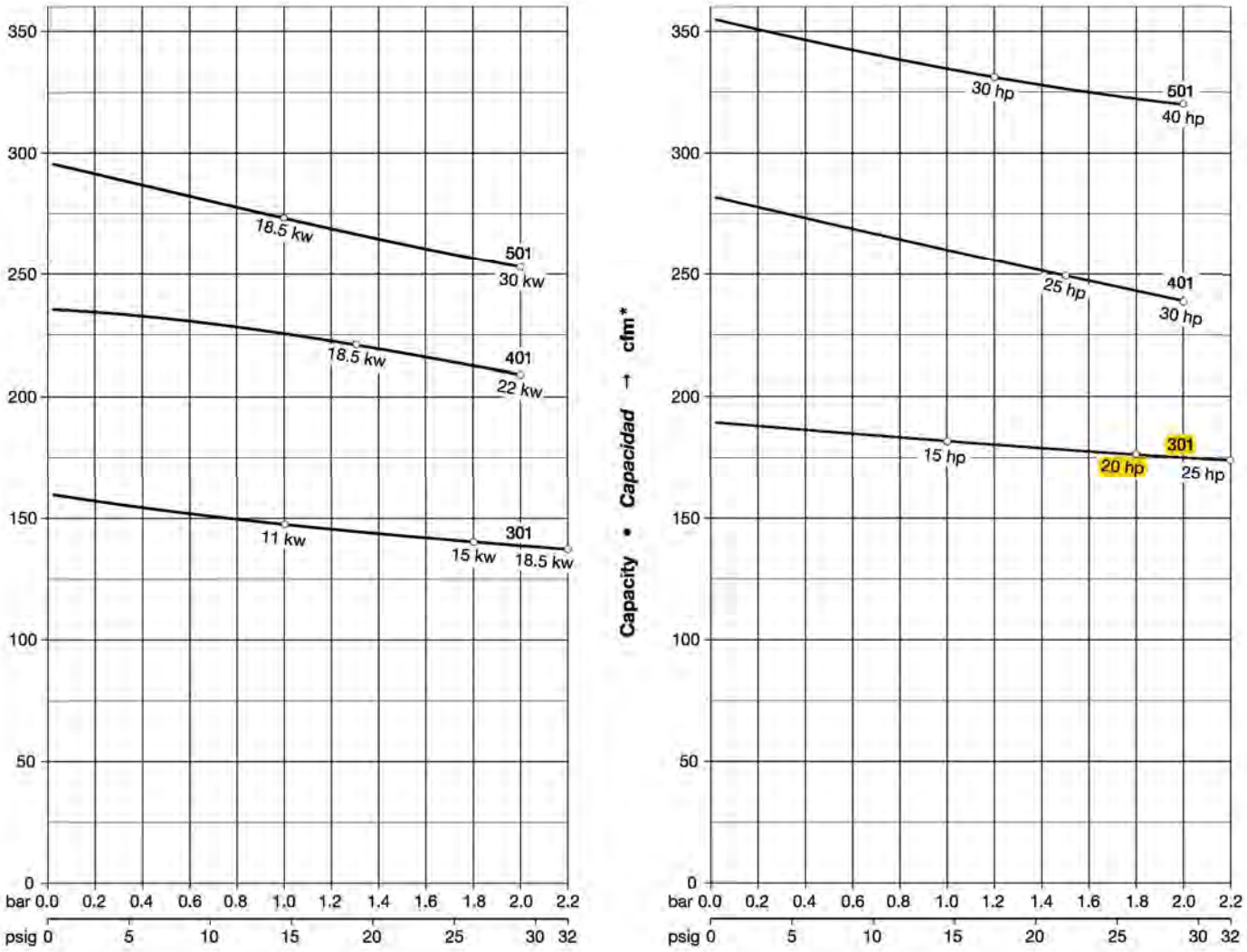
Elmo Rietschle

C-DLR 301 | C-DLR 401 | C-DLR 501

High efficiency, dry and contactless compressor with NEMA Premium motor
Capacity ranging to 355 cfm.
Pressure for continuous operation up to max. 32 psig (DLR 301).
Low maintenance. Air cooled.
Versatile design can be used in many applications.

Alta eficiencia, seco y sin contacto compresor con motor NEMA Premium
Capacidad de aspiración de 355 cfm.
La presión para funcionamiento continuo asciende a un máximo de 32 psig (DLR 301).
Bajo nivel de mantenimiento. Aire refrigerado.
Diseño versátil con numerosas posibilidades de uso.

Performance curves • ***Curvas de desempeño*** **50 Hz** **60 Hz**



C-DLR			301		
Capacity *Capacidad*	cfm	50 Hz		160	
		60 Hz		190	
Pressure *Presión*	psig	50 Hz	14.5	26.0	32.0
		60 Hz	14.5	26.0	32.0
Rated voltage *Tensión asignada*	3~	50 Hz		400 / 690 V ±10 %	
		60 Hz		208 – 230 / 460 V ±10 %	
Motor rating *Potencia requerida*	kw	50 Hz	11.0	15.0	18.5
	hp	60 Hz	15.0	20.0	25.0
Full load amperage *Amperaje a carga plena*	A	50 Hz	20.9 / 12.1	28.0 / 16.2	28.0 / 16.2
		60 Hz	37.0-24.0 / 17.0	51.3-46.4 / 23.2	62.0-58.0 / 29.0
Speed *Velocidad*	rpm	50 Hz		2950	
		60 Hz		3540	
Average noise level *Nivel promedio de ruido*	dB(A) EN ISO 3744	50 Hz		80	
		60 Hz		82	
Weight *Peso*	lbs	50 Hz	650	650	770
		60 Hz	650	680	950
Oil capacity (gear) *Capacidad de aceite (engranaje)*	qt			1.5	

C-DLR			401			501	
Capacity *Capacidad*	cfm	50 Hz		235		295	
		60 Hz		282		355	
Pressure *Presión*	psig	50 Hz	23.2	29.0	14.5	–	29.0
		60 Hz	21.8	29.0	–	17.4	29.0
Rated voltage *Tensión asignada*	3~	50 Hz			400 / 690 V ±10 %		
		60 Hz			208 – 230 / 460 V ±10 %		
Motor rating *Potencia requerida*	kw	50 Hz	18.5	22.0	18.5	–	30.0
	hp	60 Hz	25.0	30.0	–	30.0	40.0
Full load amperage *Amperaje a carga plena*	A	50 Hz	28.0 / 16.2	39.2 / 22.8	28.0 / 16.2	–	53.9 / 31.2
		60 Hz	62.0-58.0 / 29.0	74.8-67.6 / 33.8	–	74.8-67.6 / 33.8	101-91.5 / 45.8
Speed *Velocidad*	rpm	50 Hz			2950		
		60 Hz			3540		
Average noise level *Nivel promedio de ruido*	dB(A) EN ISO 3744	50 Hz			83		
		60 Hz			85		
Weight *Peso*	lbs	50 Hz	1050	1190	1050	–	1250
		60 Hz	1233	1179	–	1179	1334
Oil capacity (gear) *Capacidad de aceite (engranaje)*	qt				1.85		

cfm* Capacity refers to free air at 1 standard atmosphere and 20 °C (68 °F). • *La capacidad se refiere al aire libre a 1 atmosfera estandár de presión y a 20 °C (68 °F) de temperatura.*

Curves, table contents (tolerance ±10 %) refer to compressor at normal operating temperature. • *Las curvas, las tablas (tolerancia ±10 %) se refieren al compresor a una temperatura normal de operación.*

The motor dimensions as well as the full load amperage may vary due to different motor manufacturers. • *Las dimensiones de motor pueden variar para distintos fabricantes de motores.*

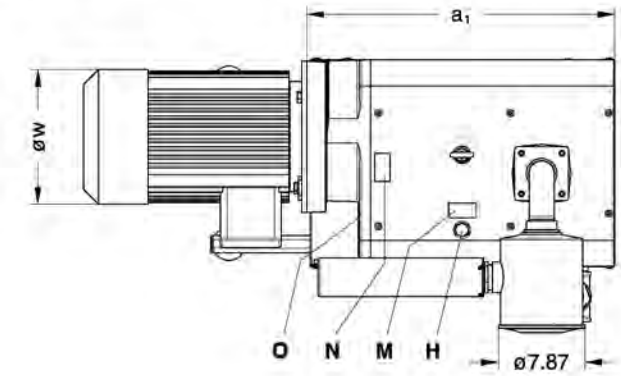
on request • # *on pedido*

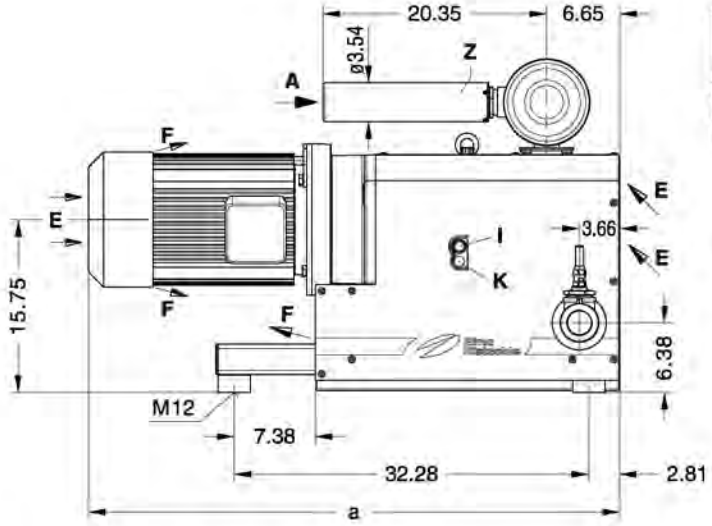
Technical information is subject to change without notice! • *La información técnica está sujeta a cambios sin previo aviso!*

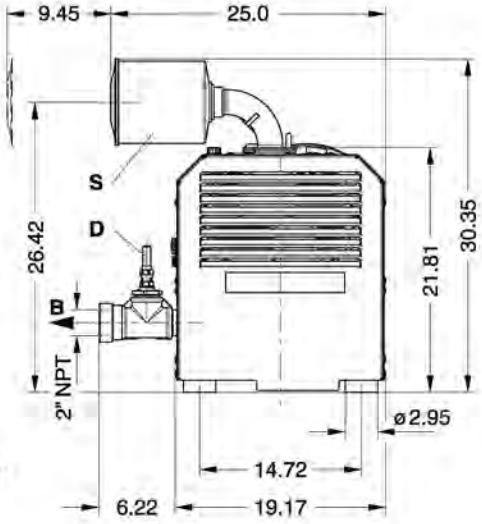
Dimensions • *Dimensiones* [inches]

C-DLR 301

C-DLR			301	
kw	50 Hz	11.0	15.0	18.5
hp	60 Hz	15.0	20.0	25.0
a	50 Hz		48.39	
	60 Hz	48.21	49.60	52.52
a_1	50 Hz		28.58	
	60 Hz	28.40	28.40	29.13
øw	50 Hz		12.28	
	60 Hz	12.96	12.96	15.3





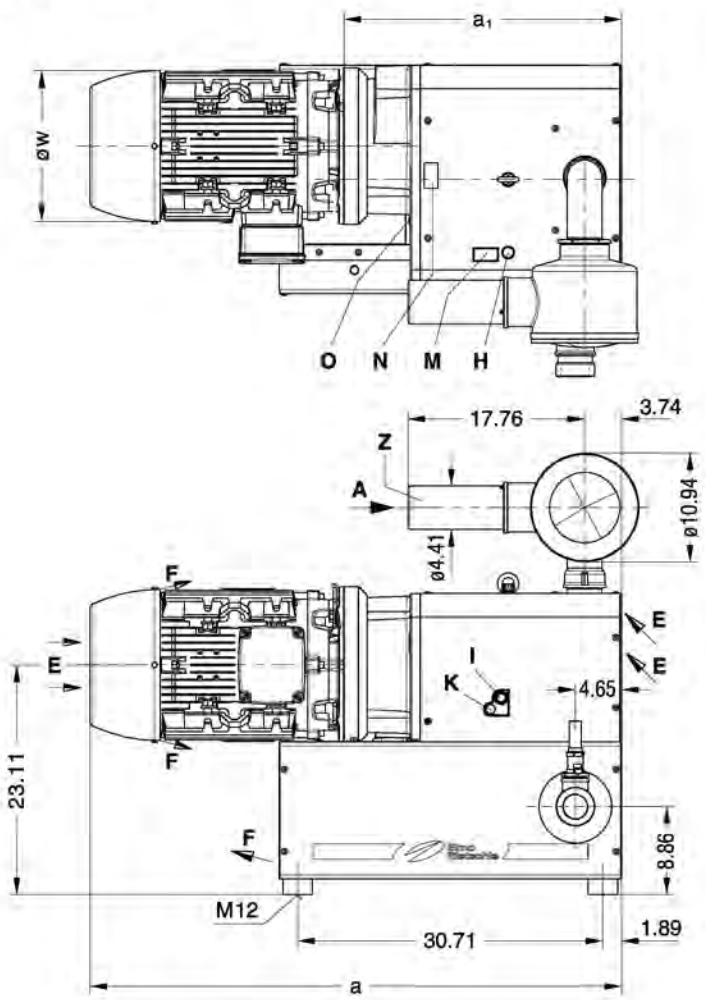


A	Suction • *Succión*
B	Pressure connection • *Conexión de presión*
D	Safety valve • *Válvula de seguridad*
E	Cooling air entry • *Entrada de aire refrigerante*
F	Cooling air exit • *Salida de aire refrigerante*
H	Oil fill port • *Punto de alimentación del aceite*
I	Oil sight glass • *Mirilla de aceite*

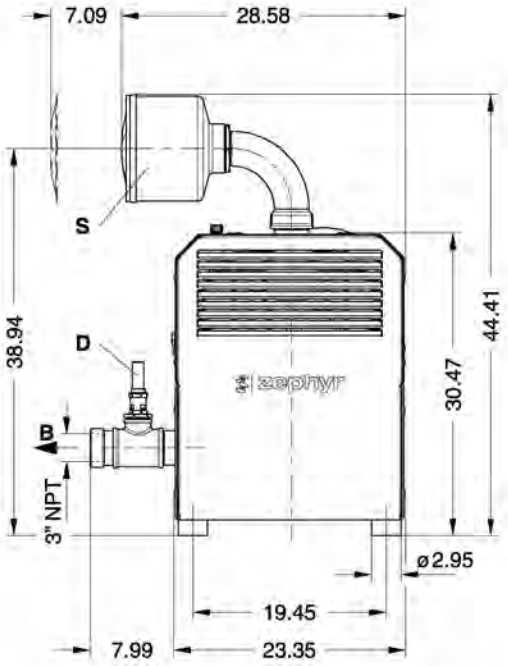
K	Oil drain port • *Punto de drenaje del aceite*
M	Oil type plate • *Placa de aceite*
N	Data plate • *Placa de la unidad*
O	Direction of rotation arrow • *Dirección de rotación*
S	Suction filter • *Filtro de aspiración*
Z	Inlet silencer • *Silenciador de entrada*

Dimensions • *Dimensiones* [inches]

C-DLR 401 / 501



C-DLR		401		501	
kw	50 Hz	18.5	22.0	18.5	30.0
hp	60 Hz	25.0	30.0	30.0	40.0
a	50 Hz	53.50	55.10	53.50	58.4
	60 Hz	51.12	51.78	51.78	54.85
a_1	50 Hz	26.50		26.50	
	60 Hz	27.73	28.23	28.23	28.75
øw	50 Hz	15.59		15.59	
	60 Hz	15.3	14.17	14.17	15.83



A	Suction • *Succión*
B	Pressure connection • *Conexión de presión*
D	Safety valve • *Válvula de seguridad*
E	Cooling air entry • *Entrada de aire refrigerante*
F	Cooling air exit • *Salida de aire refrigerante*
H	Oil fill port • *Punto de alimentación del aceite*
I	Oil sight glass • *Mirilla de aceite*

K	Oil drain port • *Punto de drenaje del aceite*
M	Oil type plate • *Placa de aceite*
N	Data plate • *Placa de la unidad*
O	Direction of rotation arrow • *Dirección de rotación*
S	Suction filter • *Filtro de aspiración*
Z	Inlet silencer • *Silenciador de entrada*

Accessories • *Accesorios*

C-DLR		301	401	501
Non return leaf • *Válvula retención*	**ZRZ**	50	80	80
Pressure regulating valve • *Válvula reguladora de presión*	**ZDR**	40	65	65
Pulsation dampener • *Amortiguador de pulsación*	**ZPD**	300	400	500
Motor starter • *Arranque del motor*	**ZMS**		#	

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APPENDIX D

DRAFT REMEDIATION SYSTEM OPERATION & MAINTENANCE PLAN

DRAFT

REMEDIATION SYSTEM OPERATION & MAINTENANCE PLAN

PERMA-FIX OF SOUTH GEORGIA, INC.

1612 JAMES P. RODGERS CIRCLE

VALDOSTA, GA 31601

EPA ID No. GAD093380814

GDNR HW Facility Permit No. HW-020(D)

November 20, 2025

PREPARED FOR:

Perma-Fix Environmental Services, Inc.
8302 Dunwoody Place, Suite 250, Atlanta, GA 30350

PREPARED BY:

GeoSouth Environmental Solutions, LLC
11250 Old St. Augustine Rd., Suite 15 PMB 333, Jacksonville, FL 32257

Project: PFSG-025-002

Certification and Signatories

40 CFR 260.10

Pursuant to 40 CFR § 260.10, I certify that I am a Qualified Groundwater Scientist who has received a Baccalaureate or Post-Graduate Degree in the Natural Sciences or Engineering and have sufficient training and experience in groundwater hydrology and related fields as demonstrated by state registration and completion of accredited university courses that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by myself or by a subordinate working under my direction.

I also hereby certify that this "Draft Remediation System Operation & Maintenance Plan" was prepared under the direction of a Georgia Registered Professional Geologist.

William C. Kelly

Digitally signed by William C. Kelly
DN: cn=William C. Kelly, c=US, o=GeoSouth Environmental Solutions, LLC, ou=President, email=wkelly@geosouthes.com
Date: 2025.11.20 17:12:53 -05'00'

11/20/2025

William C. Kelly, PG
President and Principal Hydrogeologist
Georgia Professional Geologist No. 1568
Qualified Groundwater Scientist

Date

Certification and Signatories

40 CFR 270.11

The certifications as required by 40 CFR § 270.11(b)(1) and (d)(1) are provided below:

Certification is provided by Kevin Schmuggerow, Vice President, Industrial Business, Perma-Fix Environmental Services, Inc., as a responsible corporate officer in accordance with 40 CFR § 270.11(b).

In accordance with 40 CFR § 270.11(b)(1) and 270.11(d)(1), the following certification is made with respect to the Perma-Fix of South Georgia Draft Remediation System Operation & Maintenance Plan submitted November 20, 2025.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kevin Schmuggerow Digitally signed by Kevin Schmuggerow
Date: 2025.11.20 16:55:34 -05'00'

Kevin Schmuggerow
Vice President, Industrial Business
Perma-Fix Environmental Services, Inc.
8302 Dunwoody Place, Suite 250
Atlanta, GA 30350

Date

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List of Acronyms and Abbreviations

%	percent
µg/m^3	micrograms per cubic meter
bgs	below ground surface
COC	contaminant of concern
DO	dissolved oxygen
DTW	depth to water
fpm	feet per minute
GEPD	Georgia Environmental Protection Division
inWC	inches water column vacuum
LNAPL	light nonaqueous phase liquids
O&M	Operation and Maintenance
ORP	oxidation-reduction potential
psi	pounds per square inch
RDR	Remediation Design Report
ROI	Radius of Influence
scfm	standard cubic feet per minute
SVE	Soil Vapor Extraction
VOC	volatile organic compound

1.0 INTRODUCTION

This *Draft* Remediation System Operation & Maintenance Plan (O&M Plan) has been prepared by GeoSouth Environmental Solutions, LLC (GeoSouth) to present the system components, maintenance requirements, and operational details for a groundwater air sparge (AS) and soil vapor extraction (SVE) system proposed for installation at the Perma-Fix of South Georgia, Inc. (PFSG) facility, located in Valdosta, Georgia (the Site). The Site location is depicted on **Figure 1**. The Site layout, including groundwater monitoring well locations, is depicted on **Figure 2**. The purpose of the O&M Plan is to serve as a field reference guide for the prescribed operation parameters, equipment specifications and maintenance schedule for the AS/SVE treatment system at the Site.

1.1 BACKGROUND

The PFSG property was originally developed by Ramsey chemical during the 1980s as a hazardous waste treatment, storage, and disposal (TSD) facility. PFSG acquired the property in 1999 and continued to operate the TSD facility. During operations conducted by others prior to 1999, discharges of organic chemicals occurred, impacting soil and groundwater beneath the facility.

1.2 SITE SAFETY

The remediation treatment system employs high voltage electricity, compressed air and high vacuum equipment, to deliver air injection and vacuum vapor recovery for operation. Prior to performing work onsite, system operation and monitoring personnel will review and be familiar with remediation system components and conventional safety practices, including familiarity with emergency shutdown controls for the primary electrical supply, as well as AS and SVE electrical, temperature, vacuum, and pressure gauges and controls. Prior to entering the control unit, workers should wear hearing and eye protection, and avoid hot surfaces and moving components.

1.3 PERSONNEL RESPONIBILITIES

The remediation treatment system will be monitored and inspected by a team of properly trained personnel. The team will include a combination of select facility employees, and contracted field technicians and remediation system specialists. The designated facility employees who have been trained to inspect the system for routine operating status will perform the daily system inspections to confirm that the components and relays are operating, no alarm/failsafe conditions have occurred, and the condensate fluid storage tank is secure and not leaking. The designated facility employees will also be responsible for weekly lubrication of the vacuum blower. The inspector will promptly report alarm or other non-standard conditions to the remediation system operations consultant. If the system requires shutdown to address the observed condition, the consultant will request that the designated facility employee turn off the system via at the emergency shutdown switch, while a remediation specialist is dispatched to the facility to perform a diagnostic inspection and system restart.

The field technician will be responsible for monthly system monitoring, optimization adjustments, and routine maintenance activities. The data collected will be recorded on field logs that are transmitted to the remediation system operations consultant. The inspector will promptly report alarm or other non-standard conditions to the remediation system operations consultant. If the system requires shutdown to address the observed condition, the consultant will request that the field technician turn off the system via at the emergency shutdown switch, while a remediation specialist is dispatched to the facility to perform a diagnostic inspection, implement repairs as necessary, and restart system.

The remediations system operations consultant will be responsible for communicating with the client, regulatory agency, and the remediation system operations team. That individual will receive and review operational information and interpret the data to confirm proper system performance and optimization.

1.4 SPILL PREVENTION CONTROL AND COUNTERMEASURES

The primary spill potential from the treatment system is the release of fluid condensate from the moisture separator or condensate storage tank. A spill kit will be staged in the vicinity of the condensate tank. However, the SVE system is intended to capture vapors from above the water table and does not generate a significant volume of fluids. In addition, both the moisture separator and connected condensate tank will be located within the secure property boundaries and staged on a concrete-paved surface.

2.0 REMEDIATION SYSTEM DESCRIPTION

A layout of the AS/SVE system is presented on **Figures 3** and **4**. AS and SVE well construction details are provided on **Figure 5**, and a process and instrumentation diagram (P&ID) for the system is presented on **Figure 6**. The following sections provide a brief overview of each system's processes and equipment. PFSG intends to use an enclosed storage unit (stationary or trailer-mounted structure) to house and protect the AS and SVE system controls. The storage unit will be staged and secured on the paved area outside the southwestern corner of the BSTF portion of the warehouse. Underground piping and above ground electrical will terminate in this area for connection to the remedial system control components. Piping from the AS and SVE wells will be independently connected to common manifolds located adjacent to or housed within the storage unit. The AS and SVE manifolds will include individual valves and gauges to control and monitor air flow and pressure/vacuum to/from the individual treatment wells. The individual AS lines will be equipped with a rotameter (or similar device) to measure air flow. The individual SVE lines will include a valved fitting to enable air flow measurement using a pitot tube (or alternate air velocity probe device) inserted into the air stream, and a valved sample port to enable collection of influent air samples from the individual SVE lines. Equipment specifications are included as **Appendix A**.

2.1 SOIL VAPOR EXTRACTION SYSTEM

SVE is a soil treatment process involving the application of vacuum to a network of 12 vertical SVE wells (SVE-1 through SVE-12) with screened intervals designed to influence the unsaturated soil horizon above the groundwater surface in the assessed area of soil impacts, to vacuum-capture and recover volatile organic compounds (VOC) from the unsaturated soils. The SVE well locations are depicted on **Figure 3**. The recovered vapors are then treated using a granular activated carbon (GAC) adsorption to capture and remove contaminants of concern (COC) from the air stream. To achieve the proposed SVE system design objectives, a Roots URAI 47 (10 hp) positive displacement (PD) vacuum blower (or equivalent) will be used. When the 12 vertical SVE wells are operating at the minimum desired design air flow rate of 15 to 18 standard cubic feet per minute (scfm) and 100 inches of water column (inWC) vacuum, the performance curve for this PD vacuum blower indicates this unit has the capacity to exceed the targets air flow of 225 scfm and reach up to 350 scfm. The SVE system will include a moisture separator, a condensate storage tank, air dilution valve, flexible vacuum hoses connecting the individual vacuum lines to a common SVE piping manifold, and effluent treatment via vapor phase GAC vessels prior to treated effluent final discharge to the atmosphere.

The captured vapor stream is directed through a 140-gallon moisture separator (knockout tank) to separate condensate moisture from the vapor stream prior to further treatment of the influent soil gas stream. The small amount of fluid recovered within the SVE system knockout tank will be pumped through a 55-gallon liquid-phase GAC drum via a relay-controlled transfer pump, and the treated effluent will then be collected into a separate storage container (estimated 250–500-gallon capacity poly holding tank or similar) for subsequent testing, manifesting and appropriate disposal.

Condensate liquids collected in the storage container will be periodically emptied into 55-gallon steel drums or nominal 330-gallon poly totes for transport and proper disposal. An initial hazardous waste profile will be set up within the

Perma-Fix system for disposal of these liquids. Once collected, each transport container will be labeled, manifested, and transported to the Perma-Fix of Florida TSD facility where it will be managed for final disposition.

Based on the pilot test results and experience, the target vacuum of 100 inWC should be sufficient to achieve the minimum subsurface extraction flow rate of at least 225 scfm. If the SVE wells can yield up to 350 scfm, then less inflow air from the dilution line and valve will be required. Achieving high airflow through the SVE system is desirable to allow the use of larger (2,000 lbs) GAC vessels. To optimize carbon polishing of the SVE influent vapor stream, the minimum pass-through air flow velocity for these vessels is approximately 25 feet per minute (fpm) to provide adequate contact time with the GAC media. The vapor phase GAC vessels will be configured in a three-canister series with sampling ports available to collect vapor samples prior to the initial GAC unit, a port between the first and second GAC unit, and a final port located after the third GAC unit.

A summary of the planned SVE system and its operational objectives for this facility are as follows:

- Operational air flow - per vertical SVE well @ 15 - 18 scfm (or greater, if subsurface conditions allow)
- SVE Flow - Entire System (12 SVE Wells) @ 180 - 216 scfm with ~100 in WC (~7.4 in Hg)
- SVE Flow - Entire System (max capacity) @ ≥225 scfm with ~100 in WC (~7.4 in Hg)
- The SVE blower must be capable of recovering ≥125% of the air flow for the entire AS system
- The SVE system will include all appropriate valves, gauges, meters to regulate flow at each SVE well
- The SVE system will include an air-water separator (knockout tank) with transfer pump
- SVE system will include an air inlet dilution (bleed) line and a discharge silencer
- SVE system will include galvanized steel discharge header leading to the SVE piping manifold

Based on these criteria, a conservative SVE ROI of 39 feet has been incorporated for the final design.

2.2 GROUNDWATER AIR SPARGE SYSTEM

AS is a groundwater treatment process involving the injection of air into a series of 19 AS wells (AS-1, ASI-2, and AS-3 through AS-19) screened below the groundwater surface to stimulate oxidation and promote migration of dissolved organic chemicals from the groundwater horizon into the overlying unsaturated soil horizon, where the vapors are captured and extracted by the SVE system. The AS well locations are depicted on **Figure 3**. To achieve the planned AS system design objectives, a Rietschle DLR-301 20 hp rotary claw (or equivalent) compressor is proposed. When operating within the 12 to 15 psi pressure range, the performance curve for this compressor indicates this unit has the capacity to achieve up to 175 to 190 cfm air flow. The AS system will include a heat exchanger, a discharge silencer, and a galvanized steel discharge header leading to the AS piping manifold.

The selected AS pressure should be sufficient to overcome water column head; however, excessive air injection pressure should be avoided to prevent fracturing and soil channeling. Therefore, AS well injection pressures typically range between 11 and 15 psi. Based on these injection pressures, injection flowrates should also range between 7.5 to 10 scfm per AS well. The total air flow anticipated for the 19 AS well points is ≤180 scfm.

A summary of the planned AS system and its operational requirements for this facility are thus as follows:

- Breakthrough pressure @ ~13-15 PSI
- Operational pressure @ ~10-12 PSI
- Air Flow - per AS well @ 7.5-10 scfm
- Air Flow – for entire AS system (19 AS wells) @ 142 - 190 scfm
- The AS system will include all appropriate valves, gauges, meters to regulate flow at each AS well
- The AS system will include a discharge silencer and heat exchanger
- The AS system will include galvanized steel discharge header leading to the AS piping manifold

Based on these criteria, a conservative AS well ROI of 24 feet has been incorporated for the final design.

2.3 REMEDIATION SYSTEM STARTUP

During the initial startup and operations of the treatment system and in consideration of the contaminant mass distribution (and off-gas treatment), a greater emphasis will be placed on the performance of the SVE system to accelerate subsurface mass removal, with the AS system and groundwater impacts still being important but a lower priority. Therefore, after the initial bump start testing of all remediation equipment, the SVE system will remain operational for an estimated 3 to 6 months before initiating operation of the AS system.

During SVE system operation, wellhead pressures, ROIs, and recovery flow rates will be recorded and adjusted as necessary to ensure optimized performance for maximum contaminant recovery and remedial effectiveness of the system. During the startup of the SVE system, air dilution will be used to control the initial contaminant concentrations and GAC loading.

During this startup phase, once SVE system performance has been optimized, the AS system will be started up. The sparge cycle and sparge ROIs will be recorded and adjusted as necessary to confirm design optimization. Once startup and initial adjustment of both systems have been accomplished, the AS system will be turned back off and SVE alone will be operated for an estimated 3-6 months to provide sufficient time for influent stream concentrations stabilize and show a decreasing trend. Well schematics and process flow diagrams for the AS/SVE system are shown in **Figures 5** and **6**.

Once sustained SVE influence has achieved a decreasing influent concentration trend (estimated 3-6 months), the AS system will be restarted. It is anticipated that constant air flow will be routed to the active AS wells. Initially, the AS flow rate will be maintained at approximately 3 scfm while monitoring changes in SVE influent stream. Once SVE concentrations stabilize, the AS flow rates will be gradually increased toward the design goal of 7.5-10 scfm per AS well, while continuing to monitor changes in SVE influent stream.

Once dynamic equilibrium has been achieved, the number of wells actively operated may change, to either perform zone treatment, or to perform episodic treatment of select AS wells to allow the sparge bubbles to expand and collapse within a given sparge cycle. When AS wells are active, the corresponding SVE well(s) influencing that area will also be active.

2.4 REMEDIATION SYSTEM SHUTDOWN

During normal system operation, both the AS and SVE systems controls will be operating on automatic mode. To confirm system failsafe relays are working properly, the SVE may be switched to off at the control panel, which will automatically trip the AS system relay and turn off the entire system. Once the failsafe relay testing is completed, the SVE will be switched back to automatic on the control panel and the system will be restarted.

The system will be periodically turned off to perform routine system maintenance or occasional repairs. During these events, the system will be de-energized at the main electrical switch. Lockout/tagout procedures will be followed during such occasions, securing the electric lever in the off position with a unique (not multikey) temporary padlock to ensure unintentional power won't be restored until all system components are secured and workers are informed and prepared for re-energization and restart. Prior to restart, the control panel switches will be turned to automatic and then the padlock will be removed, and electrical power will be restored to the system.

The system will remain in active operation until cleanup objectives for active treatment have been achieved, confirmed by collection of representative environmental media (soil and groundwater) from the historic areas of concern, and following receipt of regulatory approval to suspend active treatment.

2.5 AS/SVE OPERATIONAL PERFORMANCE MONITORING PROGRAM

2.5.1 BASELINE SOIL AND GROUNDWATER SAMPLING AND AS/SVE SYSTEM MONITORING

Prior to and during the initial startup phase and first week of operation of the remedial system, water level, vapor flow rate, and total VOC vapor field monitoring data will be collected to provide "initial conditions" data. This data collection will be conducted in addition to the "baseline" soil and groundwater sampling. A summary of system operation and performance monitoring schedules is provided in **Table 1**. The groundwater elevation data will be used to evaluate the hydraulic head distribution and groundwater flow field around the new wells. The COC data collected in soil, groundwater, and air will be used to track AS/SVE mass removal and system loading and to evaluate remedial performance by comparing baseline sampling results with ongoing remedial performance data. The following system testing, sampling and analysis program will be performed prior to and during the course of operation of the remediation systems after AS/SVE system startup:

- Prior to startup, baseline groundwater levels will be measured once in all existing groundwater monitoring and all newly constructed and inactive AS and SVE wells. The groundwater level measurements will be completed to coincide with the appropriate quarterly groundwater monitoring event, or other sampling frequency approved by the GEPD, if possible.
- Prior to startup, all existing monitoring wells and newly constructed AS and SVE wells will be sampled and analyzed for COCs in groundwater by USEPA Method 8260 at the same time as the groundwater level measurements are collected, and will coincide with the appropriate quarterly groundwater monitoring event, or other sampling frequency approved by the GEPD, if possible.
- An O&M checklist and log sheet (**Appendix B**) will be used to record system operation and monitoring data.
- During the first week of system operation, COC concentrations in the off-gas of each SVE well will be measured with a field-calibrated organic vapor meter (OVM) during the first day of startup, during days 2 and 3 after three of system operation, during weeks 1-3 of the first month of system operation, and monthly thereafter. Vapor samples will also be collected prior to the first GAC vessel, between the first and second GAC vessel, and after the third GAC vessel. These vapor samples will be captured in Tedlar® bags and then the OVM will be used to draw the vapors from the sample bag. Vapor concentrations, recovery rates, and vacuum readings from each SVE well will also be recorded in the O&M logbook. The initial GAC vessel is intended to serve as the primary COC polishing media, with the second and third vessels serving as additional/backup treatment vessels. Therefore, vapor concentrations from the pre, mid, and post GAC effluent stream will be recorded in the O&M logbook and closely monitored to detect increases in concentrations in the samples collected after the first GAC (mid GAC sample).
- Air pressure and air flow rates to each AS well will be recorded in the O&M logbook.
- Vacuum pressure will be measured at each SVE well and recorded in the O&M logbook.
- Potential collection of condensate from the SVE wells will be monitored.
- Vacuum pressure and water levels will be measured daily for the first three days, weekly for weeks 1-3, and monthly thereafter at 11 designated O&M performance monitoring wells (MW-7S, MW-8S, MW-9S, MW-10S, MW-13S, MW-24S, B106, B108, B113, B114, and MP-8).
- At a minimum, vapor (off-gas) samples will be collected at the influent sample port (pre-GAC) and at the final effluent sample port (post GAC) to the SVE system during the first day of operation, after 24-48 hours of operation, weekly for weeks 1-3, and monthly thereafter for the first year of operation of the AS/SVE remedial measures system. The vapor (off-gas) samples will be analyzed for the vapor VOCs by USEPA Method TO-15 or an equivalent, U.S. EPA-approved vapor analytical method.

2.5.2 PROJECT SITE REMEDIATION PERFORMANCE MONITORING

The data collected during the monitoring of the AS/SVE remediation system, and the routine groundwater monitoring program will be included in the semi-annual corrective action effectiveness reports required under the permit (condition III.G.). These reports will be submitted upon completion of the second quarter and fourth quarter sampling events and include and describe all analytical data collected during the first half and second half of the calendar year. In addition, brief and concise summary quarterly reports documenting the first and third quarter remediation performance in terms of

COC mass removal and describing system operation and maintenance will be submitted following the first and third quarters while the AS/SVE system is in operation.

3.0 REMEDIATION SYSTEM CONTROLS AND FAILSAFES

The AS and SVE systems will be operated using electronic programable logic controls (PLC), hour meters, hand-off-auto (HOA) motor control switches, fault alarms, and an emergency stop switch. Select facility staff will be trained in operation of the equipment and for alarm monitoring.

- 3-phase 240-volt electrical power will be supplied to the system via a column or pole-mounted outdoor-rated breaker box with external safety switch located near the enclosed control unit.
- The AS system relays will be configured to only operate the AS when the SVE system is operating.
- The AS and SVE system controls will feature HOA switches, as well as automatic settings that are controlled by failsafe circuit relays. The relays include high amperage and fluid level control safety sensors.
- In anticipation of periodic storm-related temporary power fluctuations that typically cause an automatic system trip, the control panel will include a power surge automatic restart control to automatically restart the system after a timed delay.
- The transfer pump between the moisture separator and condensate tank will automatically turn on when the level switch inside the moisture tank signals that liquid accumulation has reached a certain level. The moisture separator tank also features a high-high relay to automatically shut off the SVE if fluid levels cannot be purged from the moisture separator.
- The condensate tank will be equipped with a high-level alarm that will override the transfer pump and prevent overfilling of the condensate tank.
- The SVE system will be routinely inspected to confirm that all vacuum gauges are working, that fittings are tight, and that the system is balanced and operating within manufacturer and design specifications.
- The AS system will be routinely inspected to confirm that all pressure and flow gauges are working, that the fittings are tight, that the temperature and pressure gauges for the air compressor indicate performance within manufacturer specifications, and that the heat exchanger filter is not clogged and/or requiring replacement.
- The AS and SVE system electrical use and individual hour meters will be inspected and the data recorded to document progress between inspections and total operating hours.
- The AS and SVE systems will be turned off monthly to perform routine maintenance per manufacturer's specifications. This will include lubricating motor components, wiring and piping inspections, filter element replacement, and testing control relays for proper function.
- The exterior of the control unit will feature an emergency kill button to shut off all electrical power to the system in the event of an unforeseen emergency.
- The control unit will include placards indicating authorized personnel entry only and the access doors will be normally closed and latched when personnel are not working inside the unit.

4.0 REMEDIATION SYSTEM MAINTENANCE

In addition to vapor sampling and airflow measurements, the monitoring of the remediation system will include routine operation and maintenance. Routine operation and maintenance at a minimum will include visual inspection of the electrical system, valves, meters, vacuum blower, air compressors, conveyance piping, and wellheads. The visual inspections of the remediation system will be conducted on a regular basis and operation and maintenance of the existing systems will be conducted on an "as-needed" basis and in accordance to any component manufacturer recommendation. All shut-downs and start-ups due to equipment malfunctions will be documented on a facility log.

This draft version of this O&M Plan has been developed, using standard operating procedures and equipment specifications. A final O&M Plan will be prepared once system has been completed. The final plan will be adjusted as necessary to compensate for site-specific performance observations and the maintenance scope and schedule will also be adjusted based upon the applicable manufacturer's maintenance specifications for the mechanical components installed on the remediation system. The final O&M Plan will be kept on file at the facility with a copy submitted to GEPD for review and comment once completed.

The routine schedule for equipment maintenance is as follows:

Frequency	Maintenance Activity
Daily	• Confirm air compressor and vacuum blower are operating • Confirm system failsafe relays are not tripped; no alarms • Visually inspect condensate tank fluid level
Weekly	• Inspect and lubricate the vacuum blower
Monthly	• Clean the air compressor and cooling ribs • Check air compressor oil level • Check and clean air compressor air filter cartridge • Record electrical consumption and hour meter readings
Each Six Months	• Replace air compressor air filter cartridge
Each Two Years	• Air compressor oil change
Each Four Years	• Air compressor overhaul

TABLES

TABLE 1
System Operation and Performance Monitoring Schedules
Remediation System Operation and Monitoring Plan
Perma-Fix of South Georgia, Inc., Valdosta, Georgia

Parameter	Measurement Method	Location	Frequency/Interval
VOC Total Vapor Concentration	Field Meter (OVM)	• Each SVE Well at manifold individual sample port. • At the pre GAC influent, midGAC, and final (postGAC) effluent sample streams.	• At startup, and at 4 hour daylight intervals during day 1. • At 4 hour daylight intervals during days 2-3. • Weeks 1-3 of operation • Monthly after first month of operation
VOC Vapor Concentration	Laboratory analysis	• Total system influent (preGAC), midGAC and final effluent samples.	• At startup • Within 24-48 hours of operation • Weeks 1-3 of operation • Monthly for first year of operation
System Operating Parameters			
Operational Parameters (Flow, Runtime)	Field Gauges	At location of gauge or over SCADA	• At startup • Days 1-3 • Weeks 1-3 of operation • Monthly after first month of operation
Vacuum or Pressure	Field Gauge	Each AS and SVE well	
Vacuum, vapor, and water level	Field Gauge	MW-7S, 8S, 9S, 10S, 13S, 24S, B106, B108, B113, B114, MP-8	
Treatment Wells Status	Valve position for wells with applied vacuum or injection pressure	Each treatment well	
Discharge Temperature	Field Gauge	Blower Discharge	
Discharge Pressure	Field Gauge	Blower Discharge	
Inlet Temperature	Field Gauge	Compressor Inlets	
Inlet Pressure	Field Gauge	Compressor Inlets	

FIGURES

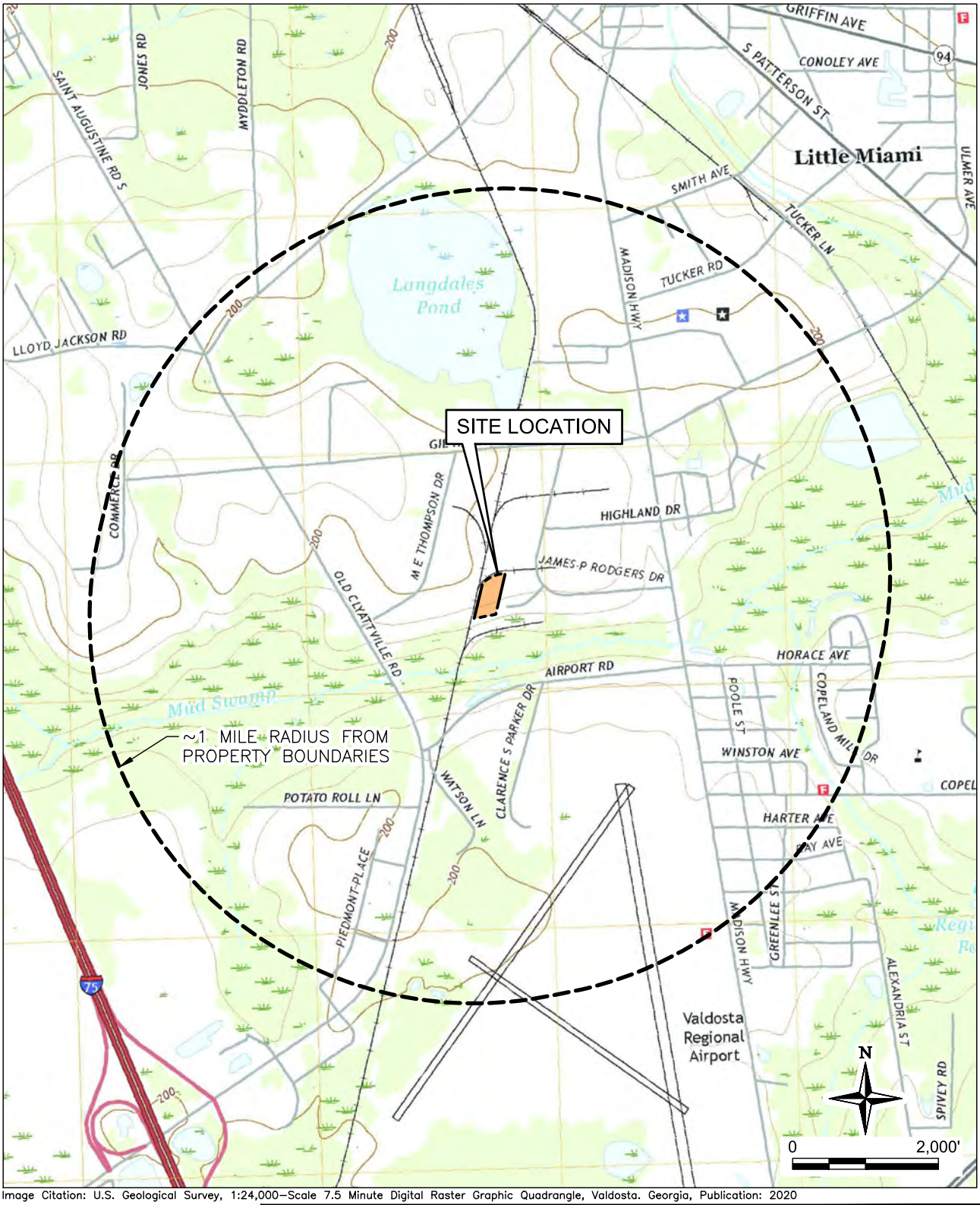


Image Citation: U.S. Geological Survey, 1:24,000–Scale 7.5 Minute Digital Raster Graphic Quadrangle, Valdosta. Georgia, Publication: 2020

QUADRANGLE LOCATION

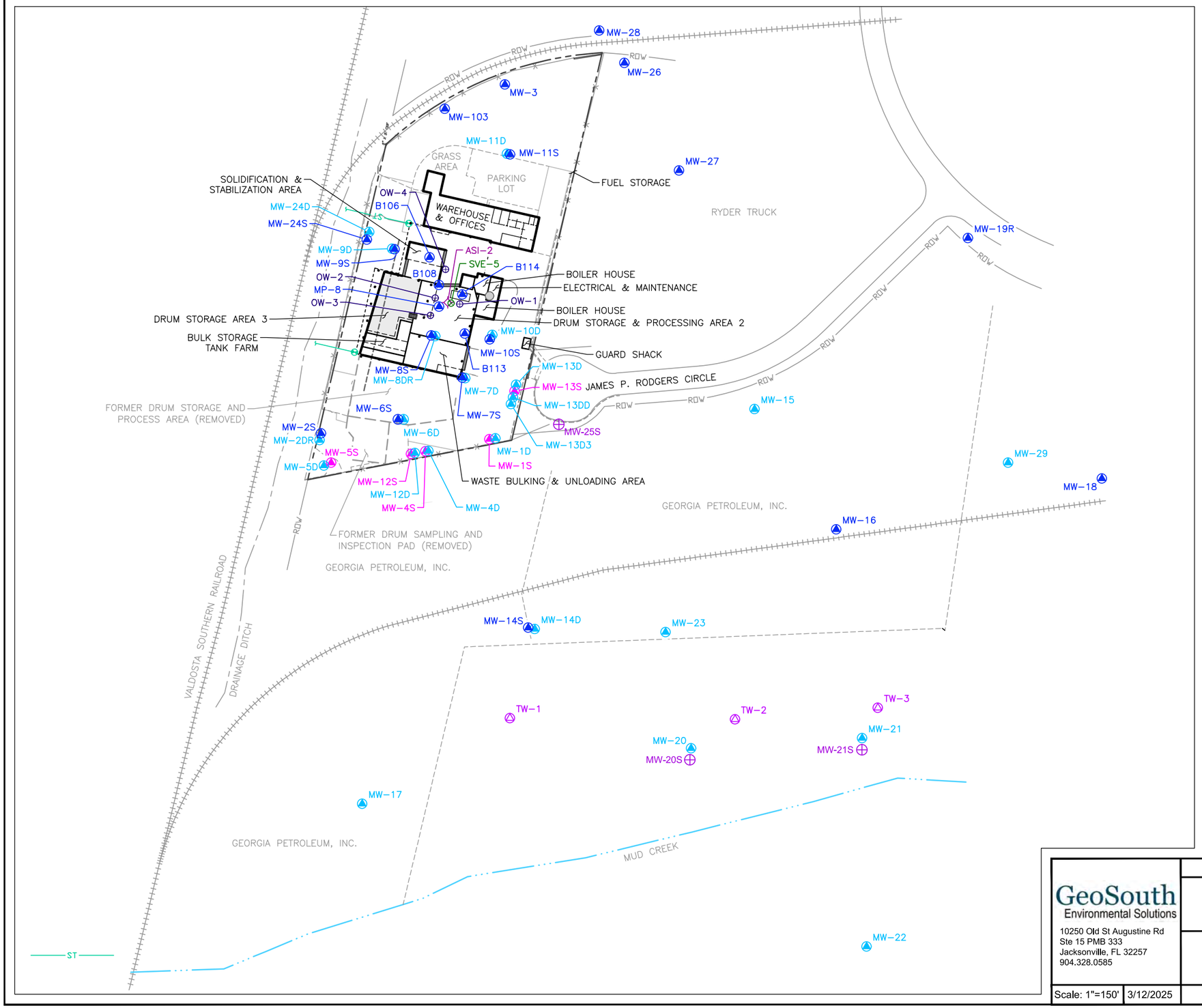
GeoSouth
Environmental Solutions
10250 Old St Augustine Rd
Ste 15 PMB 333
Jacksonville, FL 32257
904.328.0585

Scale: 1"=2000' | 1/20/2025

FIGURE 1

SITE LOCATION MAP

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



EXPLANATION

- MW-27 — SHALLOW MONITORING WELL
- MW-13D — DEEP MONITORING WELL
- MW-13S — POC MONITORING WELL
- TW-3 — TEMPORARY SHALLOW MONITORING WELL
- MW-21S — PROPOSED SHALLOW MONITORING WELL
- AIR SPARGE WELL
- SVE WELL
- OBSERVATION WELL
- WITHDRAWAL WELL
- ROOF DRAIN
- DRAINAGE LINE
- PROPERTY BOUNDARY
- FENCE
- RIGHT-OF-WAY
- BUILDING OUTER WALL
- DRAINAGE DITCH
- MUD CREEK
- ROOF LINE
- ROAD/CURB & GUTTER EDGE
- EXISTING STRUCTURE (REMOVED)
- OTHER EXISTING FEATURE
- VALDOSTA SOUTHERN RAILROAD

N

0 150'

GeoSouth Environmental Solutions
10250 Old St Augustine Rd
Ste 15 PMB 333
Jacksonville, FL 32257
904.328.0585

Scale: 1"=150' | 3/12/2025

FIGURE 2

SITE LAYOUT AND GROUNDWATER MONITORING WELL LOCATIONS

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

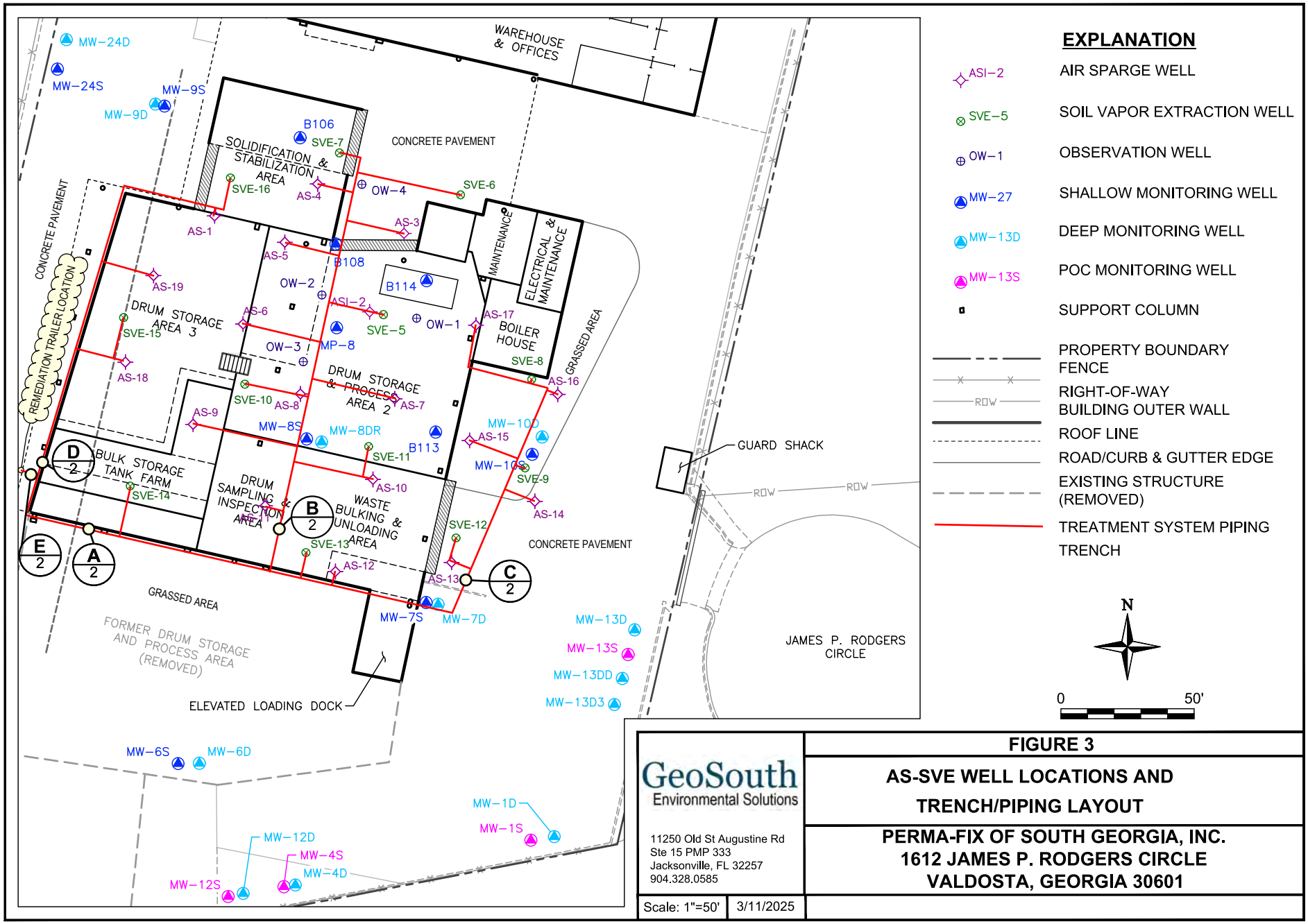


FIGURE 3

AS-SVE WELL LOCATIONS AND TRENCH/PIPING LAYOUT

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

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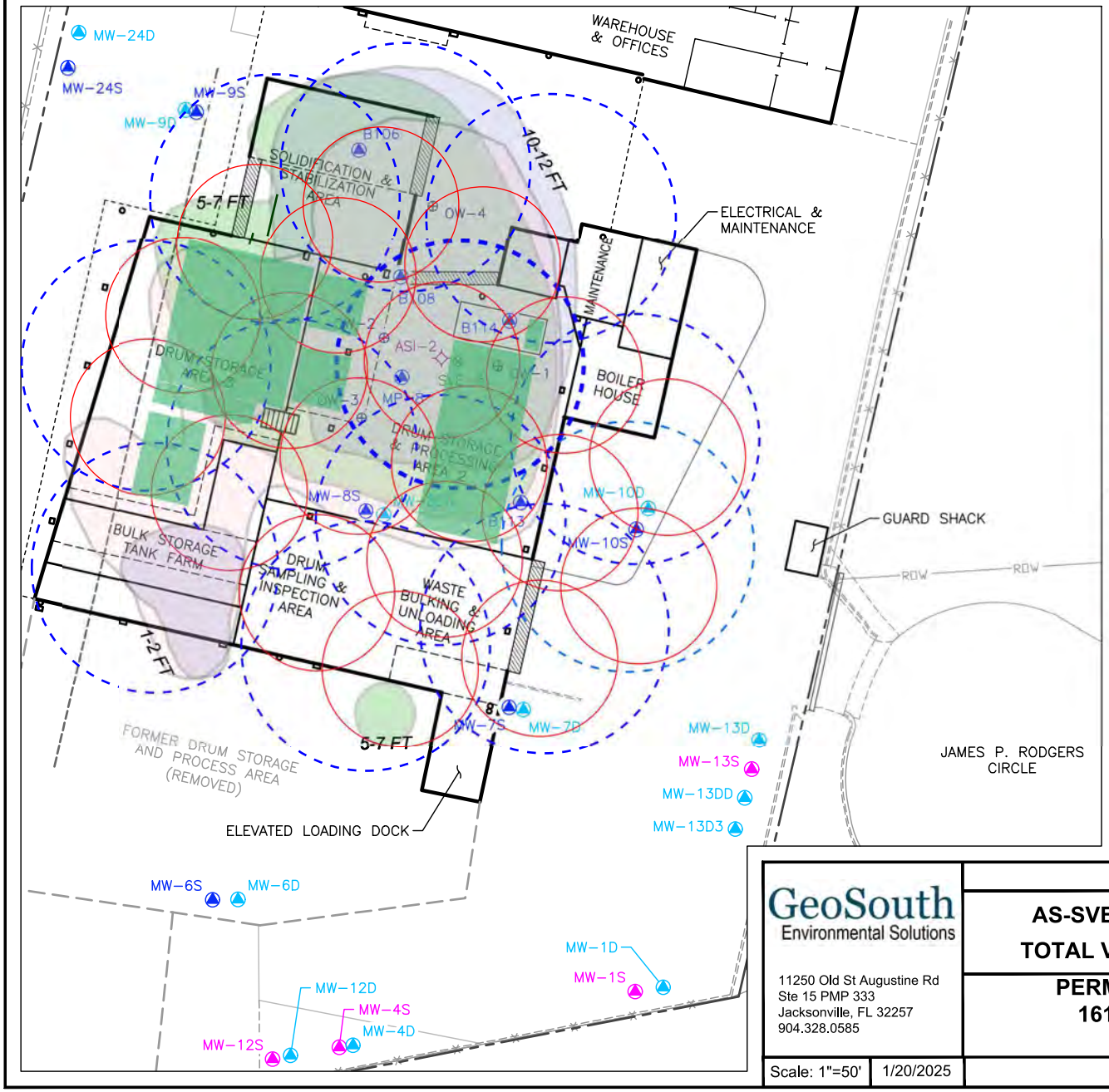
11250 Old St Augustine Rd
Ste 15 PMP 333
Jacksonville, FL 32257
904.328.0585

Scale: 1"=50' | 3/11/2025



EXPLANATION

- ASI-2 — AIR SPARGE PILOT TEST WELL AND DESIGNATION
- SVE-5 — SOIL VAPOR EXTRACTION PILOT TEST WELL AND DESIGNATION
- OW-1 — PILOT TEST OBSERVATION WELL AND DESIGNATION
- MW-27 — SHALLOW MONITORING WELL AND DESIGNATION
- MW-13D — DEEP MONITORING WELL AND DESIGNATION
- MW-13S — POC MONITORING WELL AND DESIGNATION
- AS WELL ROI
- SVE WELL ROI
- PROPERTY BOUNDARY
- FENCE
- RIGHT-OF-WAY
- BUILDING OUTER WALL
- ROOF LINE
- ROAD/CURB & GUTTER EDGE
- EXISTING STRUCTURE (REMOVED)
- TREATMENT SYSTEM PIPING
- STORAGE CELLS

N

0 50'

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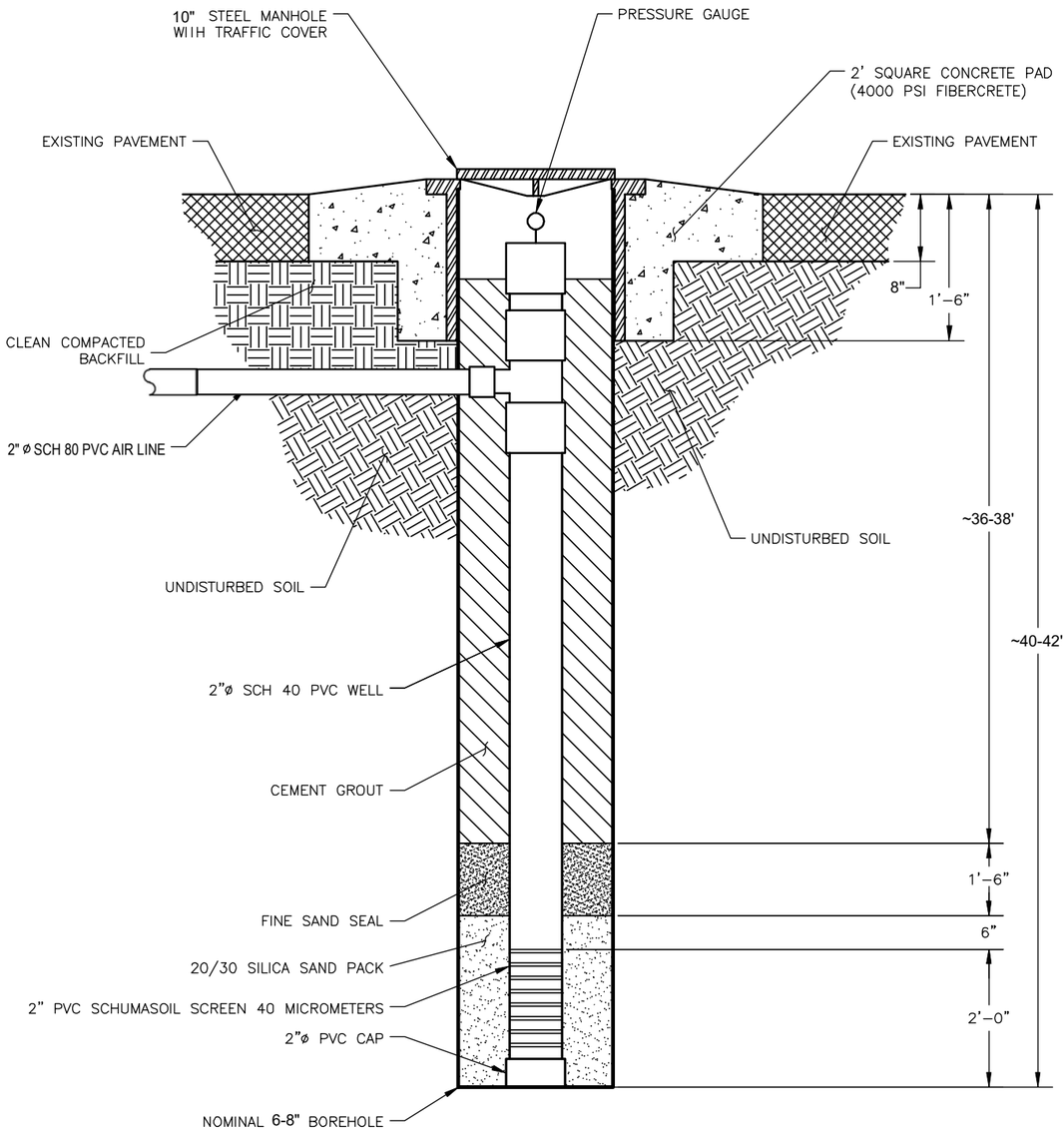
Jacksonville, FL 32257
904.328.0585

Scale: 1"=50' | 1/20/2025

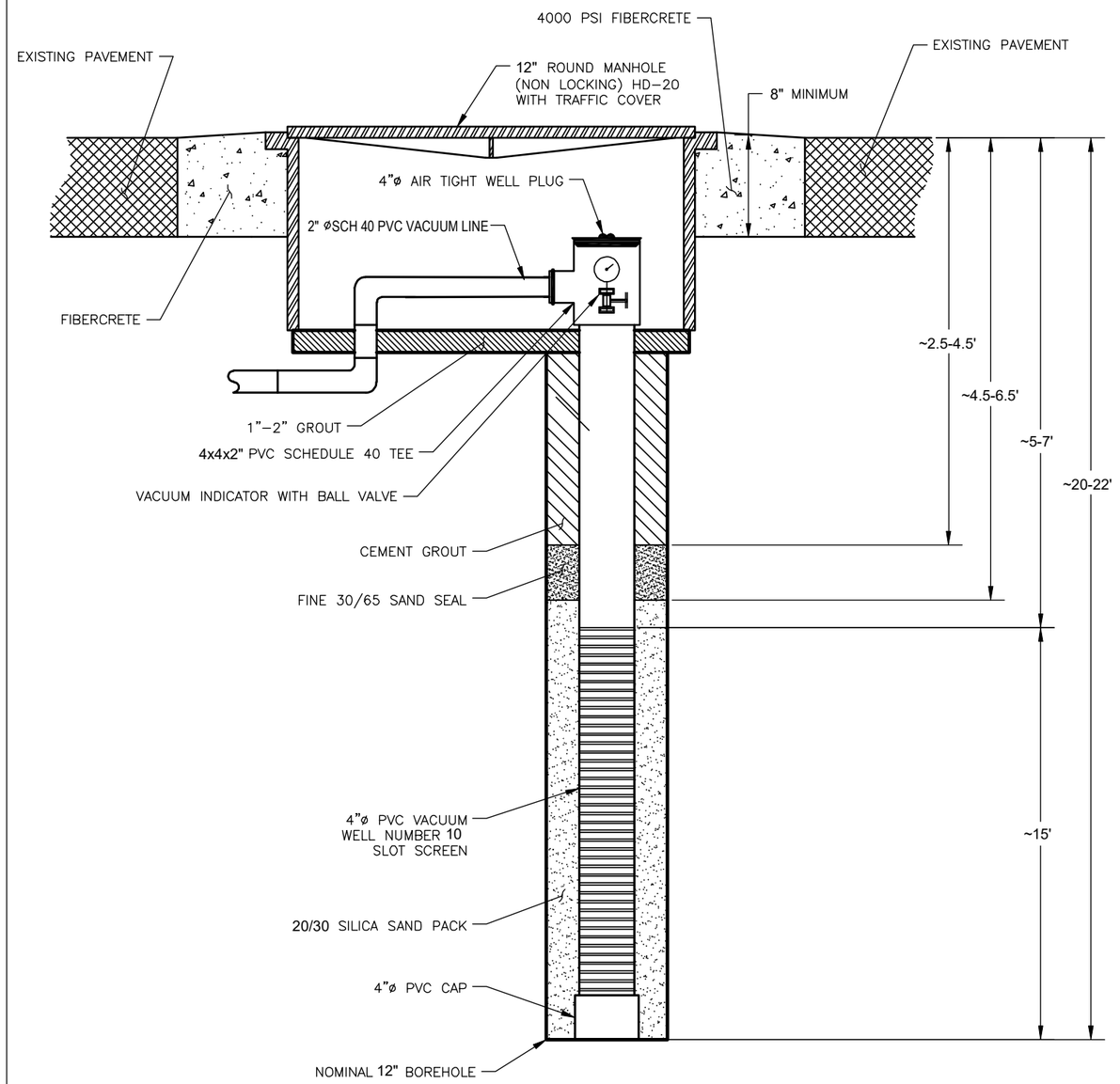
FIGURE 4

AS-SVE WELL LOCATIONS WITH ROI AND TOTAL VOC SOIL IMPACTS AREA OVERLAY

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



1 **AIR SPARGE WELL DETAIL**
SCALE: NONE



2 **VERTICAL SOIL EXTRACTION WELL**
SCALE: NONE

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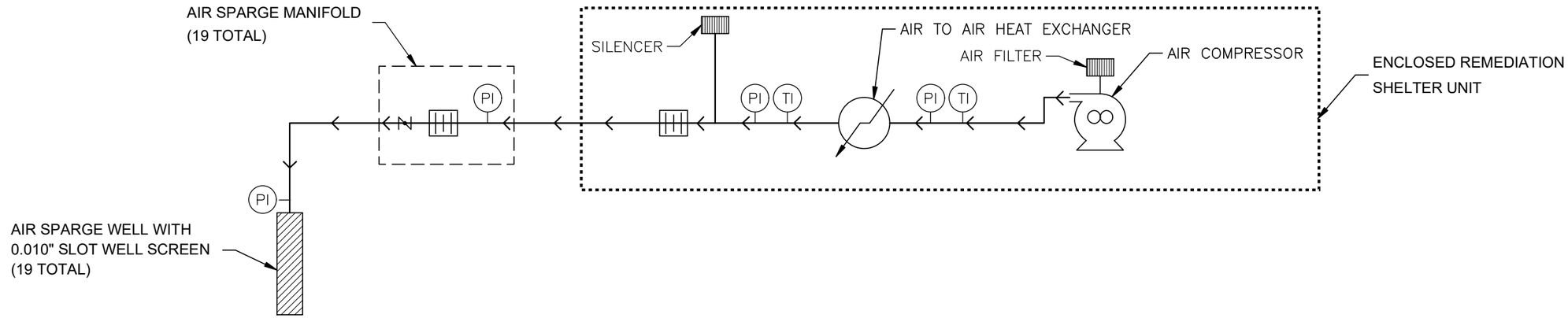
11250 Old St Augustine Rd
Ste 15 PMP 333
Jacksonville, FL 32257
904.328.0585

Scale: NONE | 9/10/2025

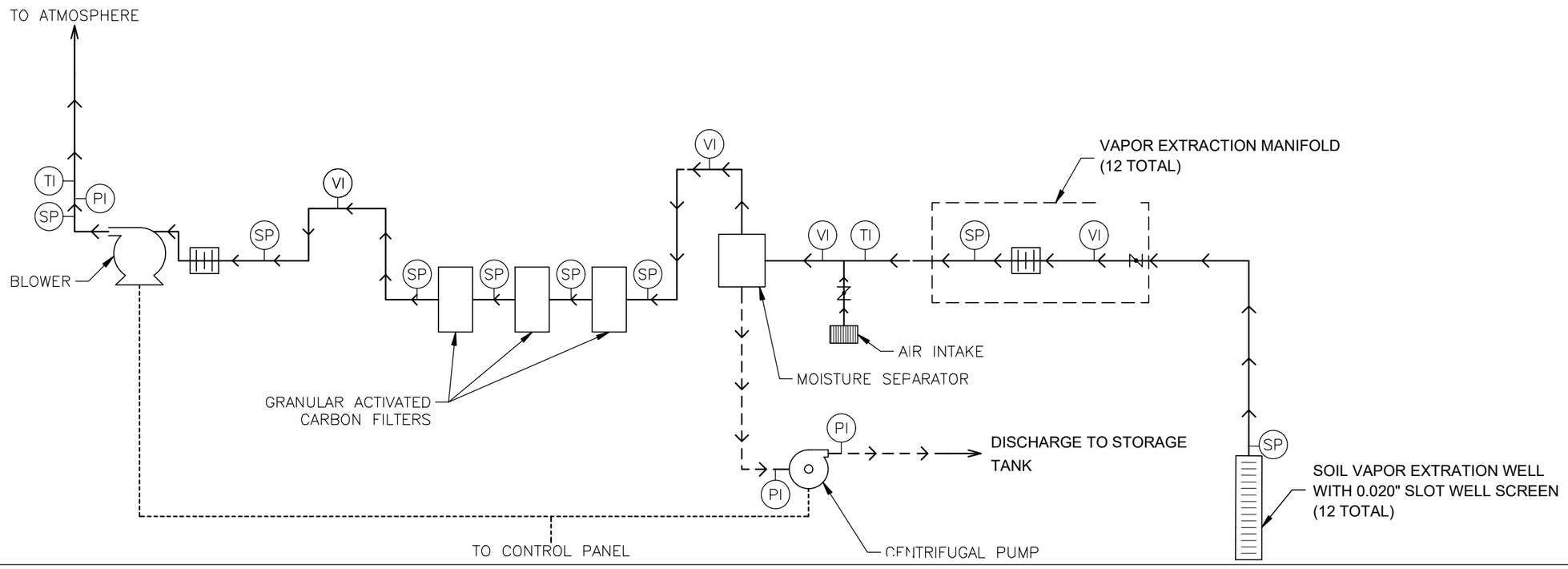
FIGURE 5

AS-SVE WELL CONSTRUCTION DETAILS

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601



1 AIR SPARGE P&ID
SCALE: NONE



2 SOIL VAPOR EXTRACTION P&ID
SCALE: NONE

EXPLANATION

FLOW METER	TI	TEMPERATURE INDICATOR		AIR LINE WITH FLOW DIRECTION
VALVE	PI	PRESSURE INDICATOR		WATER DISCHARGE LINE WITH FLOW DIRECTION
SP	SAMPLE PORT	ELECTRICAL LINE	P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
VI	VACUUM INDICATOR	AIR LINE		

GeoSouth Environmental Solutions
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Jacksonville, FL 32257
904.328.0585

FIGURE 6

AS-SVE SYSTEMS
PROCESS AND INSTRUMENTATION DIAGRAMS

PERMA-FIX OF SOUTH GEORGIA, INC.
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GEORGIA 30601

Scale: NONE | 9/10/2025

APPENDIX A

AS/SVE SYSTEM SPECIFICATIONS SHEETS

REMEDIATION EQUIPMENT SERVICES, LLC

SYSTEM ID: RES-002

Air Sparge (AS) / Soil Vapor Extraction (SVE) System
AS (190 cfm / 26 psi) / SVE (370 cfm / 10" Hg vac)
230 Volt, 3 Phase, 150 Amp

- 8' x 14' Tandem axle enclosed trailer
- UL listed control panel with PLC logic and wireless telemetry, hour meters, HOA switches, fault alarms and emergency stop

AIR SPARGING:

- **Rietschle DLR-301**, 20 hp Rotary Claw compressor
- American Industrial ACA-4302 heat exchanger
- Flow control and measurement with 22 leg manifold

SVE:

- **Roots URAI 47,** 10 hp Rotary Lobe (PD) vacuum blower
- 140-gallon moisture separator with Moyno 34401 progressive cavity pump, auto pumpout and totalizer/flowmeter
- Flow control and measurement with custom manifold configurations

This system is available for long term, short term and episodic soil and groundwater remediation and pilot tests. Generator and carbon vapor emissions treatment available separately.

For more equipment rental information, please contact:

Remediation Equipment Services, LLC
290 Dempsey Road
Palm Harbor, Florida 34683

Phone (727) 458-6808 **Fax (727) 683-9166** **Email: ddennis@resflorida.com**

Visit: www.resflorida.com for equipment information

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Blower Selection

PDAnalysis 2013 Version 4.30

Monday, Feb 5, 2018

CONTACT: Jeff Brunsman
pdblowers, Inc.
770-538-0020 / 770-538-0022

AMBIENT CONDITIONS:

Gas	Air	
Relative Humidity	80%	
Molecular Weight	28.646	
k-Value (ratio of specific heats)	1.398	
Specific Gravity	0.989	
Ambient Temperature	75	deg F
Ambient Pressure	14.66	PSIA
Elevation	60	Feet

INPUT CONDITIONS:

Actual Volume	370	ICFM
Standard Volume	284	SCFM
Mass/Weight Flow	21	lb/min
System Inlet Vacuum	10.	in HgVac
Inlet Pressure Drop	0.1	PSI
Blower Inlet Pressure	11.62	PSIA
System Discharge Pressure	14.66	PSIA
Discharge Pressure Drop	0.2	PSI
Blower Discharge Pressure	14.86	PSIA
Inlet Temperature	75	deg F

STANDARD CONDITIONS:

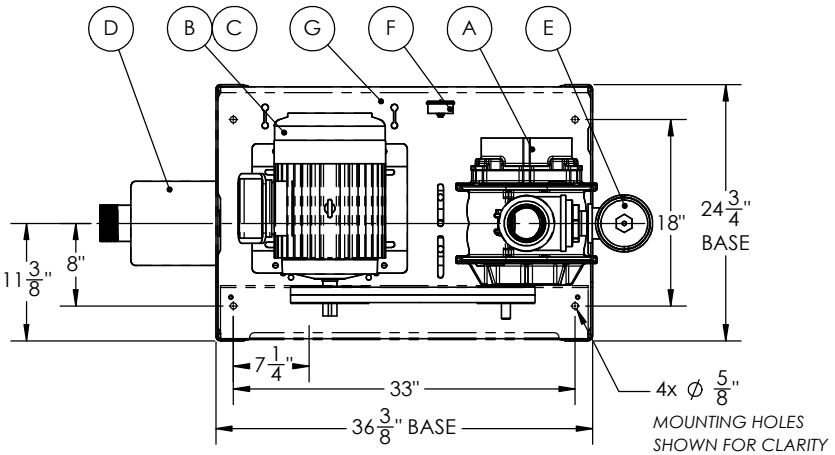
Pressure	14.7	PSIA
Temperature	68	deg F
Relative Humidity	36	%

BLOWER PERFORMANCE:

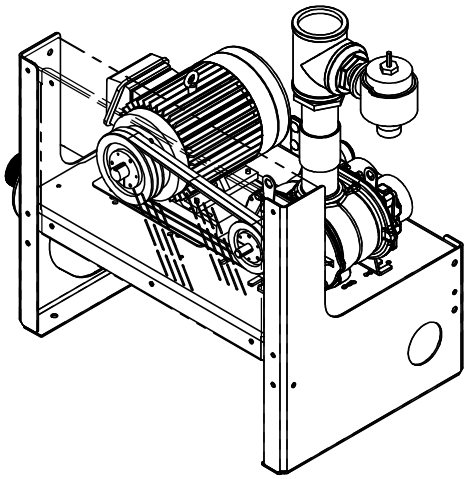
Blower Model	47	URAI	
Blower Operating Speed	2,727	RPM	(76% of maximum)
Blower Shaft Horsepower	7.0	HP	
Differential Pressure across Blower	3.25	PSI	(44% of maximum)
Temperature Rise across Blower	52	deg. F	(23% of maximum)
Blower Discharge Temperature	127	deg. F	
Estimated Noise @ 1 Meter	85.7	dBA	
Blower Discharge Volume	317	ACFM	
Estimated Bearing Life (V-Belt)	6,974,598	Hours	
Estimated Bearing Life (Coupling)	6,974,598	Hours	
Gear Tip Speed	2,858	Feet/Minute	
Connection Sizes (Inlet/Outlet)	3T / 3T		

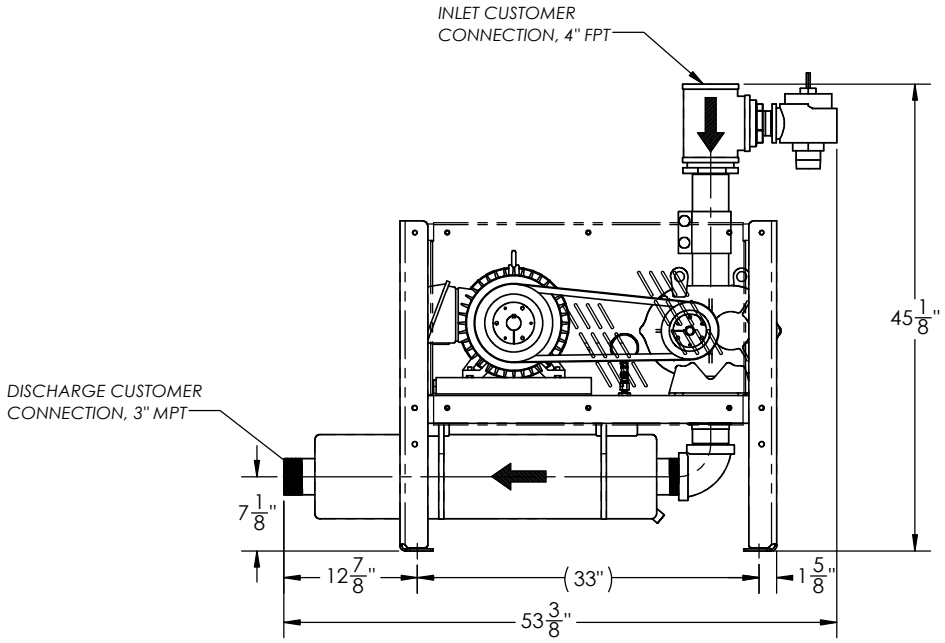
DWG. NO. 75145

ITEM	PART	DESCRIPTION	QTY.
A	21459	BLOWER, ROOTS 47 URAI	1
B	56544.P	MOTOR, 10HP, TEFC, MAX-PE, 215T	1
C	56489	MOTOR BASE, 215T	1
D	22126	SILENCER, SD-3", 3" MPT, UNIVERSAL	1
E	31175.E	VALVE, VACUUM, RELIEF, 215V, 9" HGG SET POINT	1
F	55197	VACUUM GAUGE ASSY, 30-0" HGG, 2-1/2" DIA	1
G	50107	BASE WELDMENT, VB34	1



PLAN VIEW





ELEVATION VIEW

UNLESS OTHERWISE SPECIFIED:	DRAWN	DATE	NAME
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	AUTHOR	5/26/2017	JB
	CHECKED BY		
	MFG APPR.		
	COMMENTS:		

JOB NUMBER	PARENT P/N

INTERPRET GEOMETRIC TOLERANCING PER:

MATERIAL

THICKNESS:

FINISH

WEIGHT: 635.2362

PROPRIETARY AND CONFIDENTIAL
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pdblowers inc
2280 Chicopee Mill Road SW • Gainesville, GA • 30504
800-536-9933

TITLE: PACKAGE, VACUUM
47 URAI, 10 HP, 215T FR
V1 CONFIGURATION

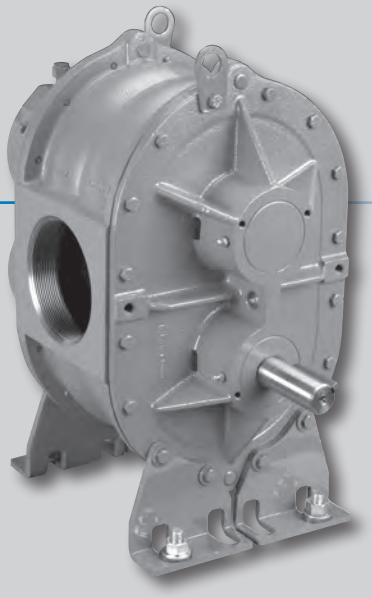
SIZE	DWG. NO.	REV
B	75145	

SCALE: 1:12 SHEET 1 OF 3

DRESSER Roots

The original ROOTS blower still leads the way™

ROOTS™ UNIVERSAL RAI® Rotary Positive Displacement Blowers



Specifications Frames 22 thru 718

DESIGN AND CONSTRUCTION FEATURES

- Steel detachable mounting feet
- Rigid one-piece cast iron casing
- Anti-friction bearings
- Thrust control
- Splash oil lubricated spur timing gears
- Connections in standard pipe sizes
- Balanced, precision machined bi-lobe impellers
- Ground steel shafts

Basic Blower Description

Universal RAI blowers are heavy duty blowers designed with detachable rugged steel mounting feet that permit easy in-field adaptability to either vertical or horizontal installation requirements.

Because of the detachable mounting feet, these units can be easily adapted to any of four drive shaft positions - right hand, left hand, bottom or top. The compact, sturdy design is engineered for continuous service when operated in accordance with speed and pressure ratings.

The basic model consists of a cast iron casing and cast iron involute impellers. Carburized and ground alloy steel spur timing gears are secured to the steel shafts with a taper mounting and locknut. Oversized antifriction bearings are used, with a cylindrical roller bearing at the drive shaft to withstand V-belt pull. The Universal RAI features thrust control, with splash oil lube on the gear end and grease lube on the drive end.

Available accessories include driver, relief valve, inlet and discharge silencers, inlet filter, check valve, extended base, v-belt or flexible coupling and drive guards.

Strongest Warranty in the Industry

ROOTS™ Universal RAI® blowers are warranted for two years plus an additional 6 months for shipping and construction where required. ROOTS synthetic oil is recommended for longer lubricant life.

Vertical Gear End

Horizontal Gear End

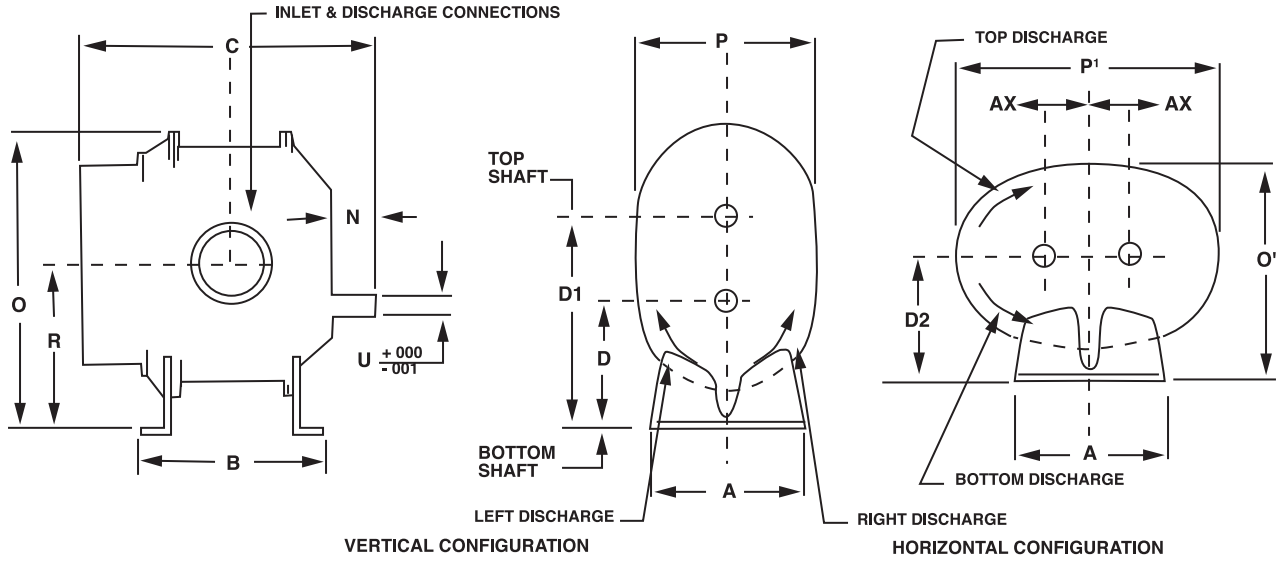
Horizontal Drive End

URAI Blower Performance

Frame Size	Speed RPM	1 PSI		6 PSI		7 PSI		10 PSI		12 PSI		13 PSI		14 PSI		15 PSI		Maximum Vacuum		
		CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	"HGV	CFM	BHP
	1160	10	0.1															4	6	0.2
22	3600	49	0.3	38	1.6	36	1.8	32	2.6	29	3.1							14	28	1.8
	5275	76	0.5	64	2.4	63	2.7	59	3.8	56	4.6							15	53	2.8
	1160	24	0.2															6	12	0.5
24	3600	102	0.6	83	3.1	81	3.6											14	69	3.5
	5275	156	0.9	137	4.6	135	5.4											15	119	5.5
	1160	40	0.2	21	1.4	19	1.6											10	18	1.1
32	2800	113	0.6	95	3.4	93	3.9	86	5.6	82	6.7	81	7.2	79	7.8	77	8.3	15	78	4.1
	3600	149	0.9	131	4.4	129	5.2	122	7.3	118	8.7	117	9.4	115	10.1	113	10.8	16	110	5.3
	1160	55	0.3	31	1.9	28	2.2											10	27	1.5
33	2800	156	0.9	132	4.6	129	5.4	120	7.7	116	9.2							14	113	5.2
	3600	205	1.2	181	6.1	178	7	170	9.9	165	11.9							15	159	7.3
	1160	95	0.5	61	3.1	57	3.6											10	55	2.5
36	2800	262	1.5	229	7.7	224	8.9											12	213	7.5
	3600	344	2.1	310	10.1	306	11.7											15	278	12.1
	860	38	0.2	18	1.4	15	1.6											8	19	0.9
42	1760	92	0.5	72	2.8	69	3.3	62	4.7	58	5.6							14	56	3.2
	3600	204	1.4	183	6.1	181	7.1	173	9.9	169	11.8	167	12.8	165	13.7	163	14.7	16	160	7.7
	860	79	0.5	42	2.7	37	3.2											8	46	1.8
45	1760	188	1	151	5.7	146	6.6	133	9.4									12	134	5.5
	3600	410	2.7	374	12.2	369	14.1	356	19.8									16	332	15.4
	860	105	0.6	59	3.6	53	4.2											8	63	2.4
47	1760	249	1.3	203	7.5	196	8.7											12	181	7.3
	3600	542	3.5	496	16.1	490	18.6											15	452	19.1
	700	72	0.4	42	2.4	38	2.8											10	36	2
53	1760	211	1.2	181	6.3	177	7.3	167	10.3	160	12.3	157	13.3	155	14.4			14	158	7.1
	2850	355	2.5	325	10.7	321	12.3	310	17.2	304	20.5	301	22.1	298	23.8	295	25.4	16	291	13.4
	700	123	0.7	78	4.1	72	4.7											10	70	3.3
56	1760	358	2	312	10.5	306	12.2	290	17.3	280	20.6	276	22.3					14	276	11.8
	2850	598	4	553	17.7	547	20.5	531	28.7	521	34.2	517	37					16	501	22.4
	700	187	1	130	5.9													8	135	3.9
59	1760	529	2.9	472	15.3	464	17.8											12	445	14.9
	2850	881	5.9	824	26	816	30											15	770	30.8
	700	140	0.8	93	4.5	86	5.3	70	7.5									12	71	4.4
65	1760	400	2.4	353	11.9	347	13.8	330	19.4	320	23.2	316	25.1	311	27	307	28.9	16	300	15.2
	2350	546	3.8	499	16.4	492	19	475	26.5	466	31.6	461	34.1	457	36.6	452	39.1	16	445	25.6
	700	224	1.2	149	7.3	139	8.5											10	135	5.9
68	1760	643	3.7	567	18.9	557	21.9	530	31	515	37	507	40.1	500	43.1			15	495	22.7
	2350	876	5.6	801	25.9	790	29.9	763	42.1	748	50.2	740	54.2	733	58.3			16	715	32.8
	700	420	2.3	279	13.6	260	15.9											8	292	8.9
615	1760	1205	6.6	1063	34.9	1044	40.6											12	997	33.9
	2350	1641	9.7	1500	47.6	1481	55.2											14	1389	53.4
	575	192	1.1	134	6.1	126	7.1	105	10.2									12	117	6
76	1400	527	3	468	15.4	460	17.8	439	25.3	427	30.2	421	32.7	415	35.1	410	37.6	16	413	19.7
	2050	790	5.3	731	23.4	723	27	702	37.9	690	45.1	684	48.7	679	52.4	673	56	16	674	29.5
	575	362	1.9	271	11.1	258	13	226	18.6									12	228	10.9
711	1400	970	5.2	880	27.7	867	32.2	835	45.7									15	793	33.5
	2050	1450	8.8	1359	41.8	1347	48.4	1315	68.2									16	1256	53.1
	575	600	3.1	470	18.1													10	446	14.8
718	1400	1590	8.1	1460	44.8													12	1398	43.6
	2050	2370	13.3	2240	66.9													12	2178	64.7

Notes: 1. Performance based on inlet air at standard pressure of 14.7 psia, standard temperature of 68° F, and specific gravity of 1.0.
2. Vacuum ratings based on inlet air at standard temperature of 68°F, discharge pressure of 30" Hg and specific gravity of 1.0.

Outline Drawing and Dimensions



Universal RAI® Blower Dimensions

Frame Size	A	B	C	Drive Shaft Location			N	O	O¹	P	P¹	R	U	Keyway	Inlet & Disch. Dia.	AX	Approx Net Wt. (lbs.)
				D	D1	D2											
22	5.13	5.00	9.75	3.75	6.25	3.75	2.50	9.63	6.88	6.25	9.25	5.00	.625	.188 x .094	1.0 NPT	1.25	32
24	5.13	7.00	11.75	3.75	6.25	3.75	2.50	9.63	6.88	6.25	9.25	5.00	.625	.188 x .094	2.0 NPT	1.25	43
32	7.25	6.75	11.25	5.00	8.50	5.00	2.44	12.81	8.88	7.75	12.13	6.75	.750	.188 x .094	1.25 NPT	1.75	69
33	7.25	7.63	12.13	5.00	8.50	5.00	2.44	12.81	8.88	7.75	12.13	6.75	.750	.188 x .094	2.0 NPT	1.75	74
36	7.25	10.00	14.63	5.00	8.50	5.00	2.56	12.81	8.88	7.75	12.13	6.75	.750	.188 x .094	2.5 NPT	1.75	102
42	8.00	7.25	13.00	6.25	10.25	6.25	3.18	15.06	10.63	8.75	13.63	8.25	.875	.188 x .094	1.5 NPT	2.00	88
~~45~~	~~8.00~~	~~10.00~~	~~15.50~~	~~6.25~~	~~10.25~~	~~6.25~~	~~2.94~~	~~15.06~~	~~10.63~~	~~8.75~~	~~13.63~~	~~8.25~~	~~.875~~	~~.188 x .094~~	~~2.5 NPT~~	~~2.00~~	~~109~~
47	8.00	11.75	17.63	6.25	10.25	6.25	3.31	15.06	10.50	8.50	13.63	8.25	.875	.188 x .094	3.0 NPT	2.00	128
~~53~~	~~10.50~~	~~8.38~~	~~15.38~~	~~6.25~~	~~11.25~~	~~6.75~~	~~3.68~~	~~17.38~~	~~11.88~~	~~10.25~~	~~17.25~~	~~8.75~~	~~1.125~~	~~.250 x .125~~	~~2.5 NPT~~	~~2.50~~	~~143~~
56	10.50	11.00	18.00	6.25	11.25	6.75	3.38	17.38	12.25	11.00	17.25	8.75	1.125	.250 x .125	4.0 NPT	2.50	170
59	10.50	14.00	21.18	6.25	11.25	6.75	3.88	17.38	12.25	11.00	17.25	8.75	1.125	.250 x .125	4.0 NPT	2.50	204
65	11.00*	10.00	18.38	8.75	14.75	8.75	3.56	21.63	15.13	12.75	19.75	11.75	1.375	.312 x .156	3.0 NPT	3.00	245
68	11.00*	13.00	21.38	8.75	14.75	8.75	3.69	21.63	15.13	12.75	19.75	11.75	1.375	.312 x .156	5.0 NPT	3.00	285
615	11.00*	20.00	28.38	8.75	14.75	8.75	3.69	21.63	16.25	15.00	19.75	11.75	1.375	.312 x .156	6.0 FLG	3.00	425
76	14.00**	11.75	19.94	11.00	18.00	11	4.06	26.13	20.69	19.38	23.25	14.50	1.562	.375 x .188	4.0 NPT	3.50	400
711	14.00**	16.75	25.19	11.00	18.00	11	4.31	26.13	19.50	17.00	23.25	14.50	1.562	.375 x .188	6.0 FLG	3.50	530
718	14.00**	23.75	32.19	11.00	18.00	11	4.31	26.13	19.50	17.00	23.25	14.50	1.562	.375 x .188	8.0 FLG	3.50	650

*17.00 in horizontal configuration
**21.00 in horizontal configuration

Dresser Roots
Houston, Texas Headquarters • U.S. Toll Free Phone: 1 877-363-ROOT(S) (7668) • Direct Phone: +1 832-590-2600
Connersville, Indiana Operations • Direct Phone: +1 765-827-9200
European Operations • Phone: +44 (0) 1695 52600 • Email: roots.europe@dresser.com
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S-12K84 rev. 0810

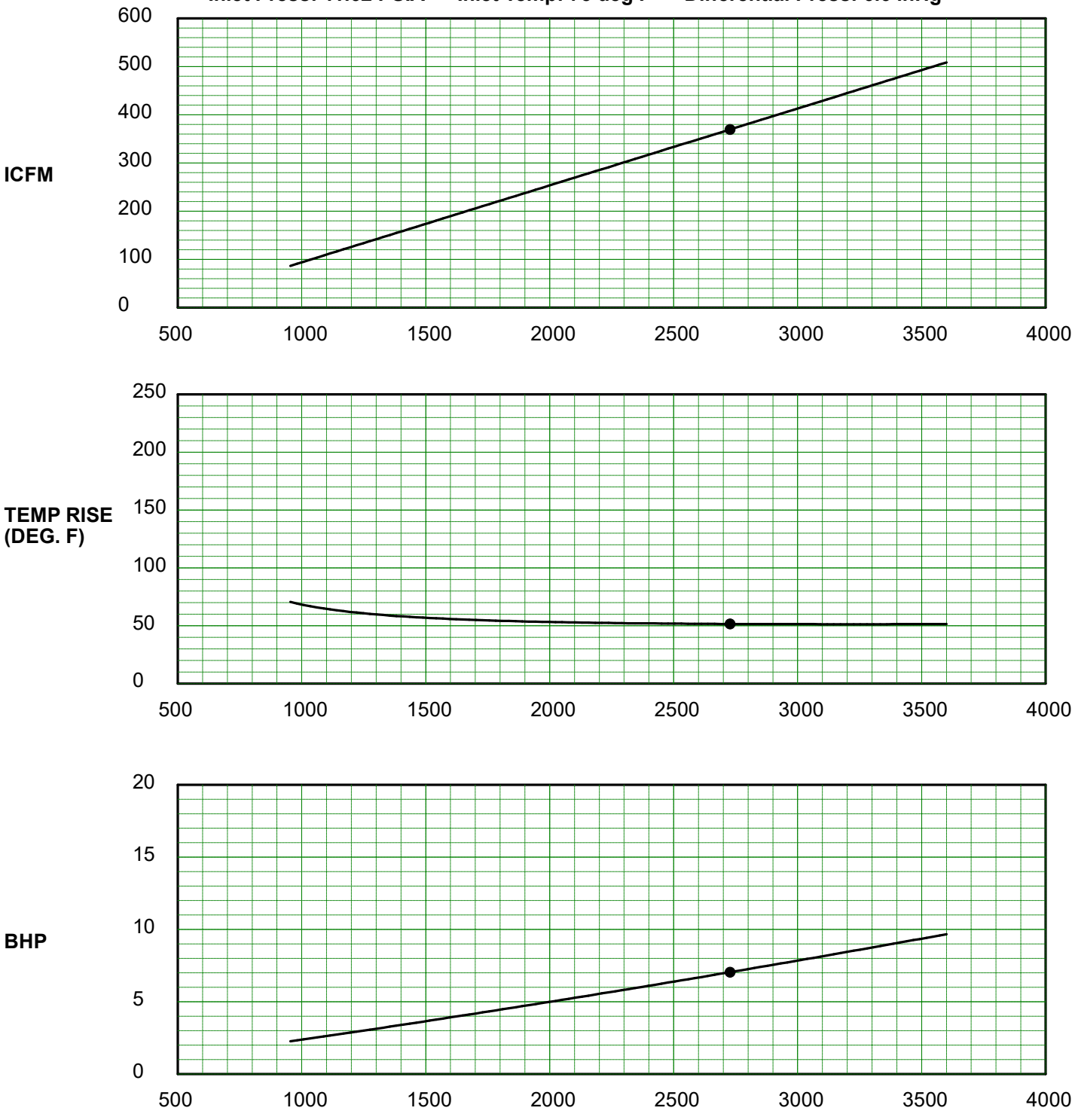
DRESSER Roots

www.dresserroots.com

Monday, Feb 5, 2018

Vacuum Performance
Roots Model 47 URAI

Maximum Vacuum: 15 inHg Maximum Speed: 3600 RPM
Inlet Press: 11.62 PSIA Inlet Temp: 75 deg F Differential Press: 6.6 inHg



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www.pdblowers.com
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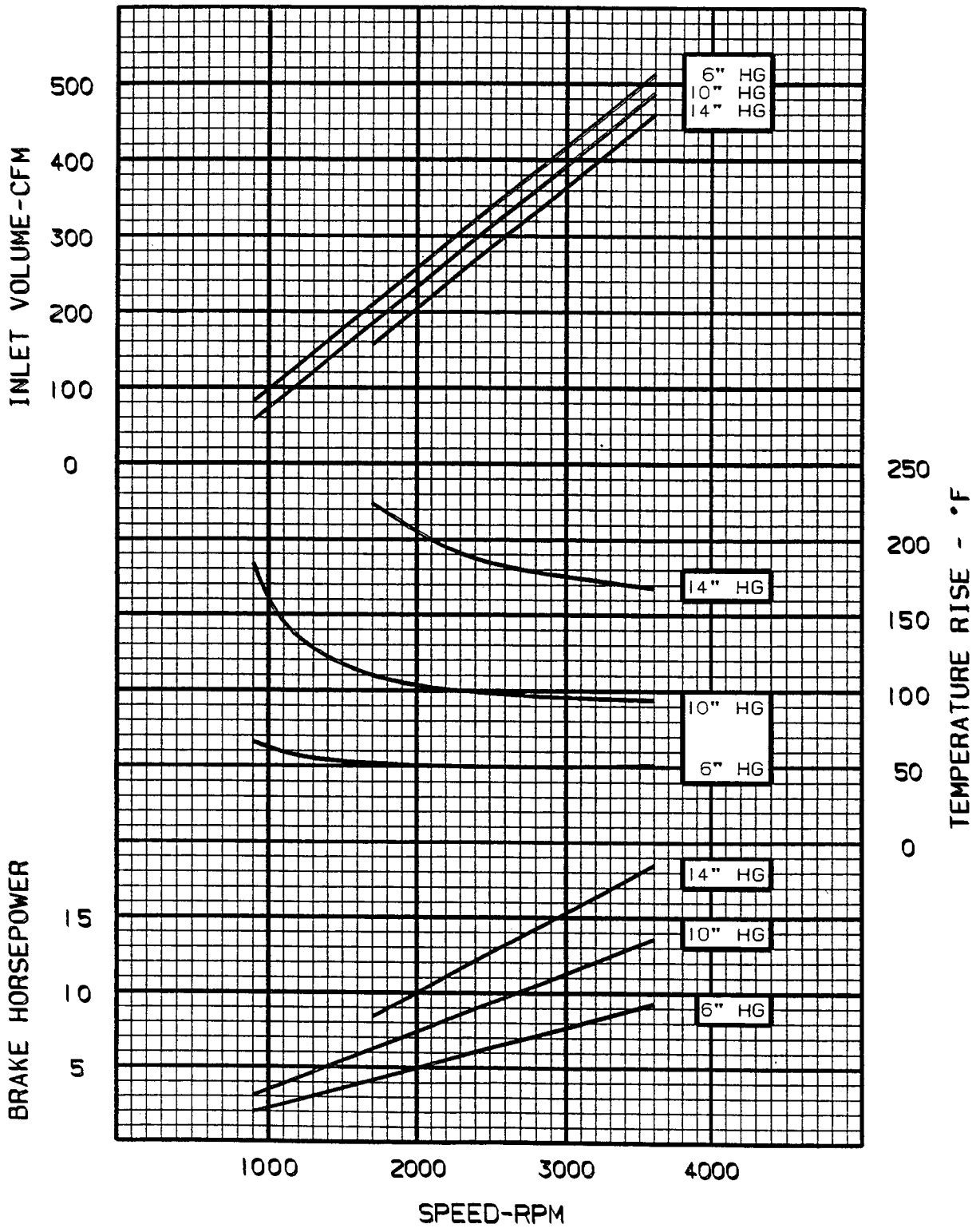
770-538-0020 or 800-536-9933
Winston Salem, NC 27103
770-538-0022

DRESSER INDUSTRIES, INC.
ROOTS DIVISION
900 WEST MOUNT STREET
CONNERSVILLE,INDIANA 47331
PRINTED IN U.S.A.

PERFORMANCE BASED ON
INLET AIR = 68°F
DISCHARGE PRESSURE = 30" HG ABS.
JULY, 1994

VACUUM PERFORMANCE
FRAME 47 UNIVERSAL RAI BLOWER
MAXIMUM VACUUM=15 IN. HG
MAXIMUM SPEED=3600 RPM



/PARTS2/CRVE

VC-12-47

C-DLR

zephyr

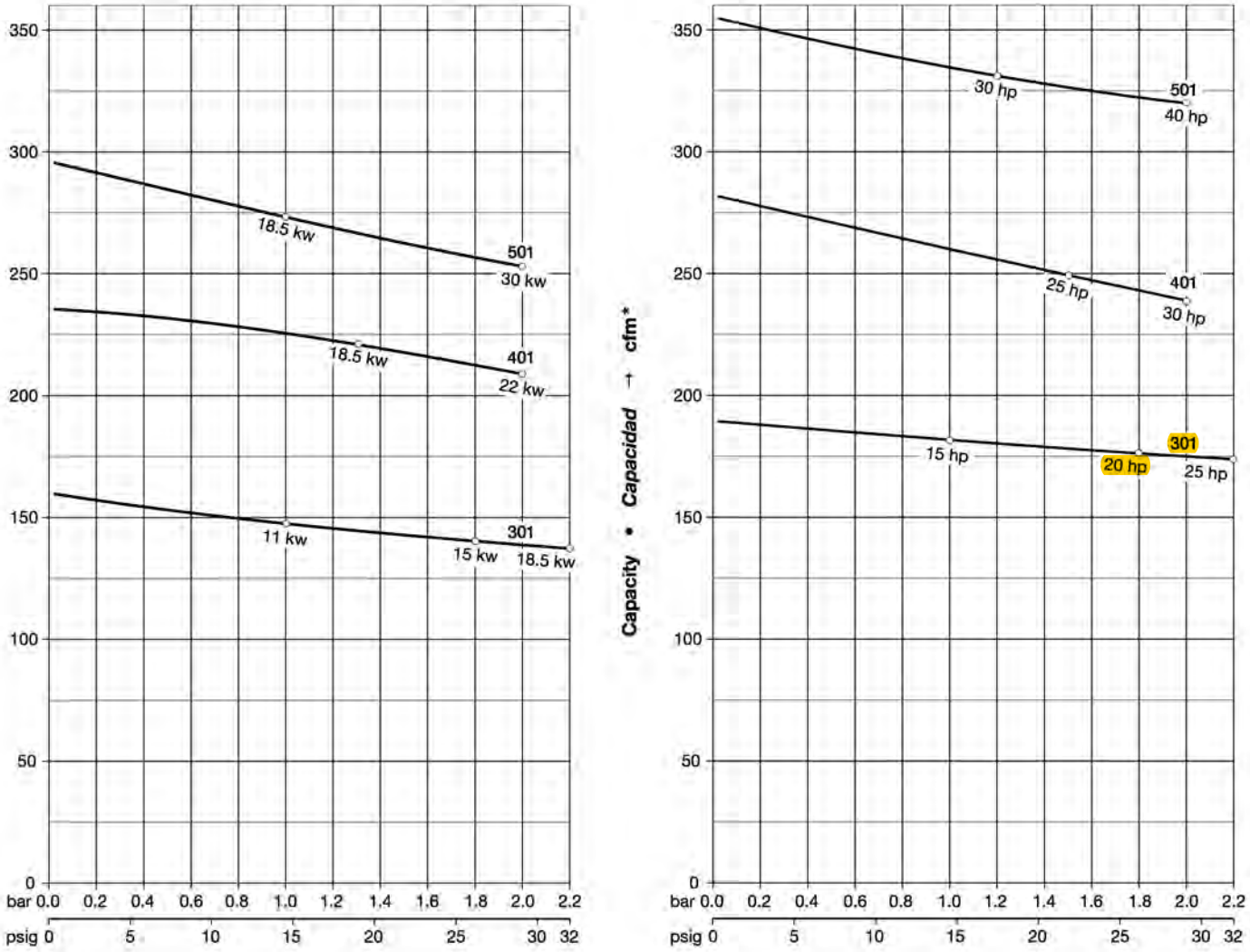
Elmo Rietschle

C-DLR 301 | C-DLR 401 | C-DLR 501

High efficiency, dry and contactless compressor with NEMA Premium motor
Capacity ranging to 355 cfm.
Pressure for continuous operation up to max. 32 psig (DLR 301).
Low maintenance. Air cooled.
Versatile design can be used in many applications.

Alta eficiencia, seco y sin contacto compresor con motor NEMA Premium
Capacidad de aspiración de 355 cfm.
La presión para funcionamiento continuo asciende a un máximo de 32 psig (DLR 301).
Bajo nivel de mantenimiento. Aire refrigerado.
Diseño versátil con numerosas posibilidades de uso.

Performance curves • ***Curvas de desempeño*** **50 Hz** **60 Hz**



Pressure • ***Presión*** → **bar / psig**

C-DLR			301		
Capacity *Capacidad*	cfm	50 Hz		160	
		60 Hz		190	
Pressure *Presión*	psig	50 Hz	14.5	26.0	32.0
		60 Hz	14.5	26.0	32.0
Rated voltage *Tensión asignada*	3~	50 Hz		400 / 690 V ±10 %	
		60 Hz		208 – 230 / 460 V ±10 %	
Motor rating *Potencia requerida*	kw	50 Hz	11.0	15.0	18.5
	hp	60 Hz	15.0	20.0	25.0
Full load amperage *Amperaje a carga plena*	A	50 Hz	20.9 / 12.1	28.0 / 16.2	28.0 / 16.2
		60 Hz	37.0-24.0 / 17.0	51.3-46.4 / 23.2	62.0-58.0 / 29.0
Speed *Velocidad*	rpm	50 Hz		2950	
		60 Hz		3540	
Average noise level *Nivel promedio de ruido*	dB(A) EN ISO 3744	50 Hz		80	
		60 Hz		82	
Weight *Peso*	lbs	50 Hz	650	650	770
		60 Hz	650	680	950
Oil capacity (gear) *Capacidad de aceite (engranaje)*	qt			1.5	

C-DLR			401			501	
Capacity *Capacidad*	cfm	50 Hz		235		295	
		60 Hz		282		355	
Pressure *Presión*	psig	50 Hz	23.2	29.0	14.5	–	29.0
		60 Hz	21.8	29.0	–	17.4	29.0
Rated voltage *Tensión asignada*	3~	50 Hz			400 / 690 V ±10 %		
		60 Hz			208 – 230 / 460 V ±10 %		
Motor rating *Potencia requerida*	kw	50 Hz	18.5	22.0	18.5	–	30.0
	hp	60 Hz	25.0	30.0	–	30.0	40.0
Full load amperage *Amperaje a carga plena*	A	50 Hz	28.0 / 16.2	39.2 / 22.8	28.0 / 16.2	–	53.9 / 31.2
		60 Hz	62.0-58.0 / 29.0	74.8-67.6 / 33.8	–	74.8-67.6 / 33.8	101-91.5 / 45.8
Speed *Velocidad*	rpm	50 Hz			2950		
		60 Hz			3540		
Average noise level *Nivel promedio de ruido*	dB(A) EN ISO 3744	50 Hz			83		
		60 Hz			85		
Weight *Peso*	lbs	50 Hz	1050	1190	1050	–	1250
		60 Hz	1233	1179	–	1179	1334
Oil capacity (gear) *Capacidad de aceite (engranaje)*	qt				1.85		

cfm* Capacity refers to free air at 1 standard atmosphere and 20 °C (68 °F). • *La capacidad se refiere al aire libre a 1 atmosfera estandár de presión y a 20 °C (68 °F) de temperatura.*

Curves, table contents (tolerance ±10 %) refer to compressor at normal operating temperature. • *Las curvas, las tablas (tolerancia ±10 %) se refieren al compresor a una temperatura normal de operación.*

The motor dimensions as well as the full load amperage may vary due to different motor manufacturers. • *Las dimensiones de motor pueden variar para distintos fabricantes de motores.*

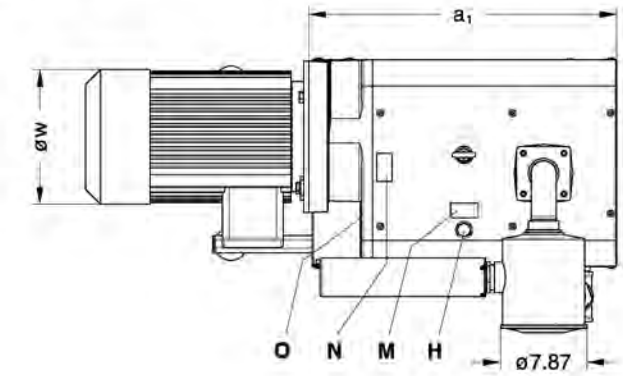
on request • # *on pedido*

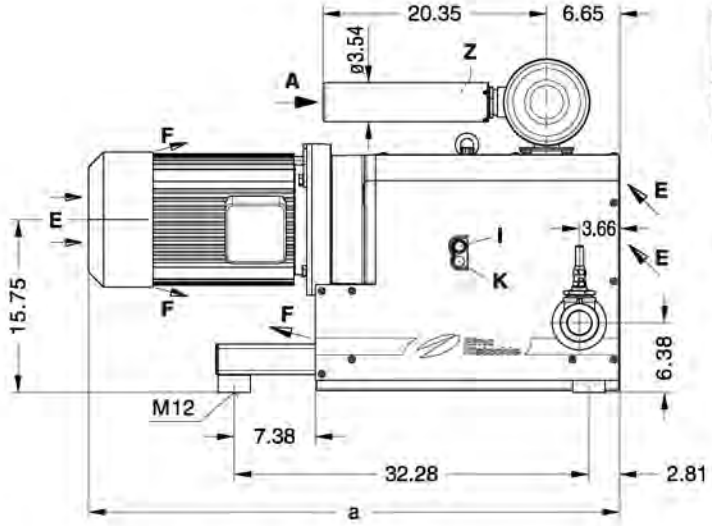
Technical information is subject to change without notice! • *La información técnica está sujeta a cambios sin previo aviso!*

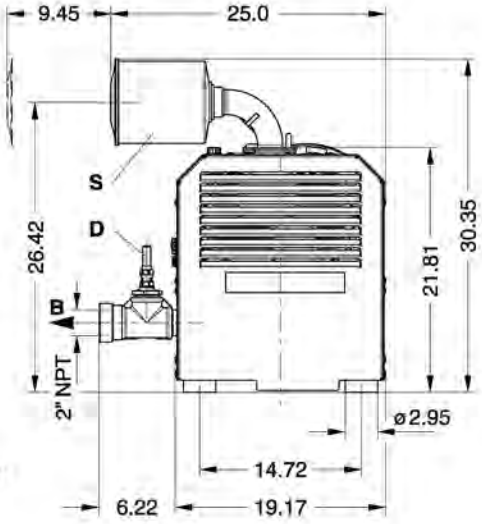
Dimensions • *Dimensiones* [inches]

C-DLR 301

C-DLR			301	
kw	50 Hz	11.0	15.0	18.5
hp	60 Hz	15.0	20.0	25.0
a	50 Hz		48.39	
	60 Hz	48.21	49.60	52.52
a_1	50 Hz		28.58	
	60 Hz	28.40	28.40	29.13
øw	50 Hz		12.28	
	60 Hz	12.96	12.96	15.3







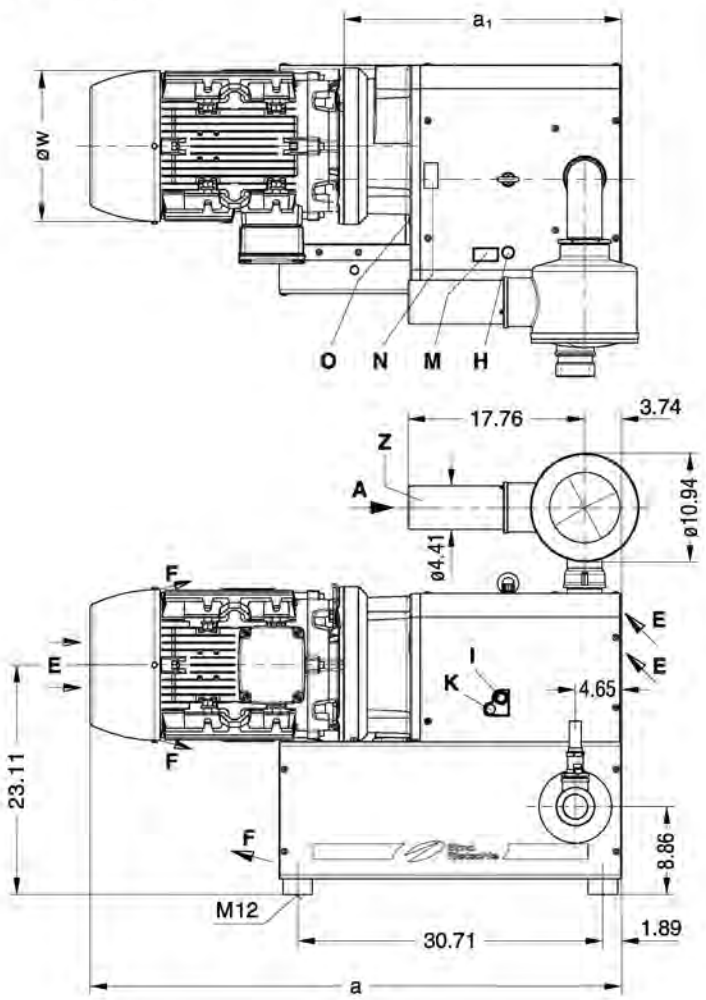
A	Suction • *Succión*
B	Pressure connection • *Conexión de presión*
D	Safety valve • *Válvula de seguridad*
E	Cooling air entry • *Entrada de aire refrigerante*
F	Cooling air exit • *Salida de aire refrigerante*
H	Oil fill port • *Punto de alimentación del aceite*
I	Oil sight glass • *Mirilla de aceite*

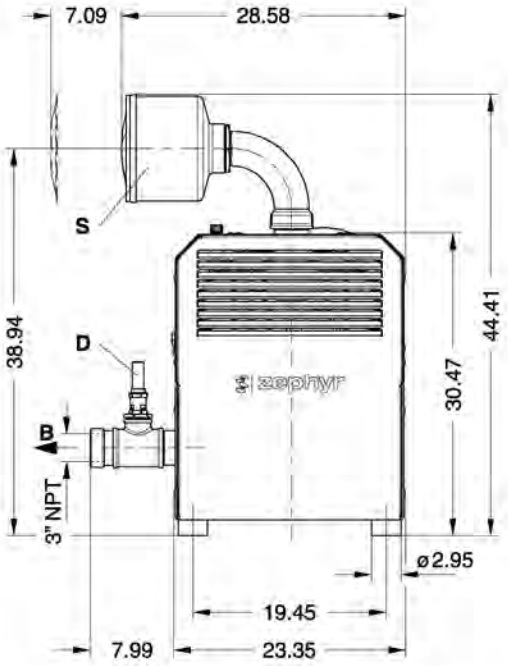
K	Oil drain port • *Punto de drenaje del aceite*
M	Oil type plate • *Placa de aceite*
N	Data plate • *Placa de la unidad*
O	Direction of rotation arrow • *Dirección de rotación*
S	Suction filter • *Filtro de aspiración*
Z	Inlet silencer • *Silenciador de entrada*

Dimensions • *Dimensiones* [inches]

C-DLR 401 / 501

C-DLR		401		501	
kw	50 Hz	18.5	22.0	18.5	30.0
hp	60 Hz	25.0	30.0	30.0	40.0
a	50 Hz	53.50	55.10	53.50	58.4
	60 Hz	51.12	51.78	51.78	54.85
a_1	50 Hz	26.50		26.50	
	60 Hz	27.73	28.23	28.23	28.75
øw	50 Hz	15.59		15.59	
	60 Hz	15.3	14.17	14.17	15.83





A	Suction • *Succión*
B	Pressure connection • *Conexión de presión*
D	Safety valve • *Válvula de seguridad*
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M	Oil type plate • *Placa de aceite*
N	Data plate • *Placa de la unidad*
O	Direction of rotation arrow • *Dirección de rotación*
S	Suction filter • *Filtro de aspiración*
Z	Inlet silencer • *Silenciador de entrada*

Accessories • *Accesorios*

C-DLR		301	401	501
Non return leaf • *Válvula retención*	**ZRZ**	50	80	80
Pressure regulating valve • *Válvula reguladora de presión*	**ZDR**	40	65	65
Pulsation dampener • *Amortiguador de pulsación*	**ZPD**	300	400	500
Motor starter • *Arranque del motor*	**ZMS**		#	

Gardner Denver, Inc.
1800 Gardner Expressway
Quincy, IL 62305 / USA
Phone (217) 222-5400
Fax (217) 221-8780

elmorietschle@gardnerdenver.com
www.gd-elmorietschle.com

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Keep in a safe place for future reference!

Translation of the original Operating Instructions C-DLR 301

Compressor

Elmo Rietschle

C-Serie
C-Series

Klaue
Claw

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1 Foreword

1.1 Principles

These Operating Instructions:

- Are a part of the following contact-free running claw compressors.
  - C-DLR 301
  - C-DLR 301 with frequency converter (variants Fxxx)
- Describes the safe and proper use in all life phases and are to be observed by all responsible persons
- Include general information on installation, commissioning, maintenance and inspection
- Must be available at the place of application.

Figures presented in these Operating Instructions serve for better understanding and can deviate from the components installed. This does not influence the validity of the details set out in the instructions.

1.2 Target group

Target group for these Operating Instructions are the technically trained specialist personnel which have been qualified by appropriate training and instruction.

1.3 Supplier documentation and accompanying documents

Document	Contents	No.
Supplier documentation	Operating Instructions	BA 887
	Declaration of Conformity	C 0079
	Declaration of no-objection	7.7025.003.17
	Connection diagram (in the cover of the frequency converter)	–
Spare parts list	Spare parts documents	E 887
Data sheet	Technical data and characteristic curves	D 889
Info sheet	Storage guideline for lubricants	I 100
Info sheet	Storage guideline for machines	I 150
Operating Instructions	Operating instructions of the frequency converter INVEOR M	–

The documents can be ordered from our Service or downloaded using the following link:

- http://www.gd-elmorietschle.com

The operating instructions for the frequency converter is available at the following link:

- https://www.kostal-industrie-elektrik.com

1.4 Directives, standards, laws

See Declaration of Conformity.

1.5 Copyright

These Operating Instructions are intended for the customer's internal purposes.

Unless expressly permitted, passing on to third parties, copying of these documents, except for internal purposes, as well as using and providing their contents to third parties, even in excerpts, is prohibited.

Contraventions will lead to claims for damages.

1.6 Disclaimer

Please note that we cannot accept any liability for damages arising from failure to observe the instructions. Gardner Denver Schopfheim GmbH does not assume liability for the following cases:

- Not intended use
- Not complying with these instructions
- Nonobservance of all documents and specifications belonging to the overall documentation
- Erection, operation, maintenance and repair by insufficiently qualified staff
- Changing or removing of the manufacturing or serial number
- Using spare parts that have not been approved by **Gardner Denver Schopfheim GmbH**
- Unauthorised modifications to the machine or the accessories supplied by **Gardner Denver Schopfheim GmbH**

Please, also consider that repairs are only allowed to be done by authorised workshops using original spare parts; otherwise our guarantee will expire.

1.7 Specialist terms and meaning

Term	Explanation
Machine	Compressor and motor combination ready to be connected
Motor	Compressor drive motor
Compressor	Machine to produce excess pressure
Frequency converter	A frequency converter allows an infinitely variable control of the speed.
Claw	Design or operating principle of the machine
Volume flow	The volume flow determines how much air or gas volume per time unit is delivered by a compressor or flows through a pipe, specified in m^3/h
Final compression pressure	Maximum excess pressure that a compressor can generate, given as excess pressure in bar (g)
Noise emission	Noise emitted at a specific loading state indicated as a numeric value, sound pressure level dB(A) as per EN ISO 3744.

Abbreviation	Meaning
Fig.	Figure
Tab.	Table
C-DLR	Type name of compressor
FC	Frequency converter

2 Safety

The manufacturer shall not be liable for damages caused by non-observance of the whole documentation.

2.1 General

These Operating Instructions contain basic instructions for installation, commissioning, maintenance and inspection works which must be obeyed to ensure the safe operation of the machine and prevent physical and material damages.

Observe the safety instructions in all chapters.

The operating instructions must be read by the responsible technical personnel / user before installing and commissioning and must be fully understood. The contents of the operating instructions must always be available on site for the technical personnel/user. Instructions attached directly to the machine must be obeyed and must always remain legible. For example, this applies to:

- Symbols for connections
- Data plate and motor data plate
- Information and warning signs

The data plates on the machine may not be removed, not even if the machine is resold. For all queries about the product, please always quote the serial number.

The user is responsible for observing local regulations.

2.2 Labelling of warnings

Warning	Danger level
DANGER	...warns of a hazardous situation, which will lead to death or life-threatening injuries if not avoided.
WARNING	...warns of a potentially dangerous situation, which can lead to death or serious injuries if not avoided.
CAUTION	…warns of a hazardous situation, which can cause slight or medium personal injuries if not avoided.
NOTICE	...warns of a situation that can cause damages to or destruction of material assets if not avoided.

2.3 Symbols and meaning

Symbol	Explanation
➢	Instructions, action
a), b),...	Instructions in several steps
⇨	Results
🗎	Reference

Symbol	Explanation
Warning signs	Obey all safety instructions with this symbol in order to avoid injury or death.
	Warns of the potential risk of injury
	Warns of electrical voltage
	Warns of suspended loads
	Warns of hot surface
Mandatory signs	Obey all instructions with this symbol in order to avoid injury or death.
	Observe the Operating Instructions
	Wear eye protection
	Wear protective gloves
	Wear safety shoes
	Wear ear protection
	Disconnect the plant and secure it against unexpected restart
	Information, note
	Protection of environment

2.4 Intended use

The machine is suitable for conveying the following media:

- All non-explosive, non-combustible, non-aggressive and non-poisonous, dry gases and gas-air mixtures

The machine is permitted to be operated only in such areas that are described in these Operating Instructions:

- ➢ Only operate the machine in technically perfect condition
- ➢ The machine must only be operated at an ambient temperature and inlet temperature of between 5 and 40 °C
  Please contact us for temperatures outside this range
- ➢ The machine is only permitted to be operated within the speed range and frequency range that is specified on the data plate of the frequency converter

Any use extending beyond this use is seen as not in accordance with the intended use.

The intended use also includes the compliance with the operating data and operating agents specified in the operating instructions, the listed maintenance works, as well as the details in the documentation issued by the manufacturers of components and attachments.

If used under critical conditions and/or in case of any doubts, please contact the manufacturer. Non-observance can cause machine failures.

2.5 Inadmissible operating modes

- Extracting, conveying and compressing of explosive, inflammable, aggressive or poisonous media, e.g. dust as per ATEX zone 20-22, solvents as well as gaseous oxygen and other oxidation agents, water vapour, liquids or solids
- Erection and operation in potentially explosive environment (explosive gas/vapour/mist-air mixtures or dust-air mixtures or hybrid mixtures of air and flammable substances)
- Using the machine in non-commercial plants unless the necessary precautions and protective measures are taken in the plant
- Operation of the machine when it is only partially assembled
- Operation without cover sheet
- Operation without standard safety valve
- Using the machine in areas with ionising radiation
- Modifications to machine and accessories
- Changes of the basic settings of the frequency converter
- Operation by not or not sufficiently qualified personnel

2.6 Personnel qualification and training

All works are only allowed to be done by qualified and trained specialist personnel. Unauthorised persons are not allowed to stay within the operating area and must be prevented from entering operating rooms by suitable measures.

- ➢ Ensure that people entrusted with working on the machine have read and understood these operating instructions before starting work, particularly the safety instructions for installation, commissioning, maintenance and inspection work
- ➢ Responsibilities, competences and monitoring of personnel must be regulated by the operating company

- ➢ The following works are only allowed to be done by technical specialist personnel, who have been trained and instructed for the works assigned:
  - Transport only by forwarding agents
  - Erection, commissioning, maintenance and inspection works, as well as troubleshooting by technical specialist personnel (e.g. locksmith, mechanics)
  - Works on the electrical system are only allowed to be done by electricians
- ➢ Personnel to be trained and laypersons may only carry out work on the machine when under the supervision of authorised specialist personnel and must be instructed about possible hazards in a safety instruction

Specialist personnel:
Persons that can evaluate work assigned to them and evaluate possible risks as a result of their training, knowledge and experience as well as the applicable regulations.

Qualified electrician:
Specialist personnel that has obtained an electrotechnical specialist education and is familiar with work for setting up, operation and maintenance of electrical systems and operating material.

Unauthorised persons:
Unauthorised persons are persons who cannot appropriately prove that they are qualified, trained, or instructed for the works on the compressor. Furthermore, those people are seen to be unauthorised persons, who are, because of their physical, cognitive, and health abilities, not able to recognise hazards, caused by this machine.

2.7 Personal protective equipment

The user must make sure that the required protective clothing and protective equipment is available on the plant and used by the personnel. The national legal provisions and the national regulations for industrial safety must be observed.

Recommended protective equipment:

Wear eye protection

Wear protective gloves

Wear safety shoes

Wear ear protection

2.8 Safety-conscious working

The following safety regulations apply in addition to the safety instructions and intended use listed in these instructions:

- Accident prevention regulations, safety and operating regulations
- Standards and laws in force

- ➢ Hot parts of the machine must not be accessible during operation or must be fitted with a guard
- ➢ Persons must not be endangered by the free extraction or discharge of pumped media
- ➢ Risks arising from electrical energy must be eliminated
- ➢ The machine must not come into contact with flammable materials.
  Risk of fire due to hot surfaces, output of hot pumped media or cooling air

2.9 Responsibilities of the user

During the whole operating period of the machine, the operating company is obliged to prove that the limits have been met and the required maintenance and inspection works have been performed.

The user must ensure that:

- All works for installation, commissioning and maintenance are carried out by authorised and qualified specialist personnel, who gained enough information by an in-depth study of the operating instructions
- All works on electrical equipment are done by an electrician in compliance with the regulations for electrical installations
- The Operating Instructions are always available at the site of operation of the machine for the whole life phase
- All safety instructions and signs on the machine are always complete and legible
- The operating and maintenance personnel take note of all safety instructions - especially of information provided in these Operating Instructions - and observe them
- The personal protective equipment is available and is used by the personnel
- All safety-relevant regulations are met
- Unauthorised persons cannot enter the operating site
- Fire warning and firefighting possibilities have been installed and are active
- These Operating Instructions shall be amended by working instructions, as well as the duties to supervise and report. With this they shall consider the operational distinctions. Among others, it refers to instructions referring to:
  - Organization of work
  - Work procedures
  - Specialist personnel assigned

In the event of accidents caused by the machine notify the Gardner Denver Schopfheim GmbH. Please find contact data on the back page.

2.10 Hazardous substances

2.10.1 Conveying media

Machinery that may have contact to hazardous substances can cause serious burns, cauterisation or poisoning during disassembly, maintenance and repair work.

- ➢ Each time before using our services, it is necessary for reasons of occupational safety and environmental protection to indicate and declare hazardous substances on or in the plant.
- ➢ Send the completed and signed declaration of no objection back to Gardner Denver Schopfheim. If no declaration has been sent, we must assume that the plant is free from such substances. In case of doubt, our service department reserves the right to reject the acceptance until the safety has been determined without doubt.

2.10.2 Auxiliary materials and lubricant

Incorrect auxiliary materials and lubricants may decompose at high temperatures. The resulting vapours may be harmful to health and cause fires.

- ➢ Use exclusively the recommended auxiliary materials and lubricants
- ➢ Observe the oil recommendation sign on the machine
- ➢ Observe the safety data sheets of the substances used
- ➢ Ensure proper use
- ➢ Observe the maintenance intervals

2.11 Safety equipment, monitored functions

Missing or non-functional safety equipment may lead to dangerous operating states and thus result in life-threatening injuries.

- Do not modify or bypass safety equipment and safety functions
- Check the function at regular intervals

2.12 Emergency Stop / Emergency Off

Missing safety equipment may lead to hazardous operating states. This can result in severe to mortal injury.

- The machine does not have its own Emergency Stop or Emergency Off. This **must** be implemented by the user, for instance, by integration of the machine in the user's safety concept.

2.13 Protection of environment

Environmental damage may be caused by the incorrect disposal of operating material and materials. For questions about environmental protection as well as national regulations, please consult your local disposal company.

- All operating materials as well as all gases, vapours or liquids, e.g. lubricating oil escaping during operation and maintenance must be collected and disposed of in an environmentally friendly manner.

3 Transport and storage

3.1 Transport

WARNING

Death by falling down or tipping over of the transported goods!

Falling or tipping over of transported goods can cause serious or fatal injuries. Limbs can be crushed.

- ➢ Select the lifting device according to the total weight to be transported.
- ➢ Secure the machine against tipping over and falling.
- ➢ Always attach the machine on all present load handling equipment.
- ➢ Do not stand underneath a suspended load.
- ➢ Put the goods to be conveyed on a horizontal base (max. inclination: 10 ° in all directions).

3.1.1 Unpack and check the as-delivered condition

a) Unpack the machine on receipt and check for transport damage.
b) Immediately notify the manufacturer of transport damages.
c) Check the scope of deliveries for completeness.
d) Dispose of the packaging in accordance with the local regulations in force.

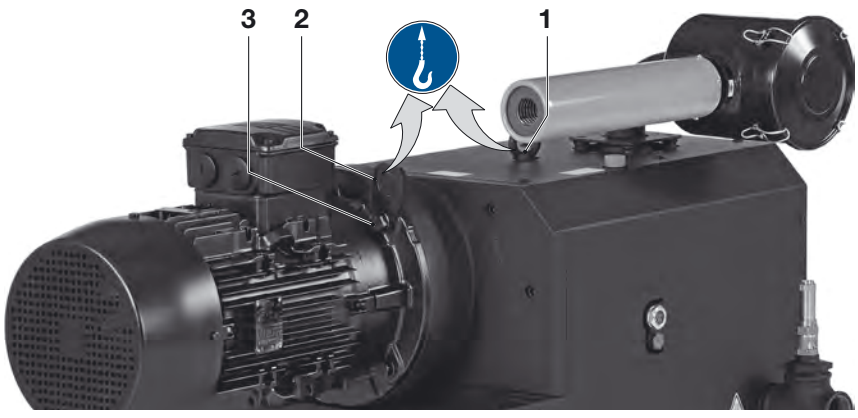
3.1.2 Lift and transport

WARNING

Bodily injury resulting from improper operation!

Improper operation of the lifting gear and the transported goods can cause serious or fatal injuries.

- ➢ Lift and transport the machine only on the permissible load handling equipment
- ➢ Loads crosswise to the load handling equipment are not permitted.
- ➢ Avoid impact stress.
- ➢ Wear your personal protective equipment.



1	Eyebolt	**3**	Fixing screw
2	Transportation lashing		

Fig. 1 Load handling equipment for lifting and transporting

The machine is supplied on a pallet.

a) Unload the machine using a forklift or pallet truck and transport it to the place of installation.
b) Tightly fasten the eyebolt (Fig. 1/1) and the fixing screw (Fig. 1/3) on the transportation lashing (Fig. 1/2).
c) To lift and transport the machine, hook it in the eye bolt and the transportation lashing using a hoisting gear.
d) Lift the machine off the pallet and align it.

3.2 Storage

NOTICE

Material damage caused by improper storage!

Improper storage can damage the machine.

➢ Observe the storage conditions described below.

3.2.1 Ambient conditions during storage

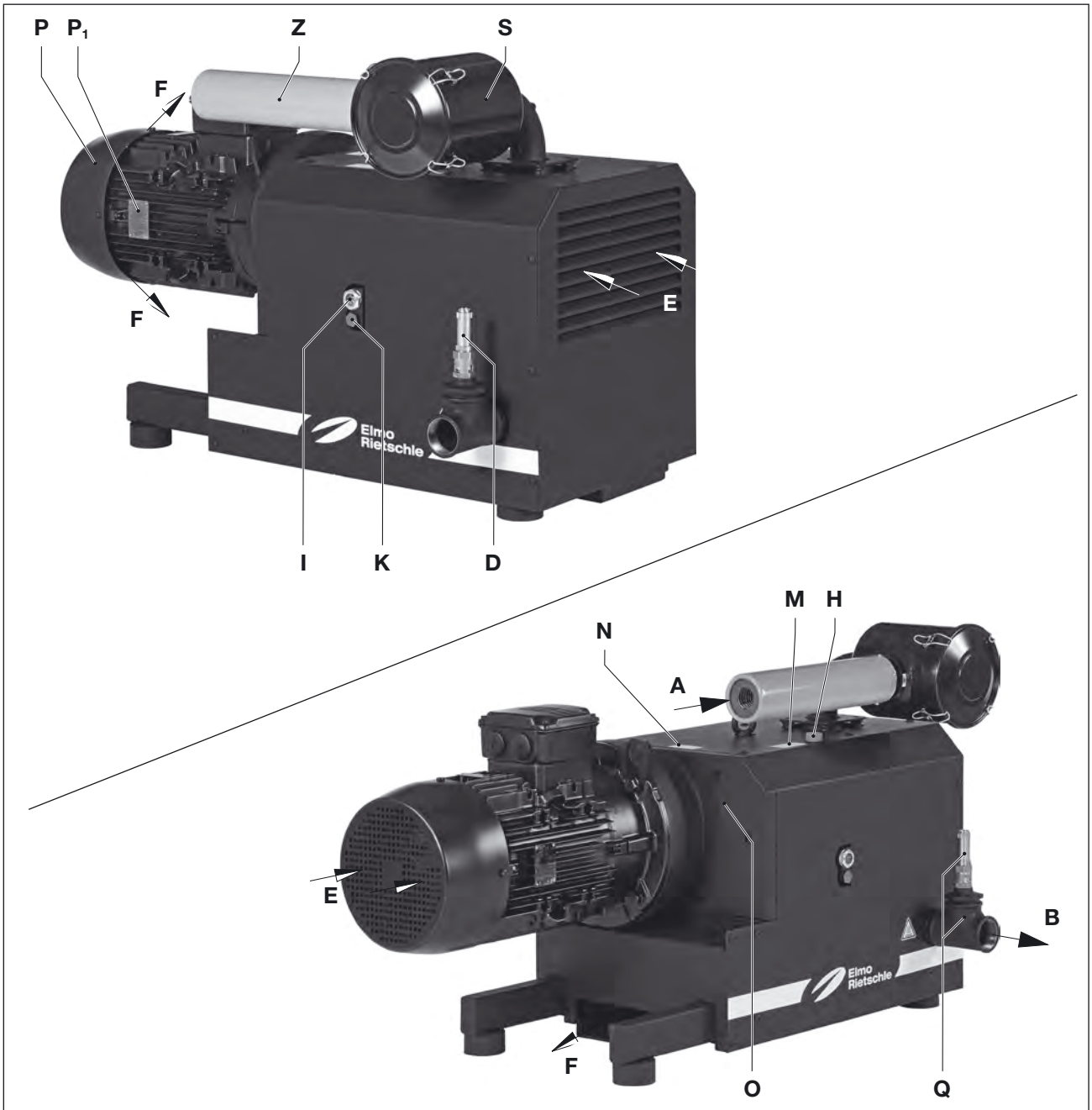
- Dust-free
- In a dry place
- Vibration free
- Protected against sun radiation
- Storage temperature: -20^0 c to +70^0 c
- Rel. air humidity: max. 80 %
- Close the openings air-tight

The machine must be stored in a dry environment with normal air humidity. It should not be stored for more than 6 months.

See Info "Storage instructions", Page 4.

4 Product overview and functioning

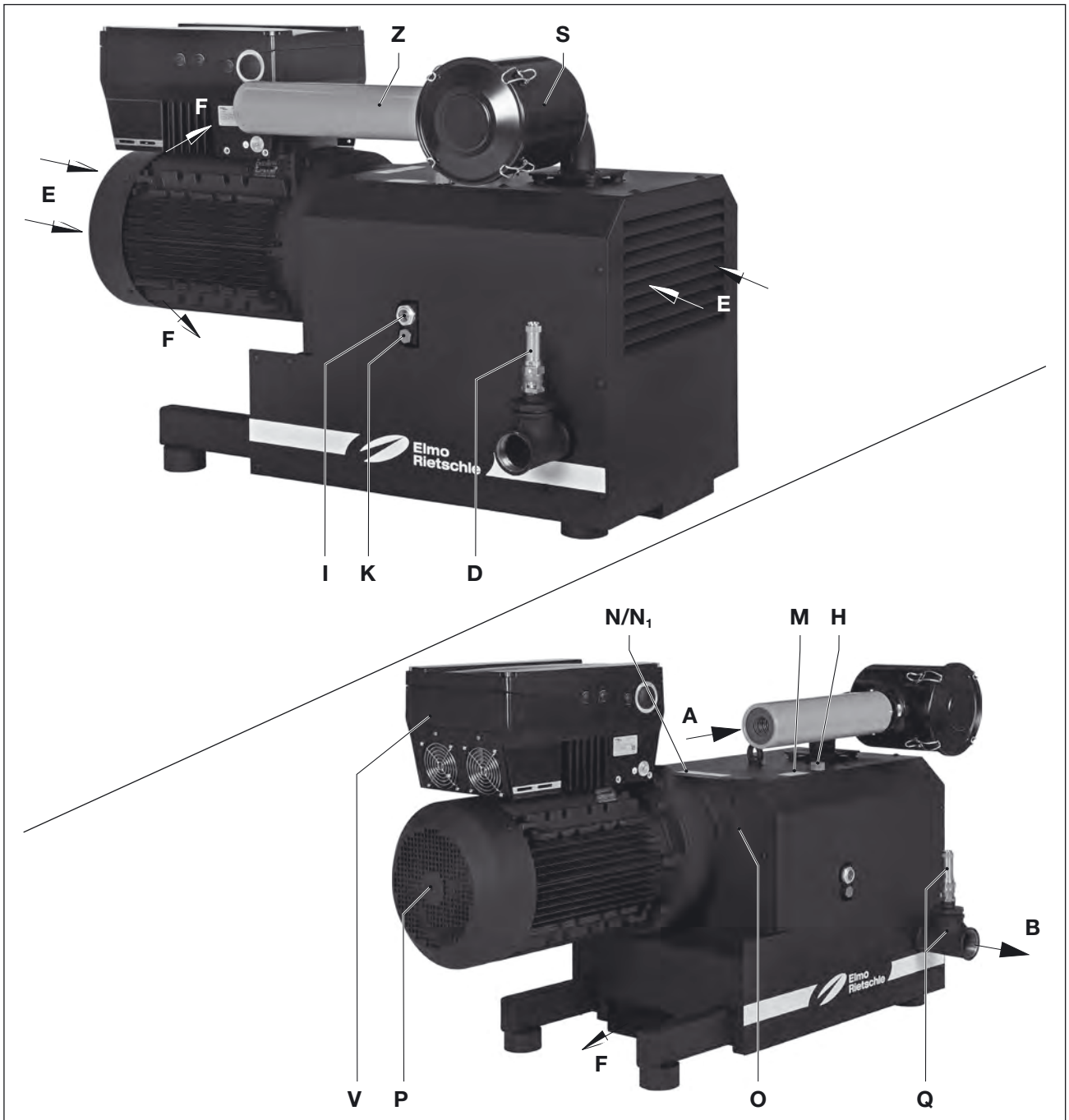
4.1 Product overview C-DLR 301



A	Air intake	**M**	Oil recommendation plate
B	Pressure line	**N**	Data plate
D	Safety valve	**O**	Direction of rotation arrow
E	Cooling air inlet	**P**	Drive motor
F	Cooling air outlet	**P_1**	Motor data plate
H	Oil filling point	**Q**	Hot surfaces > 70 °C
I	Oil sight glass	**S**	Intake filter
K	Oil discharge point with magnet	**Z**	Intake silencer

Fig. 2 Compressor C-DLR 301

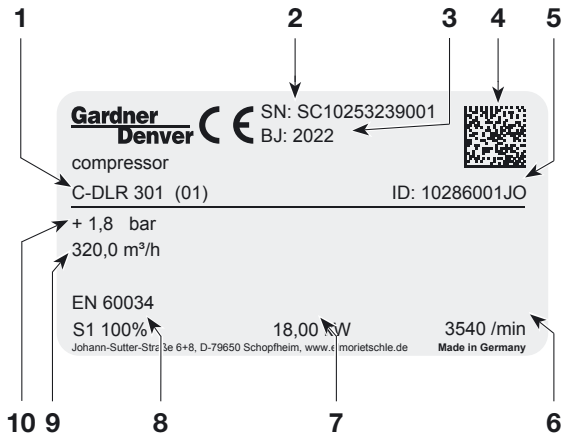
4.2 Product overview C-DLR 301 with frequency converter



A	Air intake	**N**	Data plate
B	Pressure line	**N_1**	Data plate - frequency converter
D	Safety valve	**O**	Direction of rotation arrow
E	Cooling air inlet	**P**	Drive motor
F	Cooling air outlet	**Q**	Hot surfaces > 70 °C
H	Oil filling point	**S**	Intake filter
I	Oil sight glass	**V**	Frequency converter
K	Oil discharge point with magnet	**Z**	Intake silencer
M	Oil recommendation plate		

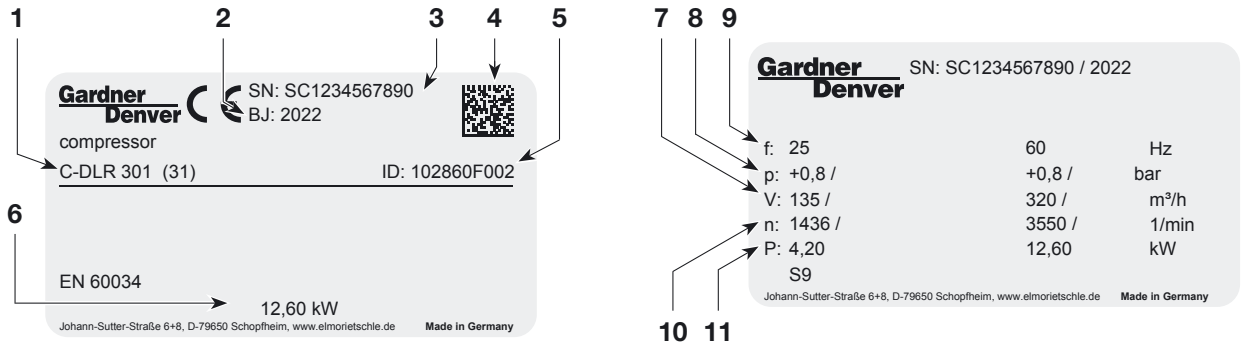
Fig. 3 Compressor C-DLR 301 with frequency converter

4.3 Data plate



1	Model / size (mechanical version)	**6**	Speed
2	Serial number	**7**	Motor output
3	Year of construction	**8**	Operating mode
4	Data matrix barcode	**9**	Volume flow
5	Article No.	**10**	Excess pressure

Fig. 4 Data plate for machines without frequency converter



1	Model / size (mechanical version)	**7**	Volume flow
2	Year of construction	**8**	Excess pressure
3	Serial number	**9**	Frequency range
4	Data matrix barcode	**10**	Speed range
5	Article No.	**11**	Motor output
6	Motor output		

Fig. 5 Data plates for machines with frequency converter

The following information is encoded as barcode:

- Material number (MA)
- Production order (PR)
- Serial Number (SC)

4.4 Description

The C-DLR 301 model is a double-shaft, rotary piston compressor, in which the claws roll against each other without contacting each other and are dry. The counter-rotating claw rotors are synchronised by a gear pair in the gearbox. The gears of the synchronized gearbox and the bearings are lubricated with oil. These components are in a gearbox that also contains the oil supply. Oil conveying devices always ensure that the bearings and the gears are sufficiently supplied with oil at all permissible speeds. The gearbox and the compression chamber are separated from each other by special seals. The gearbox is sealed from the outside with piston sealing rings and O-rings, the compressor chamber with piston rings.

The C-DLR 301 range has a connecting thread on the outlet side and an intake silencer on the inlet side. The intake air is cleaned by a filter cartridge.

The C-DLR 301 is enclosed in an insulation hood. In order to dissipate compression heat, the cooling air is sucked through between the compressor and the hood using a drum fan that sucks in the fresh cooling air and discharges the heated air out of the cooling air outlet.

The C-DLR 301 is driven via a coupling by a flanged, three-phase standard motor.

In machines with frequency converter, the frequency converter is installed on the motor and allows the infinitely variable control of the speed.

To protect it against overload a safety valve is installed as standard.

4.5 Fields of application

These contact-free running claw compressors C-DLR 301 are suitable for the generation of excess pressure between 0 bar and the maximum pressure stated on the data plate (Fig. 4/10). Constant operation is permissible.

The compressor has a flow rate of **290 m³/h** at **50 Hz**. The load limits (overpressure in bar) on the outlet side are stated on the data plate. Data sheet D 889 or D 887-60 (C-DLR 301 with frequency converter) shows the dependence of the flow rate from the overpressures.

If the unit is switched on more frequently (at regular intervals of approx. 10 times per hour) or at higher ambient temperatures and inlet temperatures, excess temperature limit of the motor winding and the bearings may be exceeded.
Contact the manufacturer regarding such operating conditions.
Observe the ambient and inlet temperature (see chapter 2.4)

If it is installed in the open air the unit must be protected from environmental influences (e.g. by a protective roof).

4.6 Accessories

The following accessories are options and on request available from Gardner Denver.

5 Installation

We urgently recommend having the installation carried out by qualified specialist personnel. Gardner Denver does not accept liability for damages caused by improper carrying out of installation.

5.1 Preparation of installation

Ensure the following conditions:

- Machine freely accessible from all sides
- Do not close ventilation grids and holes
- Sufficient space for installing and removing pipes and for maintenance work, particularly for the installation and deinstallation of the machine
- No influence by external vibrations
- Hot exhaust air from other machines may not be sucked in the cooling system
- Oil filling position (Fig. 2/H), oil inspection glass (Fig. 2/I) and oil drain (Fig. 2/K) must easily be available.
- For maintenance works, provide for a space of **at least 40 cm** around the machine.

5.2 Installation

NOTICE

Property damage caused by improper installation!

Improper erection and installation can damage the machine.

- ➢ The machine may only be operated when it is set up horizontally (Max. inclination: 8 ° in all directions).
- ➢ Secure the machine against tipping over and falling.
- ➢ The floor must be plane and even.
- ➢ The bearing surface must be designed to be able to carry the weight of the machine (see chapter 10).

NOTICE

Property damage from overheating!

Due to too low cooling capacity, the machine can overheat and can be damaged.

- ➢ Ensure for a good aeration and venting of the installation room. Observe the ambient temperature: min. +5 °C, max. +40 °C
- ➢ The cooling air inlets and the cooling air outlets must be **at least 30 cm** away from the adjacent walls. Cooling air coming out must not be sucked in again.

a) Align the compressor in the place of installation and, if necessary, bolt to the ground.

b) If available, check optional accessories for the correct mounting and correct electrical connection.

An output reduction is noticeable when installed at more than 1000 m above sea level. In this case, please contact us.

It is possible to install the machine on a firm base without anchoring. When installing on a substructure we recommend fixing it with flexible buffers.

5.3 Connection of pipes

NOTICE

Material damage resulting from too high forces and torques of the pipes acting on the machine!

If forces and torques during installation and operation are too high, the machine can be damaged.

- ➢ Only screw in pipes by hand.
- ➢ If necessary, use flexible connections.

The outlet connection is on the side of the machine (Fig. 2/B).

a) Remove the blind plug/adhesive film on the inlet (Fig. 2/A) and outlet connection (Fig. 2/B).

b) Connect the pipe to the outlet connection (Fig. 2/ B).
For connection lines (with the same pipe cross section as the machine connection) and more than 3 m length, it is reasonable to install a non-return valve, in order to avoid reverse running after switching off. For suitable non-return valves for your application (accessories ZRK), please contact our Service department.

c) Make sure that the outlet line is connected correctly and is leakproof!

The compressor volume flow is reduced if the pressure pipe is too narrow and/or too long.

5.4 Check lubricating oil

a) Check the lubricating oil level through the oil sight glass (Fig. 2/I) and top up, if necessary.

b) Fill the lubricating oil for the gear wheels and bearings at the oil filling point (Fig. 2/H) up to the middle of the sight glass (Fig. 2/I).
For suitable types: see chapter 7.5

c) Reclose the oil filling point.

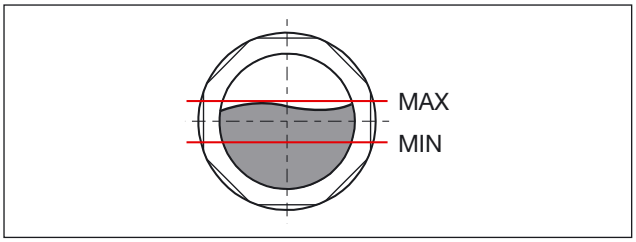


Fig. 6 Oil level in the sight glass

5.5 Connect to the energy supply network

DANGER

Danger to life if the electrical installation has not been carried out professionally!

Installation that has not been carried out professionally or properly can cause serious injuries or death. The whole electrical system can be destructed.

- ➢ The electrical installation must only be carried out by a qualified electrician observing EN 60204.
- ➢ The main switch has to be provided by the user.
- ➢ The motor must be safeguarded via a motor protection switch. This must be installed by the operating company.

NOTICE

Property damage due to wrong energy supply!

Wrong operating voltages, frequencies or currents can cause loss of power or damages to the machine.

- ➢ The conditions at the installation location must comply with the details on the motor data plate.

5.5.1 Connect motor, machine without frequency converter

Please find the electrical motor data on the data plate (Fig. 2/N) or the motor data plate (Fig. 2/P_1). The motors comply with DIN EN 60034 and are designed in protection class IP 55 and insulation class F. The appropriate connection diagram is located in the terminal box of the motor (not existing for the version with plug connection).

If not otherwise specified on the motor data plate, the following tolerances apply:

- ± 5 % voltage deviation referred to nominal value
- ± 2% frequency deviation

a) Compare the motor data with the data of the existing mains network (current type, voltage, network frequency, permitted current value).

b) The direction of rotation of the motor must correspond with the direction of rotation arrow (Fig. 2/O) on the motor flange. Check the rotation direction!

c) Directly connect the motor in the terminal box or use the optional connector (accessories).
For securing, a motor protection switch and a strain relief provide for a screwed cable connection to connect of the connecting cable.

We recommend using motor protection circuit breakers with delayed switch off, depending on a possible excess current. Temporary excess current can occur when the machine is started under cold conditions.

5.5.2 Connect motor, machine with frequency converter

The drive consists of the motor and the frequency converter. The mechanical and electrical connection between engine and frequency converter has already been established at the time of delivery. The frequency converter is parameterized with the basic settings.

Please find the electrical data on the data plate (Fig. 5, on the right). The electrical power supply values are indicated on the data plate of the frequency converter.

If not otherwise specified on the data plate, the following tolerances apply:

- Input voltage: 3~ AC , 400 V -15 % to 480 V +10 %
- Input frequency: 47 to 63 Hz ± 0 %
- Appropriate network configurations: TN / TT

a) Compare the motor data with the data of the existing mains network (current type, voltage, network frequency, permitted current value).

b) Connect the frequency converter (Fig. 3/V) according to the operating instructions or the enclosed pin configuration. Use suitable cable fittings or fasteners to comply with the protection class (IP 65).

6 Commissioning and decommissioning

6.1 Start-up

WARNING

Risk of injury due to improper operation!

Improper operation of the machine can cause serious or fatal injuries.

- ➢ Strictly observe the safety instructions. Especially observe the safety instructions in chapter 2 .

CAUTION

Risk of burns on hot surfaces!

When the machine is at operating temperature the surface temperatures on the components may rise to above 70 °C. This can cause serious burns.

- ➢ Do not touch hot surfaces (indicated by warning signs).
- ➢ Wear suitable protective gloves, if necessary.

CAUTION

Risk of injury due to noise emission!

High sound pressure level can permanently damage hearing.

- ➢ Observe measured sound pressure level, see chapter 10.
- ➢ When spending a long time in the vicinity of the running machine use ear protection to avoid permanent damage to hearing.

NOTICE

Property damage!

If the permissible final compression pressure is exceeded the machine may be damaged.

- ➢ Operation without safety valve does not comply with the intended use.

NOTICE

Property damage!

Restart of the machine while the machine has not coasted down completely can damage the machine.

- ➢ The machine is only allowed to be switched on again after it stands still.

6.1.1 Installation check

WARNING

Risk of injury!

A faulty installation as well as missing or non-functional safety equipment may lead to severe injury.

- ➢ Put the machine into operation only after it has been ensured that the installation has been carried out flawlessly and the requirements for installation, assembly and electrical installation have been observed.

The following checks must be carried out:

- For damages due to transport or assembly of the machine and the accessories attached
- Machine stands stable on the floor in a horizontal installation position
- Correct connection of the pipelines (inlet side, outlet side), check for leak tightness!
- Tight fit of the screw and flange connections
- Electrical installation complies with the specifications (connection diagram)
- The installation room is equipped with an adequate ventilation system
- Oil filled and oil level checked
- Machine and pipelines cleaned
- check the function of optional accessories (if present)

6.1.2 Check the rotation direction

NOTICE

Property damage due to wrong direction of rotation!

Running in reverse for a long time may damage the machine.

➢ Use a phase sequence indicator to check the direction of rotation (**clockwise**).

The drive shaft direction of rotation is shown by the arrow for the direction of rotation (Fig. 2/O) on the motor flange.

a) Start the motor briefly (max. two seconds) to check the direction of rotation. When looking at the motor blower, it must rotate counter-clockwise.

After successfully checking the installation and the direction of rotation, the machine will be ready for operation.

6.2 Decommissioning

6.2.1 Decommissioning of the machine

⚠ DANGER

Danger of death from touching live parts!

Touching of live parts cause serious injuries or death.

➢ Disconnect the machine from the power supply by actuation of the main switch or disconnection of the plug and secure it against unexpected restart.

➢ Works on the electrical installation or electrical components must be carried out by an electrician only.

⚠ CAUTION

Risk of injury due to hot surfaces!

When the machine is at operating temperature the surface temperatures on the components may rise to above 70 °C. This can cause burns.

➢ Avoid touching the hot surfaces. They are marked by warning signs.

➢ Wear suitable protective gloves, if necessary.

a) Switch the machine off and allow it to cool down.
b) If available, close the cut-off device in the inlet and outlet line.
c) Disconnect the machine from the power supply.
d) Depressurise the machine: Open the pipes slowly.
   ⇨ The pressure reduces slowly.
e) Remove the pipes and hoses.
f) Seal the connections for inlet and outlet stubs using adhesive foil.

6.2.2 Storing the machine

See also chapter 3.2, Page 13

6.3 Recommissioning

a) Check the condition of the machine (cleanliness, cabling etc.).

For installation see chapter 5, Page 18
For commissioning see chapter 6.1, Page 21

7 Maintenance and repair

DANGER

Danger of death from touching live parts!

Touching of live parts cause serious injuries or death.

- ➢ Before starting any maintenance work, disconnect the machine by actuation of the main switch or disconnection of the plug and secure it against accidental switching.
- ➢ Works on the electrical installation or electrical components must be carried out by an electrician only.
- ➢ Repair works are only allowed to be done by authorised specialists.

CAUTION

Risk of injury due to hot surfaces!

When the machine is at operating temperature the surface temperatures on the components may rise to above 70 °C. This can cause burns.

- ➢ Wait for the machine to cool down.
- ➢ Before maintenance and repair works allow the machine to cool down.
- ➢ Wear suitable protective clothes, if necessary.

CAUTION

Risk of injury due to missing safety devices!

Missing safety devices can cause injuries.

- ➢ Safety devices as well as safety guards on motor fans and ventilators may not be removed.

7.1 Ensure operational safety

Regular maintenance work must be carried out in order to ensure operational safety.
For some maintenance intervals we are offering service kits that include the necessary spare parts.

The cleaning and oil change intervals strongly depend on how the machine is loaded (operating time, operating conditions, etc.) and the type of oil used. Depending on the pollution of the sucked in medium and the environmental conditions, the cleaning intervals of the intake filter and the safety valve can be shorter. Extreme temperatures or pollutions can reduce the lifetime of the oil to 5,000 operating hours . The specified interval of up to 20,000 operating hours only applies to types of oil delivered or approved by Elmo Rietschle. Please find an overview in Tab. 2 on page 30.

For all works, observe the safety instructions described in chapter 2 “Safety”.

The whole plant should always be kept in a clean condition.

7.2 Maintenance table

Interval (Operating hours)	Maintenance activities	Chapter
At least 1 x per month	Check the pipes and screws for leaks and ensure their tight fit and if necessary re-seal or re-tighten.	—
	Check the terminal box and cable inlet holes for leaks and if necessary re-seal.	—
	Cleaning of the compressor: Clean the louvres of the compressor and the cooling ribs of the motor	Chapter 7.4
	Check the oil level	Chapter 7.5.1
	Check, clean, and replace the air filters, if necessary	Chapter 7.6
Depending on the degree of pollution	Cleaning of the compressor	Chapter 7.4
every 6 months	Replace the filter cartridge in the air filter	Chapter 7.6
At least 1 x per year	Visual inspection of the coupling, Check the cooling air fan for tight fit and damage	Chapter 7.7.2
20000 h	Oil change	Chapter 7.5.2
As per manufacturer's instructions	Motor (maintenance, lubrication and cleaning)	Chapter 7.7.1
	Safety valve	Chapter 7.8
	Frequency converter	Chapter 7.9
40000 h	General overhaul of the machine (Elmo Rietschle Service)	—

Tab. 1 Maintenance table

7.3 Preparing maintenance works

a) Switch the plant off electrically and secure it against unexpected restart.

b) Depressurise the compressor; for this purpose open the gate valve on the outlet side (if installed) or bleed through the safety valve.
Exceptions: Clean the outside of the compressor and check the safety valve for functioning

c) Allow the compressor to cool down.
Exception: Oil change, here the compressor shall be still warm, because oil can then flow off better.

d) Post the warning sign "Caution, maintenance works!".

7.4 Cleaning of the compressor

The compressor must be checked regularly for dust deposits and cleaned, if necessary. The cleaning interval depends on the operational requirements.

a) Clean the compressor with a dump cloth or use a vacuum cleaner. Remove dust deposits:
- From the compressor housing
- Between the cooling ribs of the motor
- On the silencer and the piping
- On the intake filter and the safety valve
- On the accessories attached

7.5 Lubricating Oil

CAUTION

Risk of burns on hot equipment!

There is the risk of burning on hot equipment when changing oil.

- ➢ Allow the machine to cool down to approx. 40 °C (lukewarm).
- ➢ Avoid contact with the hot oil because the oil temperature can be higher than the ambient external temperature of machine.
- ➢ Wear suitable protective gloves, if necessary.

CAUTION

Risk of injury due to slipping and falling!

The floor can be slippery due to leaked oil and cause slipping, tripping or falling.

- ➢ For oil change wear non-slip shoes.
- ➢ Remove leaked oil immediately.

Always change the oil when the machine is at operating temperature and in an atmospherically ventilated area. If it is not completely emptied, the refilling quantity is reduced.

If you change the type of oil, empty the oil tank completely.

A minimum oil quantity may escape from the vent screw due to pressure compensation. If larger quantities of oil escape, wash the internal filter of the vent screw.

The waste oil must be disposed of in compliance with the local environmental protection regulations.

We recommend using Elmo Rietschle oils (also see Oil recommendation plate (Fig. 7/M)) as well as Tab. 2 on page 30:

- GEAR-LUBE 150
- ECO-GEAR-LUBE 150

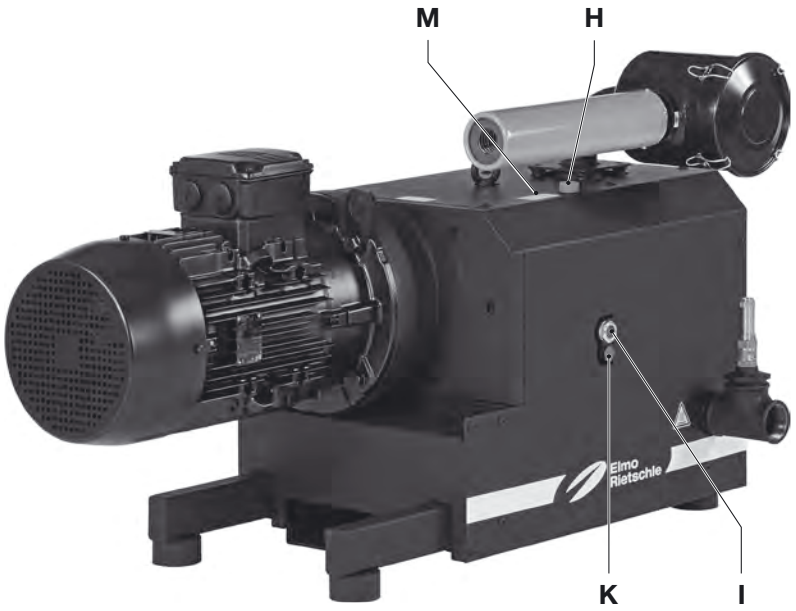
The viscosity of the oil used must comply with ISO VG 150 as per DIN 3448.
Also consider the safety data sheet of the oil type used.

If you want to change the oil type, please contact us.

7.5.1 Check/refill oil level

Check the oil level in the sight glasses (Fig. 7/I) every month.

a) Switch the machine off, secure it against accidental switching on and relieve pressure.
b) Open the cap of the oil filling point (Fig. 7/H) and refill oil until it reaches the upper edge of the sight glass (Fig. 7/I).
c) Reclose the oil filling point.



H	Oil filling point with vent screw	**K**	Oil discharge point
I	Oil sight glass	**M**	Oil recommendation plate

Fig. 7 Oil change

7.5.2 Oil change

In case of clean operation, replace oil every 20,000 operating hours.
A container is required for collecting the used oil with a minimum capacity of the filling volume of the compressor (see chapter 10).

a) Switch the machine off, secure it against accidental switching on and relieve pressure. Let the machine cool down (lukewarm).
b) Place the container below the oil discharge position (Fig. 7/K).
c) Open the screw of the oil filling point (Fig. 7/H), open the oil discharge point (Fig. 7/K) and completely discharge the used oil.
d) Close the oil discharge (Fig. 7/K) and fill in new oil in the oil filling position (Fig. 7/H) until the oil level has reached the middle of the inspection glass.
CAUTION! Tighten the screw plug of the oil discharge. Leaks cause the loss of oil and can damage the machine.
e) Close the screw in the oil filling point (Fig. 7/H).

7.6 Air filter

CAUTION

Danger of injury when dealing with compressed air!

When the filter is blown off with compressed air, loose solid particles or powder dust swirling around may cause injury to the eyes. Inhaling can damage lungs.

➢ Wear protective glasses and dust mask when cleaning the filter with compressed air.

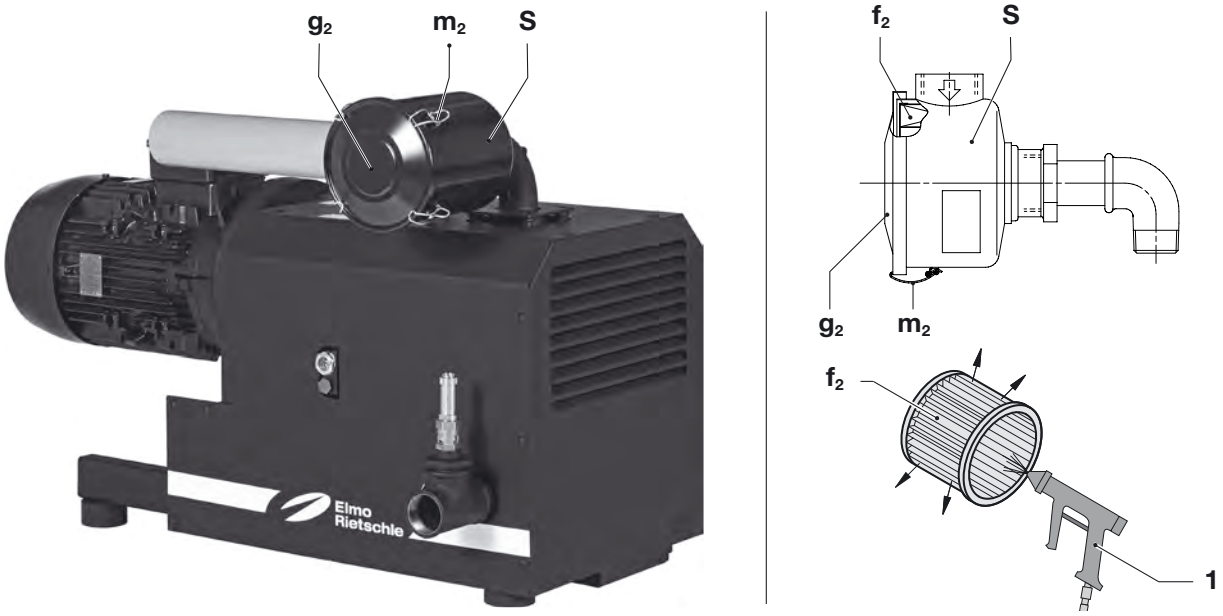
NOTICE

Property damage due to insufficient maintenance of the air filter!

Performance of the machine is reduced by a polluted air filter and insufficient maintenance. This can cause damage of the machine.

➢ Regularly check and clean the integrated air filters.

➢ Replace highly polluted or damaged air filters.



1	Compressed air	**m_2**	Tensioning clamp
f_2	Filter cartridge	**S**	Intake filter
g_2	Filter cover		

Fig. 8 Intake filter

Clean the filter cartridge of the suction filter every month or more often, depending on pollution, by blowing off from the inside to the outside.
In spite of cleaning the filter its separation efficiency will continue to deteriorate. Therefore the filter cartridges should be replaced every six months.

a) Switch the machine off, secure it against accidental switching on and relieve pressure.

b) Release the brackets (Fig. 8/m_2) on the filter cover (Fig. 8/g_2).

c) Remove the filter cartridge (Fig. 8/f_2) from the filter and clean or replace.
CAUTION! Do not damage the filter cartridge when cleaning it. Replace damaged filter cartridges.

d) Re-insert the filter cartridge in the filter and fasten the filter cover (Fig. 8/g_2) with the brackets (Fig. 8/m_2).

7.7 Motor and coupling

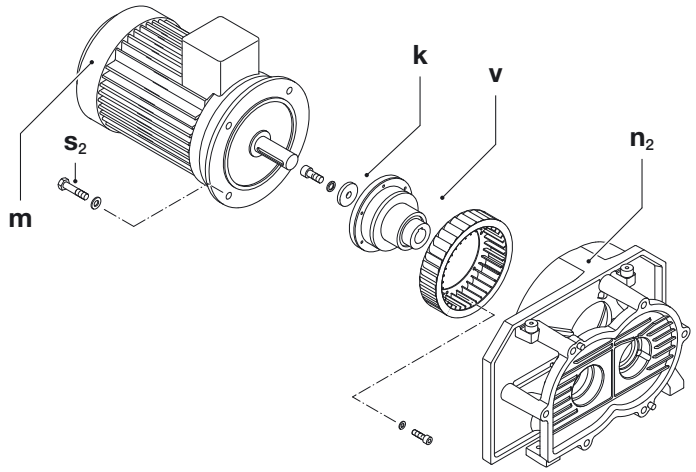
7.7.1 Motor

Perform the maintenance of the motor in accordance with the manufacturer's operating and maintenance instructions. For this, contact our service people.

7.7.2 Coupling / Fan

The coupling requires low-maintenance. We recommend visually checking the coupling in connection with the inspection of the fan at least once a year. With this, thoroughly check the condition of the elastomer components. All parts of the coupling should be checked for damages in the same way.

Perform the maintenance of the coupling in accordance with the manufacturer's operating and maintenance instructions. For this, contact our service people.



k	Coupling	s_2	Screws
m	Motor	**v**	Fan
n_2	Fan housing		

Fig. 9 Check the fan

The fan (Fig. 9/v) for cooling the compressor must be checked for tight fit and damages at least 1 x per year. If necessary, the screw connections must be retightened or the fan is to be replaced.

a) Switch the machine off, secure it against accidental switching on and vent to atmospheric pressure. Allow the machine to cool down.
b) Hook the motor (Fig. 9/m) in the eyebolts and lift it by means of lifting gear. If no eyebolts exist, suspend the Motor with round loops.
c) Release the screws (Fig. 9/s_2) on the motor flange and axially pull the motor with coupling (Fig. 9/k) and fan (Fig. 9/v) out of the fan housing (Fig. 9/n_2).
d) Check the fan (Fig. 9/v) and clean it, if necessary. If the fan is damaged, replace it.
e) Axially push on the motor with the coupling (Fig. 9/k) and fan (Fig. 9/v) and using the screws (Fig. 9/s_2), fix it to the flange (Fig. 9/n_2) of the housing.
f) Remove the lifting device.

7.8 Safety valve

Perform maintenance and replace the safety valve in accordance with the manufacturer's operating and maintenance instructions. For this, contact our service people.

7.9 Frequency converter

Perform the maintenance of the frequency converter in accordance with the manufacturer's operating and maintenance instructions. For this, contact our service people.

7.10 Repair / service

For repairs contact the manufacturer, its branch offices or authorised dealers.
Please contact the manufacturer for the address of the authorized service centre (see manufacturer's address at the rear side).

WARNING

Risk of injury due to substances hazardous to health!

Due to contamination with hazardous substances and operating agents during operation, there is a high health risk for the repair personnel.

- For each machine that is sent to an Elmo Rietschle Service centre for inspection, maintenance or repair, a fully completed, signed declaration of harmlessness must be enclosed.
  The Declaration of No Objection is part of the supplier's documentation.
- Before returning, properly clean the machine.

After a repair or re-commissioning, the actions listed in chapter 5 “Installation” and chapter 6 “Commissioning and decommissioning” are to be performed as in the first commissioning.

7.11 Spare parts

NOTICE

Property damage due to wrong or defective spare parts!

Wrong or defective spare parts can cause malfunctions or blackout failure of the machine.

- Only use original spare parts or parts approved by the manufacturer.
- The use of other parts may revoke liability or guarantee for any resulting consequences.

Please find an overview of the spare parts in the list of spare parts **E887.**

Wearing parts and sealings are separately listed. For ordering spare parts, please contact the Elmo Rietschle Service (address on the back of the page).

Oils can directly be ordered from our Elmo Rietschle Service with quotation of the material numbers.

Oil	Trading units	Material number	Description
GEAR LUBE 150 20,000 h	Can, 1 l	7201706000	Synthetic oil, highly loadable with high resistance to aging and with excellent wear protection.
ECO GEAR LUBE 150 20,000 h	Can, 1 l	7203850000	Synthetic oil, especially developed for the food and pharmaceutical industry. Refers to FDA 21 CFR 178.3570 and USDA H-1. With Halal and Koscher certificate.

Tab. 2 Oils

8 Errors

DANGER

Danger to life!

If malfunctions are disregarded and/or removed only insufficiently, serious to lethal injuries can occur.

➢ Never put the compressor in operation again if it was automatically switched off and the reason has not been found out doubtlessly and remedied.

Malfunction	Cause	Elimination	Note
Machine is switched off by the motor protection switch	Mains voltage/ Frequency does not correspond with the motor data	Check by qualified electrician	Chapter 5.5
	Connection to motor terminal board is not correct		
	Motor protection switch is not set correctly		
	Motor protection switch is triggered too quickly	Use a motor protection switch with an overload-dependent turn-off delay that considers the short excess current at start up (version with short circuit and overload trigger as per VDE 0660 Part 102 or IEC 60947-4-1)	
	The safety valve is dirty so that the permissible pressure is exceeded	See Operating Instructions of safety valve	–
Machine does not start or the frequency converter displays an error message	Malfunctions in the integrated frequency converter	See Operating Instructions of frequency converter	–
	The safety valve is dirty so that the permissible pressure is exceeded	See Operating Instructions of safety valve	–
The volumetric flow rate is not sufficient	The intake filter is dirty	Clean / replace intake filter	Chapter 7.6
	The pressure line is too long or too narrow	Check the hose and/or the pipe	Chapter 5.3
	Machine or system leaking	Check the pipework and screw connections for leaks and check for tight fit	Chapter 5.3
Final pressure (max. excess pressure) has not been reached	Machine or system leaking	Check the pipework and screw connections for leaks and check for tight fit	Chapter 5.3
	The intake filter is dirty	Clean / replace intake filter	Chapter 7.6
	Driving power selection too low	Use next largest motor output	Data sheet D 889 / D 887-60

Tab. 3 Table of malfunctions

Malfunction	Cause	Elimination	Note
Machine gets too hot	Ambient or inlet temperatures too high	Ensure proper use	Chapter 2.4
	Cooling air supply is obstructed	Check ambient conditions	Chapter 5.1
		Clean ventilation slots	Chapter 7.4
	The safety valve is dirty so that the permissible pressure is exceeded	See Operating Instructions of safety valve	–
The machine makes a strange noise	Deposits on the rotary piston	Clean the working space and the rotary piston	Elmo Rietschle Service
	Safety valve is floating	Replace the valve	
	Coupling is damaged	Replace coupling	

Tab. 3 Table of malfunctions

Please contact Elmo Rietschle Service for other malfunctions or those that cannot be eliminated.

9 Disassembly and disposal

9.1 Disassembly

WARNING

Risk of injury due to substances hazardous to health!

Due to contamination with hazardous substances and operating agents during operation, there is a high health risk for the personnel.

- ➢ Before disassembly, properly clean the machine.
- ➢ Wear suitable protective clothing.

a) Put the machine out of service according to chapter 6.2.

b) Disassemble the machine.
Dismantle large components and assemblies.

9.2 Disposal

NOTICE

Damage to the environment!

Environmental damage may be caused by the incorrect disposal of operating material and materials.

- ➢ All operating materials, as well as all liquids, such as cooling water and cooling oil, required during operation and maintenance, must be collected and disposed of in an environmentally friendly manner.
- ➢ Separate components according to the materials and if possible, recycle.

a) Collect oils and grease separately and dispose of in accordance with the local regulations in force.

b) Do not mix solvents, cold cleaning agent and paint residues.

c) Remove components and dispose of them in accordance with the local regulations in force.

d) Dispose of the machine in accordance with the national and local regulations in force.

e) Parts subject to wear and tear (marked as such in the spare parts list) are special waste and must be disposed of in accordance with the national and local waste laws.

10 Technical Data

C-DLR			301	301 FU (Fxxx)
Sound pressure level (max.) EN ISO 3744 Tolerance ±3 dB(A)	dB(A)	50 Hz	81	81
		60 Hz	83	83
Weight *	kg		330	375
Length *	mm		1229	1236
Width	mm		635	635
Height	mm		771	798
Pressure line			G 2	G 2
Oil filled volume	l		1.5	1.5

* Length and weight may differ from the information listed here depending on the motor manufacturer.

Further technical data can be found in the data sheet:
D 889 → C-DLR 301
D 887-60 → C-DLR 301 (Fxxx) with frequency converter

Subject to technical changes!

Elmo Rietschle

www.gd-elmorietschle.com
er.de@irco.com

Gardner Denver
Schopfheim GmbH
Johann-Sutter-Straße 6+8
79650 Schopfheim · Deutschland
Tel. +49 7622 392-0
Fax +49 7622 392-300

Gardner Denver

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Division and part of Blower Operations.

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Roots* Universal RAI*, URAI-DSL, URAI-G* & Metric Series

Installation Operation & Maintenance Manual

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Do these things to get the most from your Roots™ Blower

- Check shipment for damage. If found, file claim with carrier and notify Howden Roots.
- Unpack shipment carefully, and check contents against Packing List. Notify Howden Roots if a shortage appears.
- Store in a clean, dry location until ready for installation. Lift by methods discussed under INSTALLATION to avoid straining or distorting the equipment. Keep covers on all openings. Protect against weather and corrosion if outdoor storage is necessary.
- Read OPERATING LIMITATIONS and INSTALLATION sections in this manual and plan the complete installation.
- Provide for adequate safeguards against accidents to persons working on or near the equipment during both installation and operation. See SAFETY PRECAUTIONS.
- Install all equipment correctly. Foundation design must be adequate and piping carefully done. Use recommended accessories for operating protection.
- **Make sure both driving and driven equipment is correctly lubricated before start-up. See LUBRICATION.**
- Read starting check points under OPERATION. Run equipment briefly to check for installation errors and make corrections. Follow with a trial run under normal operating conditions.
- In event of trouble during installation or operation, do not attempt repairs of Howden Roots furnished equipment. Notify Howden Roots, giving all nameplate information plus an outline of operating conditions and a description of the trouble. Unauthorized attempts at equipment repair may void Howden Roots warranty.
- Units out of warranty may be repaired or adjusted by the owner. Good inspection and maintenance practices should reduce the need for repairs.

NOTE: Information in this manual is correct as of the date of publication. Howden Roots reserves the right to make design or material changes without notice, and without obligation to make similar changes on equipment of prior manufacture.

Roots products are sold subject to the current General Terms of Sale, ES104 and Warranty Policy WP-5020. Copies are available upon request.

Safety Precautions

It is important that all personnel observe safety precautions to minimize the chances of injury. Among many considerations, the following should be particularly noted:

- Blower casing and associated piping or accessories may become hot enough to cause major skin burns on contact.
- Internal and external rotating parts of the blower and driving equipment can produce serious physical injuries. Do not reach into any opening in the blower while it is operating, or while subject to accidental starting. Protect external moving parts with adequate guards.
- Disconnect power before doing any work, and avoid bypassing or rendering inoperative any safety or protective devices.
- If blower is operated with piping disconnected, place a strong coarse screen over the inlet and avoid standing in the discharge air stream.

CAUTION: Never cover the blower inlet with your hand or other part of body.

- Stay clear of the blast from pressure relief valves and the suction area of vacuum relief valves.
- Use proper care and good procedures in handling, lifting, installing, operating and maintaining the equipment.
- Casing pressure must not exceed 25 PSI (1725 mbar) gauge. Do not pressurize vented cavities from an external source, nor restrict the vents without first consulting Roots.
- Do not use air blowers on explosive or hazardous gases.
- Other potential hazards to safety may also be associated with operation of this equipment. All personnel working in or passing through the area should be trained to exercise adequate general safety precautions.

Operating Limitations

A Roots blower or exhauster must be operated within certain approved limiting conditions to enable continued satisfactory performance. Warranty is contingent on such operation.

Maximum limits for pressure, temperature and speed are specified in Table 1 for various models & sizes of blowers and exhausters. These limits apply to all units of normal construction, when operated under standard atmospheric conditions. Be sure to arrange connections or taps for instruments, thermometers and pressure or vacuum gauges at or near the inlet and discharge connections of the unit. These, along with a tachometer, will enable periodic checks of operating conditions.

PRESSURE – The pressure rise, between inlet and discharge, must not exceed the figure listed for the specific unit frame size concerned. Also, in any system where the unit inlet is at a positive pressure above atmosphere a maximum case rating of 25 PSI gauge (1725 mbar) should not be exceeded without first consulting Roots. Never should the maximum allowable differential pressure be exceeded.

On vacuum service, with the discharge to atmospheric pressure, the inlet suction or vacuum must not be greater than values listed for the specific frame size.

TEMPERATURE – Blower & exhauster frame sizes are approved only for installations where the following temperature limitations can be maintained in service:

- Measured temperature rise must not exceed listed values when the inlet is at ambient temperature. Ambient is considered as the general temperature of the space around the unit. This is not outdoor temperature unless the unit is installed outdoors.
- If inlet temperature is higher than ambient, the listed allowable temperature rise values must be reduced by 2/3 of the difference between the actual measured inlet temperature and the ambient temperature.
- The average of the inlet and discharge temperature must not exceed 250°F. (121°C).
- The ambient temperature of the space the blower/motor is installed in should not be higher than 120°F (48.8°C).

SPEED – These blowers & exhausters may be operated at speeds up to the maximum listed for the various frame sizes. They may be direct coupled to suitable constant speed drivers if pressure/temperature conditions are also within limits. At low speeds, excessive temperature rise may be a limiting factor

Special Note: The listed maximum allowable temperature rise for any particular blower & exhauster may occur well before its maximum pressure or vacuum rating is reached. This may occur at high altitude, low vacuum or at very low speed. The units' operating limit is always determined by the maximum rating reached first. It can be any one of the three: Pressure, Temperature or Speed.

Installation

Roots blowers & exhausters are treated after factory assembly to protect against normal atmospheric corrosion. The maximum period of internal protection is considered to be one year under average conditions, if shipping plugs and seals are not removed. Protection against chemical or salt water atmosphere is not provided. Avoid opening the unit until ready to start installation, as corrosion protection will be quickly lost due to evaporation.

If there is to be an extended period between installation and start up, the following steps should be taken to ensure corrosion protection.

- Coat internals of cylinder, gearbox and drive end bearing reservoir with Nox-Rust VCI-10 or equivalent. Repeat once a year or as conditions may require. Nox-Rust VCI-10 is petroleum soluble and does not have to be removed before lubricating. It may be obtained from Daubert Chemical Co., 2000 Spring Rd., Oak Brook, Ill. 60521.
- Paint shaft extension, inlet and discharge flanges, and all other exposed surfaces with Nox-Rust X-110 or equivalent.
- Seal inlet, discharge, and vent openings. It is not recommended that the unit be set in place, piped to the system, and allowed to remain idle for extended periods. If any part is left open to the atmosphere, the Nox-Rust VCI-10 vapor will escape and lose its effectiveness.
- Protect units from excessive vibration during storage.
- Rotate shaft three or four revolutions every two weeks.
- Prior to start up, remove flange covers on both inlet and discharge and inspect internals to insure absence of rust. Check all internal clearances. Also, at this time, remove gearbox and drive end bearing cover and inspect gear teeth and bearings for rust.

Because of the completely enclosed unit design, location of the installation is generally not a critical matter. A clean, dry and protected indoor location is preferred. However, an outdoor location will normally give satisfactory service. Important requirements are that the correct grade of lubricating oil be provided for expected operating temperatures, and that the unit be located so that routine checking and servicing can be performed conveniently. Proper care in locating driver and accessory equipment must also be considered.

Supervision of the installation by a Howden Roots Service Engineer is not usually required for these units. Workmen with experience in installing light to medium weight machinery should be able to produce satisfactory results. Handling of the equipment needs to be accomplished with care, and in compliance with safe practices. Unit mounting must be solid, without strain or twist, and air piping must be clean, accurately aligned and properly connected.

Bare-shaft Units: Two methods are used to handle a unit without base. One is to use lifting lugs bolted into the top of the unit headplates. Test them first for tightness and fractures by tapping with a hammer. In lifting, keep the direction of cable pull on these bolts as nearly vertical as possible. If lifting lugs are not available, lifting slings may be passed under the cylinder adjacent to the headplates. Either method prevents strain on the extended drive shaft.

Packaged Units: When the unit is furnished mounted on a baseplate, with or without a driver, use of lifting slings passing under the base flanges is required. Arrange these slings so that no strains are placed on the unit casing or mounting feet, or on any mounted accessory equipment. DO NOT use the lifting lugs in the top of the unit headplates.

Before starting the installation, remove plugs, covers or seals from unit inlet and discharge connections and inspect the interior completely for foreign material. If cleaning is required, finish by washing the cylinder, headplates and impeller thoroughly with an appropriate solvent. Turn the drive shaft by hand to make sure that the impellers turn freely at all points. Anti-rust compound on the connection flanges and drive shaft extension may also be removed at this time with the same solvent. Cover the flanges until ready to connect piping.

Mounting

Care will pay dividends when arranging the unit mounting. This is especially true when the unit is a “bare-shaft” unit furnished without a baseplate. The convenient procedure may be to mount such a unit directly on a floor or small concrete pad, but this generally produces the least satisfactory results. It definitely causes the most problems in levelling and alignment and may result in a “Soft Foot” condition. Correct soft foot before operation to avoid unnecessary loading on the casing and bearings. Direct use of building structural framing members is not recommended.

For blowers without a base, it is recommended that a well anchored and carefully levelled steel or cast iron mounting plate be provided. The plate should be at least 1 inch (25 mm) thick, with its top surface machined flat, and large enough to provide levelling areas at one side and one end after the unit is mounted. It should have properly sized studs or tapped holes located to match the unit foot drilling. Proper use of a high quality machinist’s level is necessary for adequate installation.

With the mounting plate in place and levelled, set the unit on it without bolting and check for rocking. If it is not solid, determine the total thickness of shims required under one foot to stop rocking. Place half of this under each of the diagonally-opposite short feet, and tighten the mounting studs or screws. Rotate the drive shaft to make sure the impellers turn freely. If the unit is to be direct coupled to a driving motor, consider the height of the motor shaft and the necessity for it to be aligned very accurately with the unit shaft. Best unit arrangement is directly bolted to the mounting plate while the driver is on shims of at least 1/8 inch (3mm) thickness. This allows adjustment of motor position in final shaft alignment by varying the shim thickness.

Aligning

When unit and driver are factory mounted on a common baseplate, the assembly will have been properly aligned and is to be treated as a unit for levelling purposes. Satisfactory installation can be obtained by setting the baseplate on a concrete slab that is rigid and free of vibration, and levelling the top of the base carefully in two directions so that it is free of twist. The slab must be provided with suitable anchor bolts. The use of grouting under and partly inside the levelled and shimmed base is recommended.

It is possible for a base-mounted assembly to become twisted during shipment, thus disturbing the original alignment. For this reason, make the following checks after the base has been levelled and bolted down. Disconnect the drive and rotate the unit shaft by hand. It should turn freely at all points. Loosen the unit foot hold-down screws and determine whether all feet are evenly in contact with the base. If not, insert shims as required and again check for free impeller rotation. Finally, if unit is direct coupled to the driver, check shaft and coupling alignment carefully and make any necessary corrections.

In planning the installation, and before setting the unit, consider how piping arrangements are dictated by the unit design and assembly. Drive shaft rotation must be established accordingly and is indicated by an arrow near the shaft.

Typical arrangement on vertical units has the drive shaft at the top with counterclockwise rotation and discharge to the left. Horizontal units are typically arranged with the drive shaft at the left with counterclockwise rotation and discharge down. See Figure 4 for other various unit arrangements and possible conversions.

When a unit is DIRECT COUPLED to its driver, the driver RPM must be selected or governed so as not to exceed the maximum speed rating of the unit. Refer to Table 1 for allowable speeds of various unit sizes.

A flexible type coupling should always be used to connect the driver and unit shafts.

When direct coupling a motor or engine to a blower you must insure there is sufficient gap between the coupling halves and the element to prevent thrust loading the blower bearings. When a motor, engine or blower is operated the shafts may expand axially. If the coupling is installed in such a manner that there is not enough room for expansion the blower shaft can be forced

back into the blower and cause the impeller to contact the gear end headplate resulting in damage to the blower. The two shafts must be in as near perfect alignment in all directions as possible, and the gap must be established with the motor armature on its electrical center if end-play exists. Coupling manufacturer's recommendations for maximum misalignment, although acceptable for the coupling, are normally too large to achieve smooth operation and maximum life of the blower.

The following requirements of a good installation are recommended. When selecting a coupling to be fitted to the blower shaft Howden Roots recommends a taper lock style coupling to insure proper contact with the blower shaft. If the coupling must have a straight bore the coupling halves must be fitted to the two shafts with a line to line thru .001" interference fit. Coupling halves must be warmed up per coupling manufacturer's recommendations. Maximum deviation in offset alignment of the shafts should not exceed .005" (.13 mm) total indicator reading, taken on the two coupling hubs. Maximum deviation from parallel of the inside coupling faces should not exceed .001" (.03 mm) when checked at six points around the coupling.

When a unit is BELT DRIVEN, the proper selection of sheave diameters will result in the required unit speed. When selecting a sheave to be fitted to the blower shaft Howden Roots recommends a taper lock style sheave to insure proper contact with the blower shaft. This flexibility can lead to operating temperature problems caused by unit speed being too low. Make sure the drive speed selected is within the allowable range for the specific unit size, as specified under Table 1.

Belt drive arrangements usually employ two or more V-belts running in grooved sheaves. Installation of the driver is less critical than for direct coupling, but its shaft must be level and parallel with the unit shaft. **The driver should be mounted on the inlet side of a vertical unit (horizontal piping) and on the side nearest to the shaft on a horizontal unit. SEE PAGE 6 - Acceptable**

Blower Drive Arrangement Options.

The driver must also be mounted on an adjustable base to permit installing, adjusting and removing the V-belts. To position the driver correctly, both sheaves need to be mounted on their shafts and the nominal shaft center distance known for the belt lengths to be used.

CAUTION: Drive couplings and sheaves (pulleys) should have an interference fit to the shaft of the blower (set screw types of attachment generally do not provide reliable service.) It is recommended that the drive coupling or sheave used have a taperlock style bushing which is properly sized to provide the correct interference fit required. Drive couplings, that require heating to fit on the blower shaft, should be installed per coupling manufacturer recommendations. A drive coupling or sheave should not be forced on to the shaft of the blower as this could affect internal clearances resulting in damage to the blower.

Engine drive applications often require special consideration to drive coupling selection to avoid harmful torsional vibrations. These vibrations may lead to blower damage if not dampened adequately. It is often necessary to install a fly-wheel and/or a torsionally soft elastic element coupling based on the engine manufacturer recommendations.

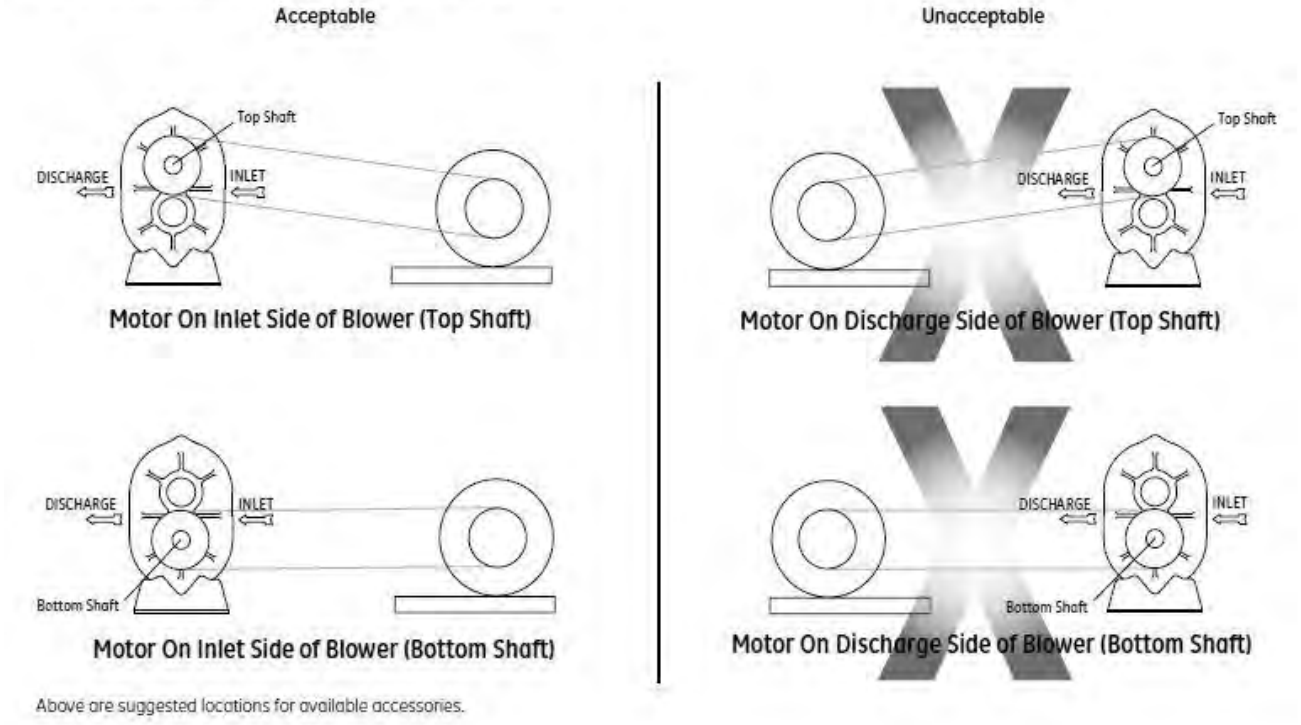
The driver sheave should also be mounted as close to its bearing as possible, and again should fit the shaft correctly. Position the driver on its adjustable base so that 2/3 of the total movement is available in the direction away from the unit, and mount the assembly so that the face of the sheave is accurately in line with the unit sheave. This position minimizes belt wear, and allows sufficient adjustment for both installing and tightening the belts. After belts are installed, adjust their tension in accordance with the manufacturer's instructions. However, only enough tension should be applied to prevent slippage when the unit is operating under load. Excessive tightening can lead to early bearing concerns or shaft breakage.

Before operating the drive under power to check initial belt tension, first remove covers from the unit connections. Make sure the interior is still clean, and then rotate the shaft by hand. Place a coarse screen over the inlet connection to prevent anything being drawn into the unit while it is operating, and avoid standing in line with the discharge opening. Put oil in the sumps per instructions under **LUBRICATION**.

Piping

Before connecting piping, remove any remaining anti-rust compound from unit connections. Clean pipe should be no smaller than unit connections. In addition, make sure it is free of scale, cuttings, weld beads, or foreign material of any kind. To further guard against damage to the unit, especially when an inlet filter is not used, install a substantial screen of 16 mesh backed with hardware cloth at or near the inlet connections. Make provisions to clean this screen of collected debris after a few hours of operation. It should be removed when its usefulness has ended, as the wire will eventually deteriorate and small pieces going into the unit may cause serious damage.

Fig. 1 - Acceptable Blower Drive Arrangement Options



Above are suggested locations for available accessories.

Pipe flanges or male threads must meet the unit connections accurately and squarely. DO NOT attempt to correct misalignment by springing or cramping the pipe. In most cases this will distort the unit casing and cause impeller rubbing. In severe cases it can prevent operation or result in a broken drive shaft. For similar reasons, piping should be supported near the unit to eliminate dead weight strains. Also, if pipe expansion is likely to occur from temperature change, installation of flexible connectors or expansion joints is advisable.

Figure 3 represents an installation with all accessory items that might be required under various operating conditions. Inlet piping should be completely free of valves or other restrictions. When a shut-off valve cannot be avoided, make sure a full size vacuum relief is installed nearest the unit inlet. This will protect against unit overload caused by accidental closing of the shutoff valve.

Need for an inlet silencer will depend on unit speed and pressure, as well as sound-level requirements in the general surroundings. An inlet filter is recommended, especially in dusty or sandy locations. A discharge silencer is also normally suggested, even though WHISPAIR* units operate at generally lower noise levels than conventional rotary blowers. Specific recommendations on silencing can be obtained from your local Howden Roots distributor. Discharge piping requires a pressure relief valve, and should include a manual unloading valve to permit starting the unit under no-load conditions. Reliable pressure/vacuum gauges and good thermometers at both inlet and discharge are recommended to allow making the important checks on unit operating conditions. The back-pressure regulator shown in Figure 3 is useful mainly when volume demands vary while the unit operates at constant output. If demand is constant, but somewhat lower than the unit output, excess may be blown off through the manual unloading valve.

In multiple unit installations where two or more units operate with a common header, use of check valves is mandatory. These should be of a direct acting or free swinging type, with one valve located in each line between the unit and header. Properly installed, they will protect against damage from reverse rotation caused by air and material back-flow through an idle unit.

After piping is completed, and before applying power, rotate the drive shaft by hand again. If it does not move with uniform freedom, look for uneven mounting, piping strain, excessive belt tension or coupling misalignment.

DO NOT operate the unit at this time unless it has been lubricated per instructions.

Technical Supplement for URAI-G Gas Blowers

Technical Supplement for 32, 33, 36, 42, 45, 47, 53, 56, 59, 65, 68, 615 Universal RAI-G blowers

Precaution: URAI-G blowers: Care must be used when opening the head plate seal vent chamber plugs (43) as some gas will escape–if it is a pressure system, or the atmospheric air will leak into the blower if the system is under vacuum. There is a possibility of some gas leakage through the mechanical seals. This leakage on the gear end will escape through the gear box vent, and on the drive end, through the grease release fittings. If the gas leakage is undesirable, each seal chamber must be purged with an inert gas through one purge gas hole (43) per seal. There are two plugged purge gas holes (1/8 NPT) provided per seal. The purge gas pressure must be maintained one PSI above the discharge gas pressure. Also, there exists a possibility of gear end oil and drive end grease leakage into the gas stream.

Roots Universal RAI-G rotary positive gas blowers are a design extension of the basic Roots Universal RAI blower model. URAIG blower uses (4) mechanical seals in place of the standard inboard lip seals to minimize gas leakage into the atmosphere.

These units are intended for gases which are compatible with cast iron case material, steel shafts, 300/400 series stainless steel and carbon seal components, viton o-rings and the oil/ grease lubricants. If there are any questions regarding application or operation of this gas blower, please contact factory.

A simple but very effective lubrication system is employed on the drive shaft end bearings. Hydraulic pressure relief fittings are provided to vent any excess grease, preventing pressure build-up on the seals. A restriction plug and metering orifice prevent loss of lubricant from initial surges in lubricant pressure but permit venting excess lubricant under steadily rising pressures.

Using a pressure gun, slowly force new lubricant into each drive end bearing housing until traces of clean grease comes out of the relief fitting. The use of an electric or pneumatic grease gun could force the grease in too rapidly and thus invert the seals and should not be used.

Gear end bearings, gears and oil seals are lubricated by the action of the timing gears which dip into the main oil sumps causing oil to splash directly on gears and into bearings and seals. A drain port is provided below each bearing to prevent an excessive amount of oil in the bearings. Seals located inboard of the bearings in each headplate effectively retain oil within the sumps. Any small weepage that may occur should the seals wear passes into a cavity in each vented headplate and is drained downward.

Proper lubrication is usually the most important single consideration in obtaining maximum service life and satisfactory operation from the unit. Unless operating conditions are severe, a weekly check of oil level and necessary addition of lubricant should be sufficient.

During the first week of operation, check the oil levels in the oil sumps about once a day, and watch for leaks. Replenish as necessary. Thereafter, an occasional check should be sufficient.

More frequent oil service may be necessary if the blower is operated in a very dusty location.

Lubrication

Due to sludge build-up and seal leakage problems, Howden Roots recommendation is DO NOT USE Mobil SHC synthetic oils in Roots blowers.

Proper lubrication is usually the most important single consideration in obtaining maximum service life and satisfactory operation from the unit.

URAI Air and Gas gear end bearing lubrication/oil with splash lubrication on the gear end only (Drive end grease lubricated).

- The specified and recommended oil is Roots Synthetic Oil of correct viscosity per Table 2, page 16.
- To fill the gearbox, remove the breather plug (25) and the oil overflow plug (21) - see page 15. Fill the reservoir up to the overflow hole. **DO NOT OVERFILL**. Place the breather and the overflow plug back into their respective holes.
- The lubrication should be changed after initial 100 hours of operation.
- Proper service intervals of the oil thereafter are based on the discharge air temperature of the blower. Please refer to the information below to “How to properly determine the oil service intervals” shown on this page.
- Unless operating conditions are quite severe, a weekly check of the oil level and necessary addition of lubricant should be sufficient. During the first week of operation, check the oil levels in the oil sumps about once a day, and watch for leaks. Replenish as necessary.
- If you choose to use another oil other than the specified and recommended ROOTS Synthetic, use a good grade of industrial type non-detergent, rust inhibiting, anti-foaming oil and of correct viscosity per Table 2, page 16.

- Howden Roots does NOT recommend the use of automotive type lubricants, as they are not formulated with the properties mentioned above.

Roots URAI-DSL blowers with splash lubrication/oil on each end. No grease.

- The specified and recommended oil is Roots Synthetic Oil of correct viscosity per Table 2, page 16.
- The lubrication should be changed after initial 100 hours of operation.
- The proper oil level should be half way or middle of the sight gauge when the blower is not operating. **DO NOT OVERFILL OIL SUMP/S** as damage to the blower may occur.
- The oil level should not fall below the middle of the site gauge when the blower is idle.
- The lubrication/oil level may rise or fall in the gauge during operation to an extent depending somewhat on oil temperature and blower speed. Proper service intervals of the oil thereafter are based on the discharge air temperature of the blower. Please refer to the information below to "How to properly determine the oil service intervals" shown on this page.
- Unless operating conditions are quite severe, a weekly check of the oil level and necessary addition of lubricant should be sufficient. During the first week of operation, check the oil levels in the oil sumps about once a day, and watch for leaks. Replenish as necessary.
- If you choose to use another oil other than the specified and recommended Roots Synthetic Oil, use a good grade of **industrial type** non-detergent, rust inhibiting, antifoaming oil and of correct viscosity per Table 2, page 16.
- Roots does **NOT** recommend the use of automotive type lubricants, as they are not formulated with the properties mentioned above.

How to properly determine the oil service intervals.

Normal life expectancy of the specified and recommended Roots Synthetic Oil is approximately 6000 hours with an oil temperature of 180°F (82°C) or less. As the oil temperature increases by increments of 15°F (8°C), the oil life is reduced by half for each 15°F (8°C) increase. Example: Oil temperatures of 195°F (90.5°C) will produce a life expectancy reduced by half or 3000 hours oil service life.

Normal life expectancy of petroleum based oils is about 2000 hours with an oil temperature of about 180°F (82°C). As the oil temperature increases by increments of 15°F (8°C), the life is reduced by half for each 15°F (8°C) increase. Example: Oil temperatures of 195°F (90.5°C) will produce life expectancy reduced by half or 1000 hours oil service life.

NOTE: To estimate oil temperature, multiply the discharge temperature of the blower by 0.80. Example: if the discharge air temperature of the blower is 200° F, it is estimated that the oil temperature is 160° F

For Units with grease lubricated drive end bearings.

URAI AIR (Non GAS) blower grease specifications.

- When servicing drive end bearings of a AIR (Non Gas) blower, use the specified and recommended Shell Darina SD 2 NLGI #2 product code 5067628.
- For grease lubricated drive end blowers see page 16, table 4, regarding specified greasing intervals.
- Lithium based greases are not compatible with the specified and recommended Shell Darina SD 2 grease used when assembling the blower. **Lithium based grease is not approved for any ROOTS blowers.**
- Table 4 page 16 has been prepared as a general greasing schedule guide based on average operating conditions. More frequent intervals may be necessary depending on the grease operating temperature and unusual circumstances.

URAI-G blower grease specifications.

- When servicing drive end bearings of a URAI-G blower, use the specified NLGI #2 premium grade aluminium complex† grease, GE P/N T20019001. Lithium based greases are not compatible with the specified and recommended Roots Synthetic Grease used when assembling a GAS blower. **Lithium based grease is not approved for any Roots blowers.**
- The lubricants selected must be compatible with the gas.

†Roots Synthetic Oil is superior in performance to petroleum based products. It has high oxidation stability, excellent corrosion protection, extremely high film strength and low coefficient of friction. Typical oil change intervals are increased 2-3 times over petroleum based lubricants. Also, Roots Synthetic Oil is 100% compatible with petroleum based oils. Simply drain the oil in the blower and refill the reservoirs with Roots Synthetic Oil to maintain optimum performance of your Roots

Operation

Before operating a blower under power for the first time, recheck the unit and the installation thoroughly to reduce the likelihood of avoidable troubles. Use the following procedure check list as a guide, but consider any other special conditions in the installation.

- Be certain that no bolts, tools, rags, or debris have been left in the blower air chamber or piping.
- If an outdoor intake without filter is used, be sure the opening is located so it cannot pick up dirt and is protected by a strong screen or grille. Use of the temporary protective screen as described under INSTALLATION is strongly recommended.
- Recheck blower levelling, drive alignment and tightness of all mounting bolts if installation is not recent. If belt drive is used, adjust belt tension correctly.
- Turn drive shaft by hand to make sure impellers still rotate without bumping or rubbing at any point.
- Ensure oil levels in the main oil sumps are correct.
- Check lubrication of driver. If it is an electric motor, be sure that power is available and that electrical overload devices are installed and workable.
- Open the manual unloading valve in the discharge air line. If a valve is in the inlet piping, be sure it is open.
- Bump blower a few revolutions with driver to check that direction of rotation agrees with arrow near blower shaft, and that both coast freely to a stop.

After the preceding points are cleared, blower is ready for trial operation under “no-load” conditions. The following procedure is suggested to cover this initial operation test period.

a. Start blower, let it accelerate to full speed, then shut off. Listen for knocking sounds, both with power on and as speed slows down.

b. After blower comes to a complete stop, repeat above, but let blower run 2 or 3 minutes. Check for noises, such as knocking sounds.

c. After blower comes to a complete stop, operate blower for about 10 minutes unloaded. Check oil levels. Observe cylinder and headplate surfaces for development of hot spots such as burned paint, indicating impeller rubs. Be aware of any noticeable increase in vibration.

Assuming that all trials have been satisfactory, or that necessary corrections have been made, the blower should now have a final check run of at least one hour under normal operating conditions. After blower is restarted, gradually close the discharge unloading valve to apply working pressure.

At this point it is recommended that a pressure gauge or manometer be connected into the discharge line if not already provided, and that thermometers be in both inlet and discharge lines. Readings from these instruments will show whether pressure or temperature ratings of the blower are being exceeded.

During the final run, check operating conditions frequently and observe the oil levels at reasonable intervals. If excessive noise or local heating develops, shut down immediately and determine the cause. If either pressure rise or temperature rise across the blower exceeds the limit specified in this manual, shut down and investigate conditions in the piping system. Refer to the TROUBLESHOOTING CHECKLIST for suggestions on various problems that may appear.

The blower should now be ready for continuous duty operation at full load. During the first few days make periodic checks to determine whether all conditions remain steady, or at least acceptable. This may be particularly important if the blower is supplying air to a process system where conditions can vary. At the first opportunity, stop the blower and clean the temporary inlet protective screen. If no appreciable amount of debris has collected, the screen may be removed. See comments under INSTALLATION. At this same time, verify levelling, coupling alignment or belt tension, and mounting bolt tightness.

Should operating experience prove that blower capacity is a little too high for the actual air requirements, a small excess may be blown off continuously through the manual unloading or vent valve. Never rely on the pressure relief valve as an automatic vent. Such use may cause the discharge pressure to become excessive, and can also result in unsafe operation of the valve itself. If blower capacity appears to be too low, refer to the TROUBLESHOOTING CHECKLIST.

Vibration Assessment Criteria

With measurements taken at the bearing locations on the housings, see chart below for an appropriate assessment guide for rotary lobe blowers rigidly mounted on stiff foundations.

In general, blower vibration levels should be monitored on a regular basis and the vibration trend observed for progressive or sudden change in level. If such a change occurs, the cause should be determined through spectral analysis.

As shown on the chart below, the level of all pass vibration will determine the need to measure discrete frequency vibration levels and the action required.

All Pass Vibrations (in/sec)	Discrete Frequency Vibration (in/sec)	Action
0.45 or less	N/R	Acceptable
Greater than 0.45 but 1.0 or less	0.45 or less @ any frequency	Acceptable
	Greater than 0.45 @ any frequency	Investigate
Greater than 1.0	Less than 1.0	Investigate
	Greater than 1.0	Investigate

Troubleshooting Checklist

Trouble	Item	Possible Cause	Remedy
No flow	1	Speed too low	Check by tachometer and compare with published performance.
	2	Wrong rotation	Compare actual rotation with Figure 1, change driver if wrong.
	3	Obstruction in piping	Check piping, valves, silencer to assure open flow path.
Low capacity	4	Speed too low	See item 1, if belt drive, check for slippage and re-adjust tension.
	5	Excessive pressure rise	Check inlet vacuum and discharge pressure and compare with published performance.
	6	Obstruction in piping	See item 3.
	7	Excessive slip	Check inside of casing for worn or eroded surfaces causing excessive clearances
Excessive power	8	Speed too high	Check speed and compare with published performance.
	9	Excessvie pressure rise	See item 5
	10	Impeller rubbing	Inspect outside of cylinder for high temperature areas, then check for impeller contact at these points. Correct blower mounting, drive alignment.
	11	Scale , sludge, rust or product build up	Clean blower appropriately
Damage to bearings or gears	12	Inadequate lubrication	Check oil sump levels in gear and drive end headplates
	13	Excessive lubrication	Check oil levels. If correct, drain and refill with clean oil of recommended grade.
	14	Excessive pressure rise	See item 5.
	15	Coupling misalignment	Check carefully. Re-align if questionable.
	16	Excessive belt tension	Re-adjust for correct tension.
Vibration	17	Misalignment	See item 15
	18	Impellers rubbing	See item 10
	19	Worn bearings/gears	Check gear backlash and conditions of bearings and replace as indicated.
	20	Unbalanced or rubbing impeller	Scale or process material may build up on casing and impellers, or inside impellers. Remove build-up to restore original clearances and impeller balance.
	21	Driver or blower loose	Tighten mounting bolts securely.
	22	Piping resonances	Determine whether standing wave pressure pulsations are present in the piping.
	23	Scale/sludge build-ups	Clean out interior of impeller lobes to restore dynamic balance.
Driver stops, or will not start	24	Casing strain	Re-work piping alignment to remove excess strain
	25	Impeller stuck	Check for excessive hot spot on headplate or cynlinder. See item 10. Look for defective shaft bearing and/or gear teeth.
	26	Scale, sludge, rust or product build-up	Clean blower appropiately
Excessive breather	27	Broken seal	Replace seals
Blow-by or excessive oil leakage to vent area	28	Defective O-ring	Replace seals and O-ring
Excessive oil leakage in vent area	29	Defective/plugged breather	Replace breather and monitor oil leakage
	30	Oil level too high	Check sump levels in gear and drive headplates
	31	Oil type or viscosity incorrect	Check oil to ensure it meets recommendations. Drain then fill with clean oil of recommended grade.
	32	Blower running hot	Check blower operating conditions to ensure they are within the operating limitations defined in this manual.

Inspection & Maintenance: Roots Universal RAI series blowers

A good program of consistent inspection and maintenance is the most reliable method of minimizing repairs to a blower. A simple record of services and dates will help keep this work on a regular schedule. Basic service needs are:

- Lubrication
- Checking for hot spots
- Checking for increases or changes in vibration and noise
- Recording of operating pressures and temperatures

Above all, a blower must be operated within its specified rating limits, to obtain satisfactory service life.

A newly installed blower should be checked often during the first month of full-time operation. Attention thereafter may be less frequent assuming satisfactory performance. Lubrication is normally the most important consideration and weekly checks of lubricant levels in the gearbox and bearing reservoirs should be customary. Complete oil change schedules are discussed under **LUBRICATION.**

Driver lubrication practices should be in accordance with the manufacturer's instructions. If direct connected to the blower through a lubricated type coupling, the coupling should be checked and greased each time blower oil is changed. This will help reduce wear and prevent unnecessary vibration. In a belted drive system, check belt tension periodically and inspect for frayed or cracked belts.

In a new, and properly installed, unit there is no contact between the two impellers, or between the impellers and cylinder or headplates. Wear is confined to the bearings (which support and locate the shafts) the oil seals, and the timing gears. All are lubricated and wear should be minimal if clean oil of the correct grade is always used. Seals are subject to deterioration as well as wear, and may require replacement at varying periods.

Shaft bearings are designed for optimum life under average conditions with proper lubrication and are critical to the service life of the blower. Gradual bearing wear may allow a shaft position to change slightly, until rubbing develops between impeller and casing. This will cause spot heating, which can be detected by observing these surfaces. Sudden bearing failure is usually more serious. Since the shaft and impeller are no longer supported and properly located, extensive general damage to the blower casing and gears is likely to occur.

Oil seals should be considered expendable items, to be replaced whenever drainage from the headplate vent cavity becomes excessive or when the blower is disassembled for any reason. Some oil seal leakage may occur since an oil film under the lip is required for proper operation. Periodically leaked oil should be wiped off from surfaces. Minor seal leakage should not be considered as indicating seal replacement.

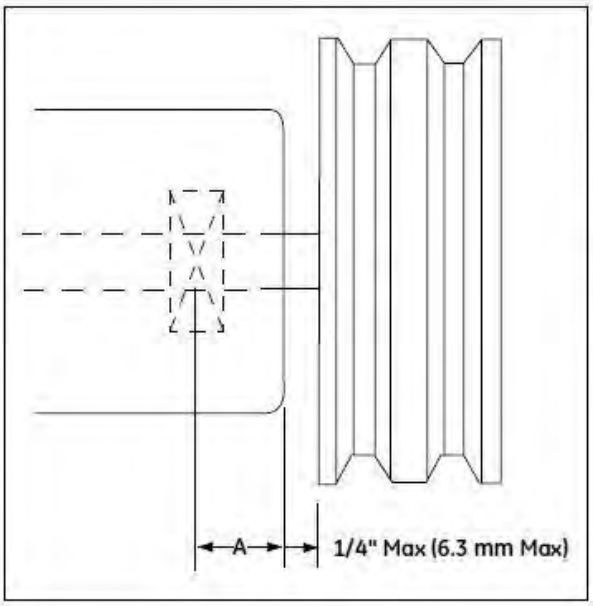
Timing gear wear, when correct lubrication is maintained, should be negligible. Gear teeth are cut to provide the correct amount of backlash, and gears correctly mounted on the shafts will accommodate a normal amount of tooth wear without permitting contact between lobes of the two impellers. However, too high an oil level will cause churning and excessive heating. This is indicated by unusually high temperature at the bottom of the gear housing. Consequent heating of the gears will result in loss of tooth-clearance, backlash and rapid wear of the gear teeth usually will develop. Continuation of this tooth wear will eventually produce impeller contacts (knocking), and from this point serious damage will be unavoidable if blower operation is continued. A similar situation can be produced suddenly by gear tooth fracture, which is usually brought on by sustained overloading or momentary shock loads.

Problems may also develop from causes other than internal parts failure. Operating clearances within a blower are only a few thousandths of an inch. This makes it possible for impeller interference or casing rubs to result from shifts in the blower mounting or from changes in piping support. If this type of trouble is experienced, and the blower is found to be clean, try removing mounting strains. Loosen blower mounting bolts and reset the levelling and drive alignment. Then tighten mounting again, and make sure that all piping meets blower connections accurately and squarely Foreign materials in the blower will also cause trouble, which can only be cured by disconnecting the piping and thoroughly cleaning the blower interior.

A wide range of causes and solutions for operating troubles are covered in the **TROUBLE SHOOTING CHECKLIST.** The remedies suggested should be performed by qualified mechanics with a good background. Major repairs generally are to be considered beyond the scope of maintenance, and should be referred to an authorized Howden Roots distributor.

Warranty failures should not be repaired at all, unless specific approval has been obtained through Howden Roots before starting work. Unauthorized disassembly within the warranty period may void the warranty.

Figure 2 - Allowable Overhung Loads for V-belt Drives Roots Universal RAI/URAI-J Units



$$\text{†Belt Pull lbs} = \frac{252100 \bullet \text{Motor HP}}{\text{Blower RPM} \bullet \text{Sheave Diameter in Inches}}$$

$$\text{Shaft Load (lb.in)} = \text{Belt Pull} \bullet \left(\text{A"} + \tfrac{3}{4}\text{"} + \frac{\text{Sheave Width (")}}{2}\right)$$

†Based on SF = 1.4 for v-belt drives. If higher SF belt is used, belt load should be increased proportionally and may exceed limits of the blower.

Frame Size	Dim "A"	Max. Allow. Shaft Load (lb.in)	Min Sheave Diameter
22, 24	0.61	150	4.00
32, 33, 36	0.80	400	5.00
42, 45, 47	1.02	730	5.00
53, 56, 59	1.13	1,325	6.00
65, 68, 615	1.36	2,250	8.00
76, 711, 718	1.16	3000	9.50

NOTE:

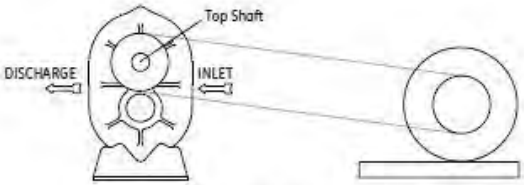
Arc of sheave belt contact on the smaller sheave not to be less than 170°.

Driver to be installed on the inlet side for vertical units, and on the drive shaft side for horizontal units.

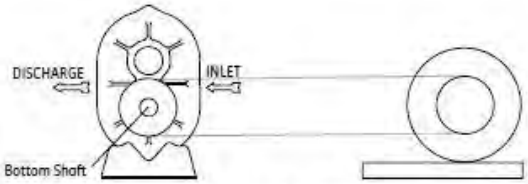
GE recommends the use of two or more 3VX, 5VX or 8VX belts and sheaves.

Acceptable Blower Drive Arrangement Options

Acceptable

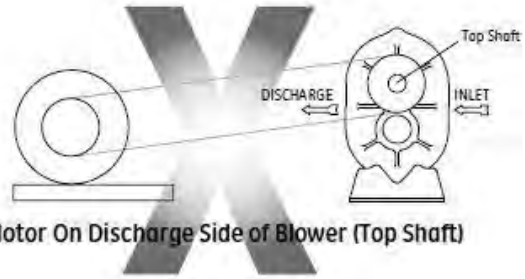


Motor On Inlet Side of Blower (Top Shaft)

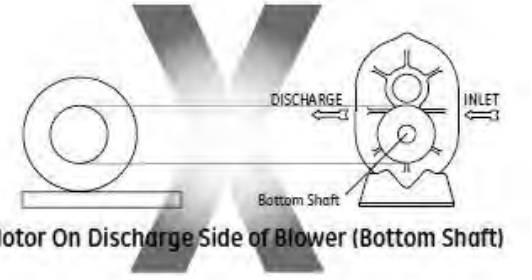


Motor On Inlet Side of Blower (Bottom Shaft)

Unacceptable



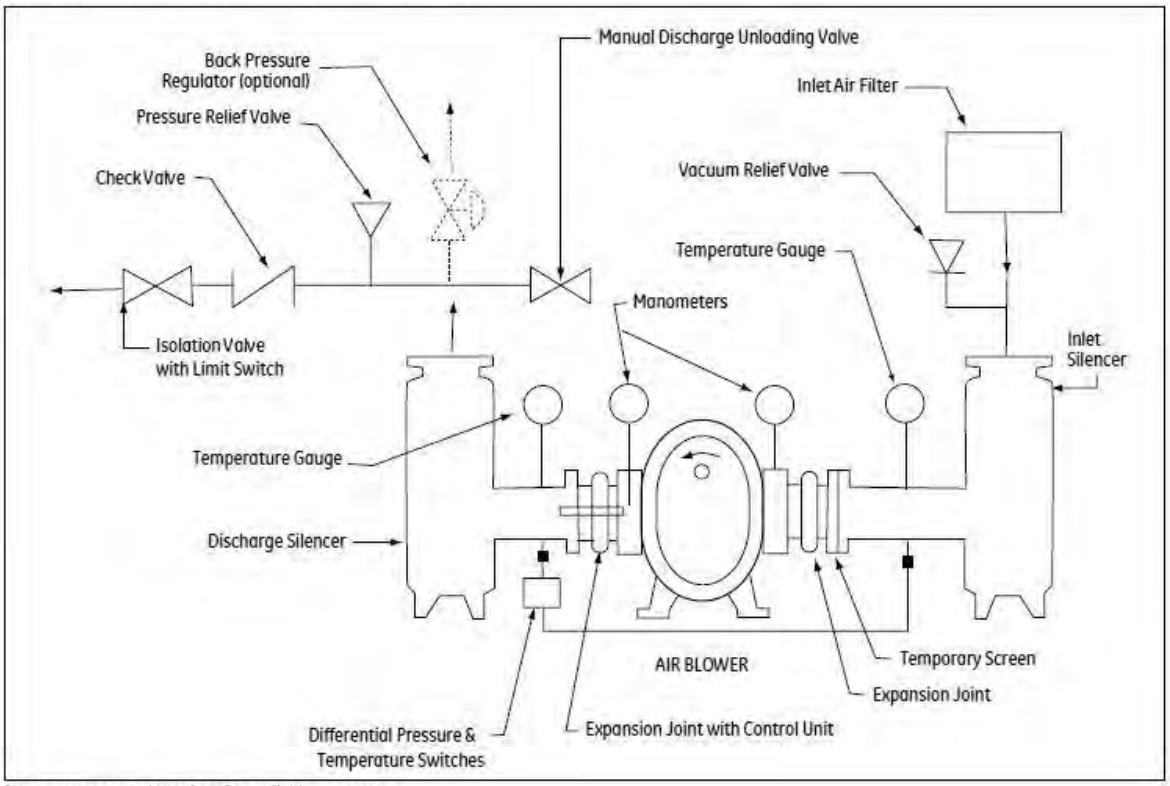
Motor On Discharge Side of Blower (Top Shaft)



Motor On Discharge Side of Blower (Bottom Shaft)

Above are suggested locations for available accessories.

Figure 3a - Air Blower Installations with Accessories



Above are suggested locations for available accessories.

Figure 3b - Gas Blower Installations with Accessories

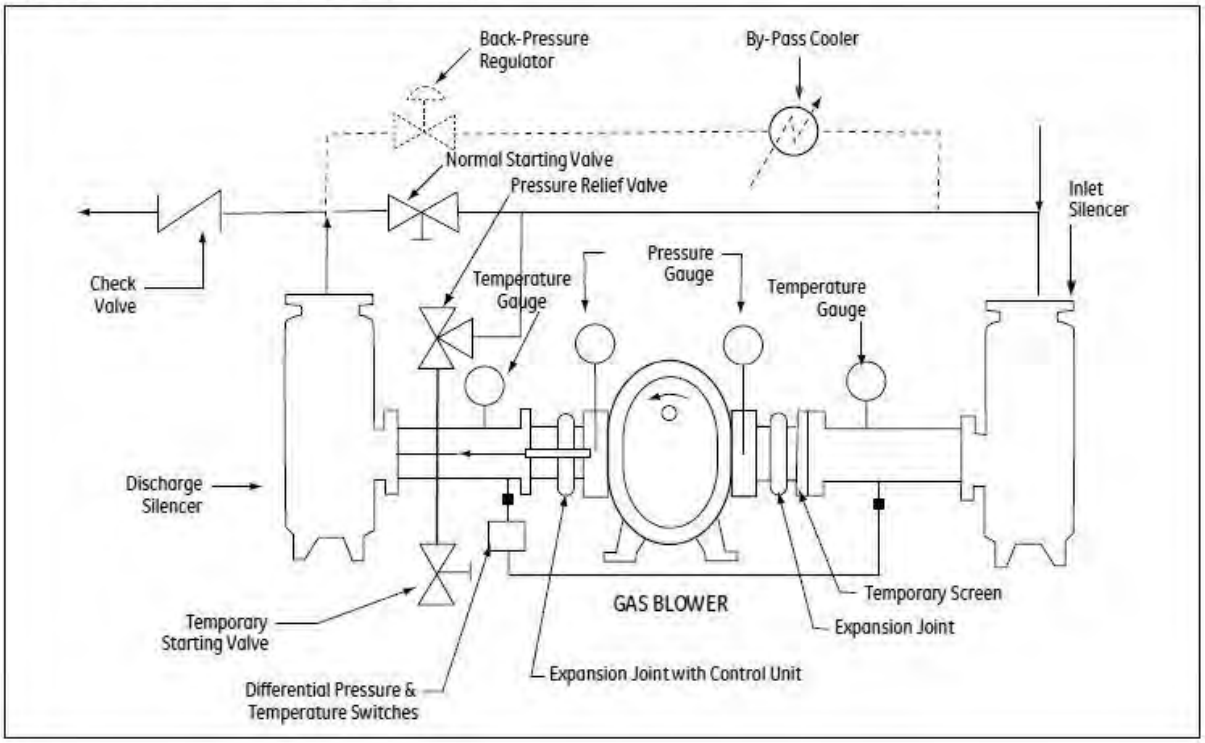


Figure 4 - Blower Orientation Conversion

Model	Reversible Rotation	WHISPAIR® Design
Roots Universal RAI	Yes	No
Roots URAI-JWHISPAIR	No	Yes
Roots URAI-G	Yes	No

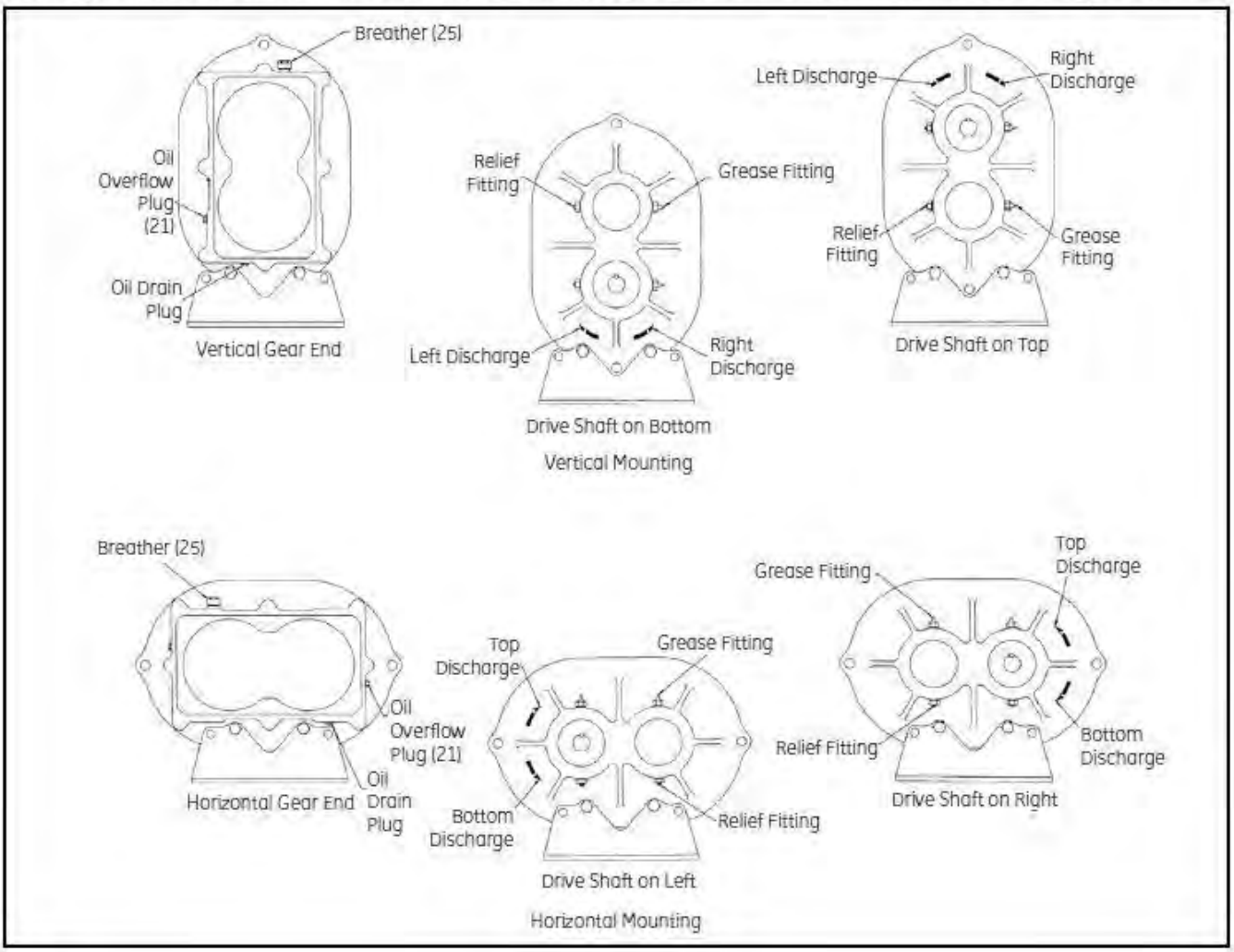
Special Note: WHISPAIR models are designed to operate with only one shaft rotation direction to take full advantage of the WHISPAIR feature. Therefore, a WHISPAIR blower may be operated in the following combinations.

- CCW Rotation: Bottom Shaft; Right side discharge or a Left Shaft; Bottom discharge
- CCW Rotation: Top Shaft; Left side discharge or a Right Shaft; Top discharge

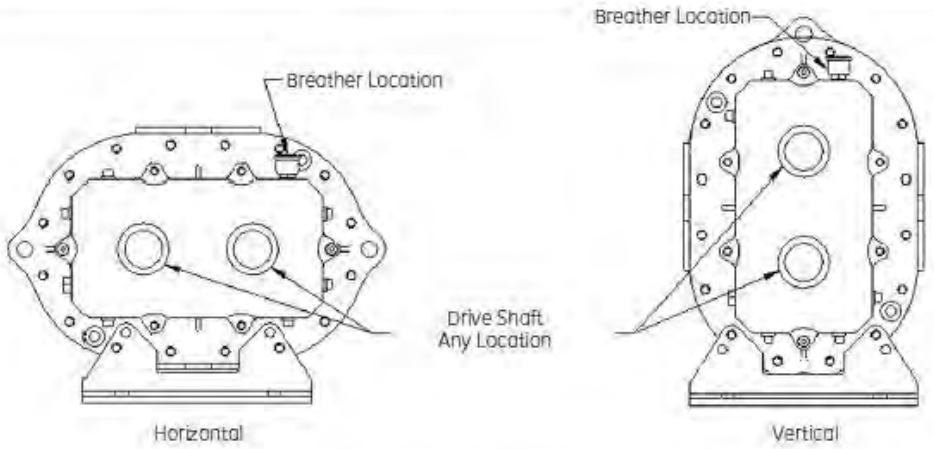
or

- CW Rotation: Bottom Shaft; Left side discharge or a Right Shaft Bottom discharge
- CW Rotation: Top Shaft; Right side discharge or a Left Shaft Top discharge

Blower Orientation and Lubrication Points: Grease Lubricated Drive End Roots Universal RAI series & URAI-G gas blowers



Drive End Breather Orientation for Roots Universal RAI Series - DSL with Oil Lube



Universal RAI DSL Breather Orientation

Revised Date: 1/11/05

Table 1 - Universal RAI series, Universal RAI-DSL & URAI-G gas blower, Maximum Allowable operating Conditions

Frame Size	Gear Dia. (inch)	Speed RPM	Temperature Rise		Delta Pressure		Inlet Vacuum	
			F°	C°	PSI	mbar	INHG	mbar
22	2.5	5275	225	125	12	827	15	500
24	2.5	5275	210	117	7	483	15	500
32	3.5	3600	240	133	15	1034	16	539
33	3.5	3,600	225	125	12	827	15	500
36	3.5	3,600	225	125	7	483	15	500
42	4.0	3,600	240	133	15	1034	16	539
45	4.0	3600	225	125	10	690	16	539
47	4.0	3600	225	125	7	483	15	500
53	5.0	2850	225	125	15	1034	16	539
56	5.0	2850	225	125	13	896	16	539
59	5.0	2850	225	125	7	483	15	500
65	6.0	2350	250	130	15	1034	16	539
68	6.0	2350	240	133	14	965	16	539
615	6.0	2350	130	72	7	483	14	472
76	7.0	2050	250	139	15	1034	16	539
711	7.0	2050	225	125	10	690	16	539
718	7.0	2050	130	72	6	414	12	405

Table 2 - Recommended Oil Grades

Ambient† Temperature °F (°C)	ISO Viscosity No.
Above 90° (32°)	320
32° to 90° (0° to 32°)	220
0° to 32° (-18° to 0°)	150
Below 0° (-18°)	100

†Ambient temperature is defined as the temperature of the space in which the blower and drive are located.

Roots URAI Gas Blower Oil and Grease Specifications

The specified oil should be Roots Synthetic Oil P/N 813-106-xxx of the proper viscosity.

Table 3 - Approximate Oil Sump Capacities

These capacities are provided to assist in stocking the correct amount of oil. Exact sump capacities may differ slightly. See "Lubrication" section for proper filing instructions.

Roots Universal RAI, URAI-J, URAI-G

Model No./Drive shaft location	Gear End Approx. Oil Sump Capacities	
	Fl. Oz	Liters
22, 24 (left or right)	6.1	0.18
22, 24 (top or bottom)	3.4	0.1
32, 33, 36 (left or right)	10.5	0.31
32, 33, 36 (top or bottom)	8.5	0.25
42, 45, 47 (left or right)	14.5	0.43
42, 45, 47 (top or bottom)	12.7	0.37
53, 56, 59 (left or right)	27.6	0.82
53, 56, 59 (top or bottom)	16	0.47
65, 68, 615 (left or right)	52.1	1.54
65, 68, 615 (top or bottom)	28.3	0.84
76, 711, 718 (left or right)	59.5	1.76
76, 711, 718 (top or bottom)	32.3	0.96

See page 14 and 15 for illustration of vertical and horizontal configurations

Roots Universal RAI series -DSL Splash Lubricated Drive End
Note that the gear and sump capacity is provided on the adjacent table.

Model No./Drive shaft location	Drive End Capacity	
	Fl. Oz	Liters
32, 33, 36 (left or right)	6.5	0.19
32, 33, 36(top or bottom)	4	0.12
42, 45, 47 (left or right)	10.8	0.32
42, 45, 47 (top or bottom)	5.5	0.16
53, 56, 59 (left or right)	14.8	0.44
53, 56, 59(top or bottom)	7.5	0.22
65, 68, 615 (left or right)	31	0.91
65, 68, 615 (top or bottom)	16	0.47

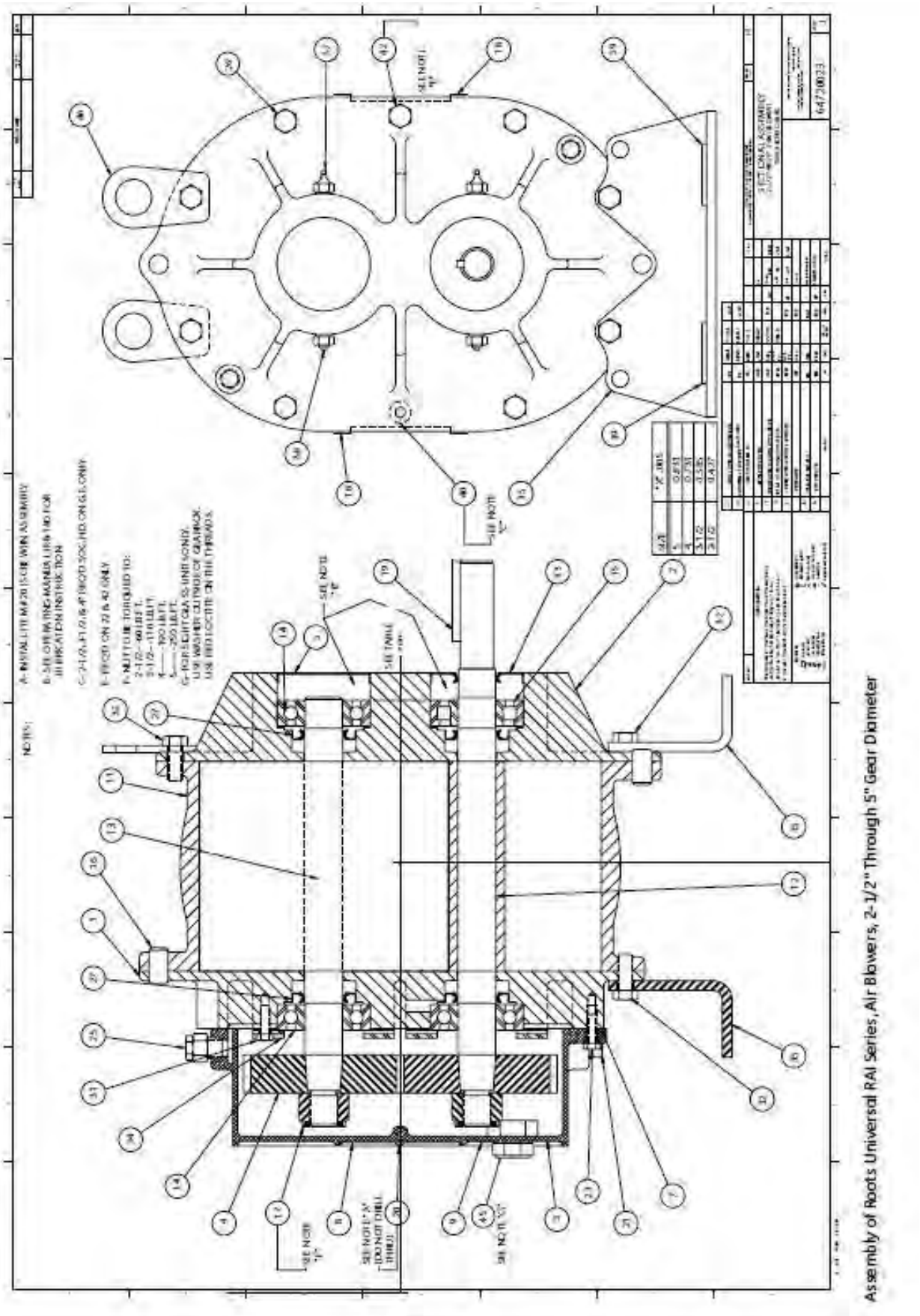
Table 4 - Roots Universal RAI series with Grease Lubricated Drive End: Specified Bearing Greasing Intervals

Speed in RPM	Operating Hours Per Day		
	8	16	24
	Greasing Interval in Weeks		
750-1000	7	4	2
1000-1500	5	2	1
1500-2000	4	2	1
2000-2500	3	1	1
2500-3000	2	1	1
3000 and up	1	1	1

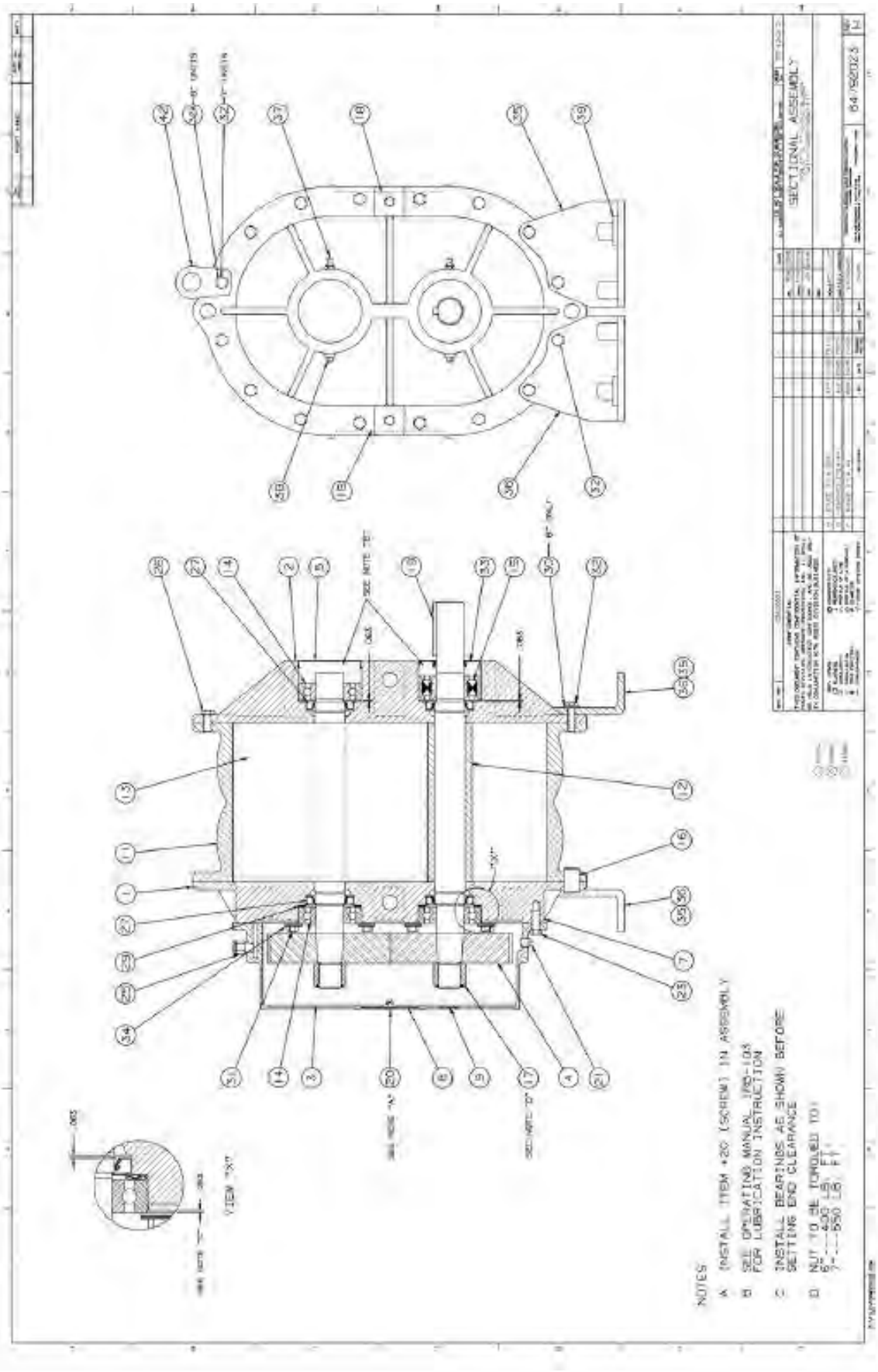
The specified grease for servicing drive end bearings of a gas blower, use a NLGI #2 premium grade aluminum complex* grease, GE P/N T20019001 with 300°F (149°C) service temperature and moisture resistance and good mechanical stability.

When servicing drive end bearings of non gas blower, use a NLGI #2 premium grade microgel grease with 250°F (121°C) service temperature and moisture resistance and good mechanical stability. GE specifies Shell Darina SD2 NLGI#2. Product Code 5067628.

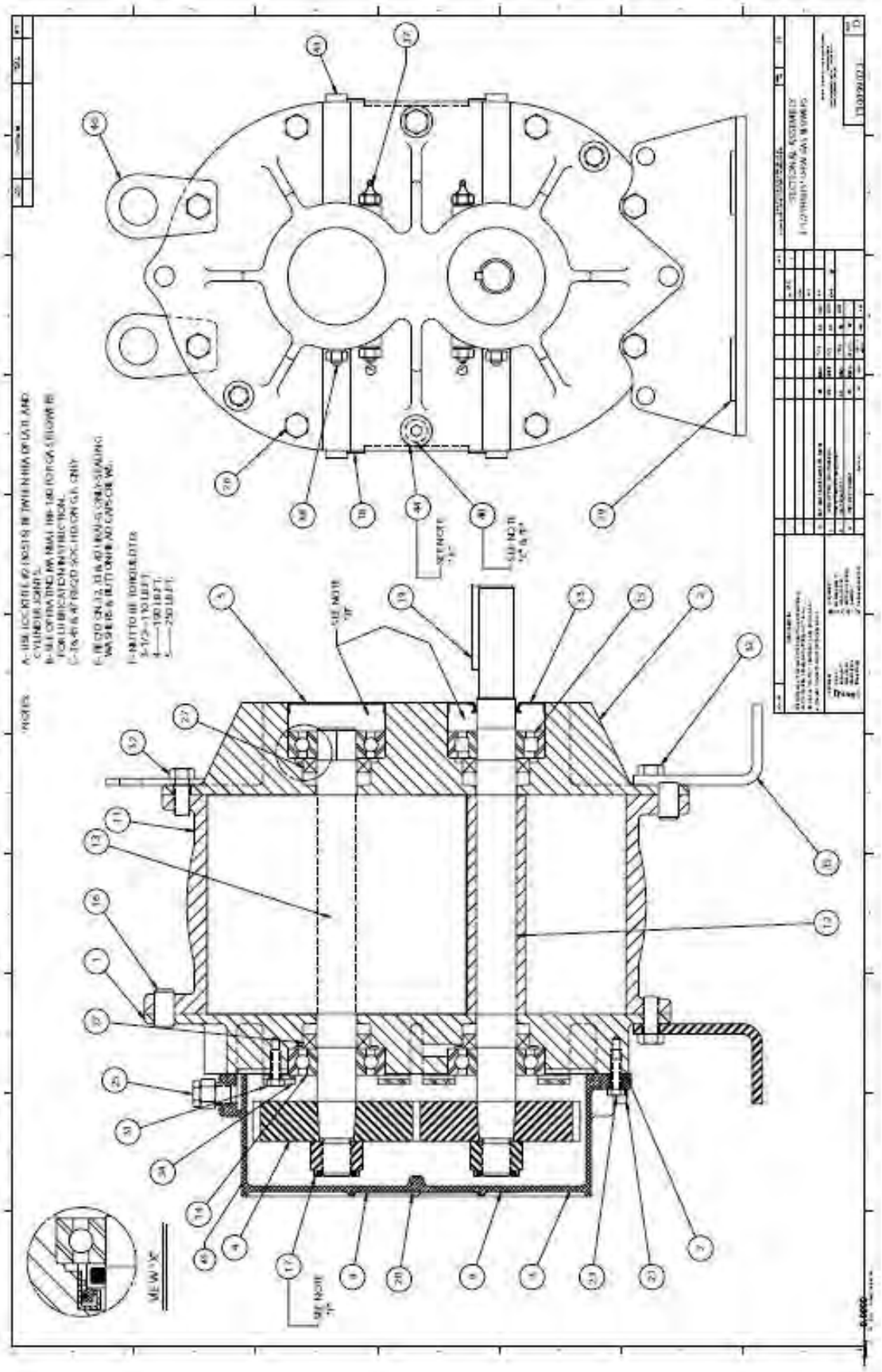
NOTE: Lithium based greases are not compatible with the Roots Synthetic Grease used when assembling a gas blower or the non-soap base grease used when assembling a standard Roots URAI blower. Lithium based grease is not approved for any Roots blowers.



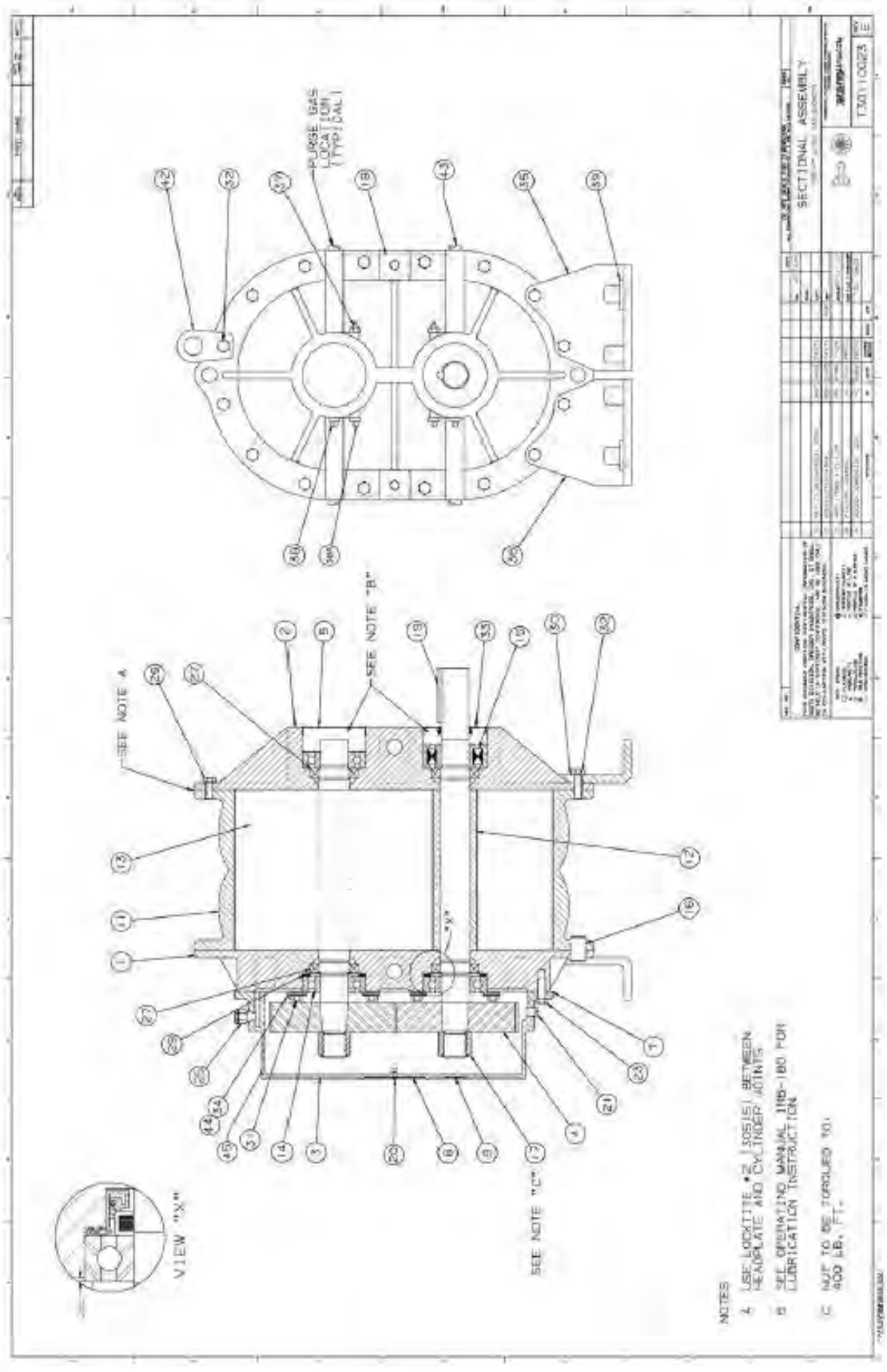
Assembly of Roots Universal RAI Series, Air Blowers, 2-1/2" Through 5" Gear Diameter



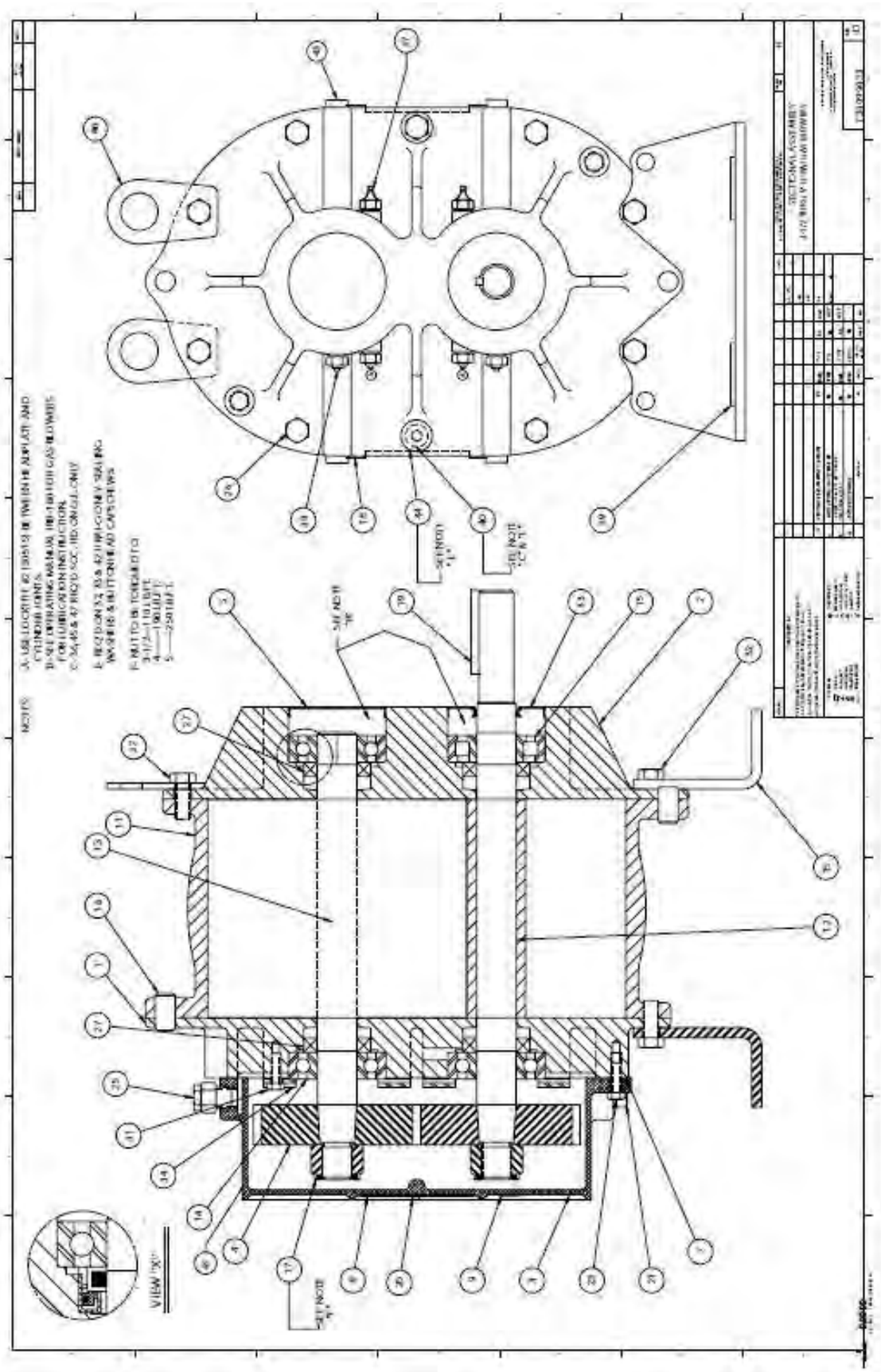
Assembly of Roots Universal RAI Blowers, 6" and 7" Diameter



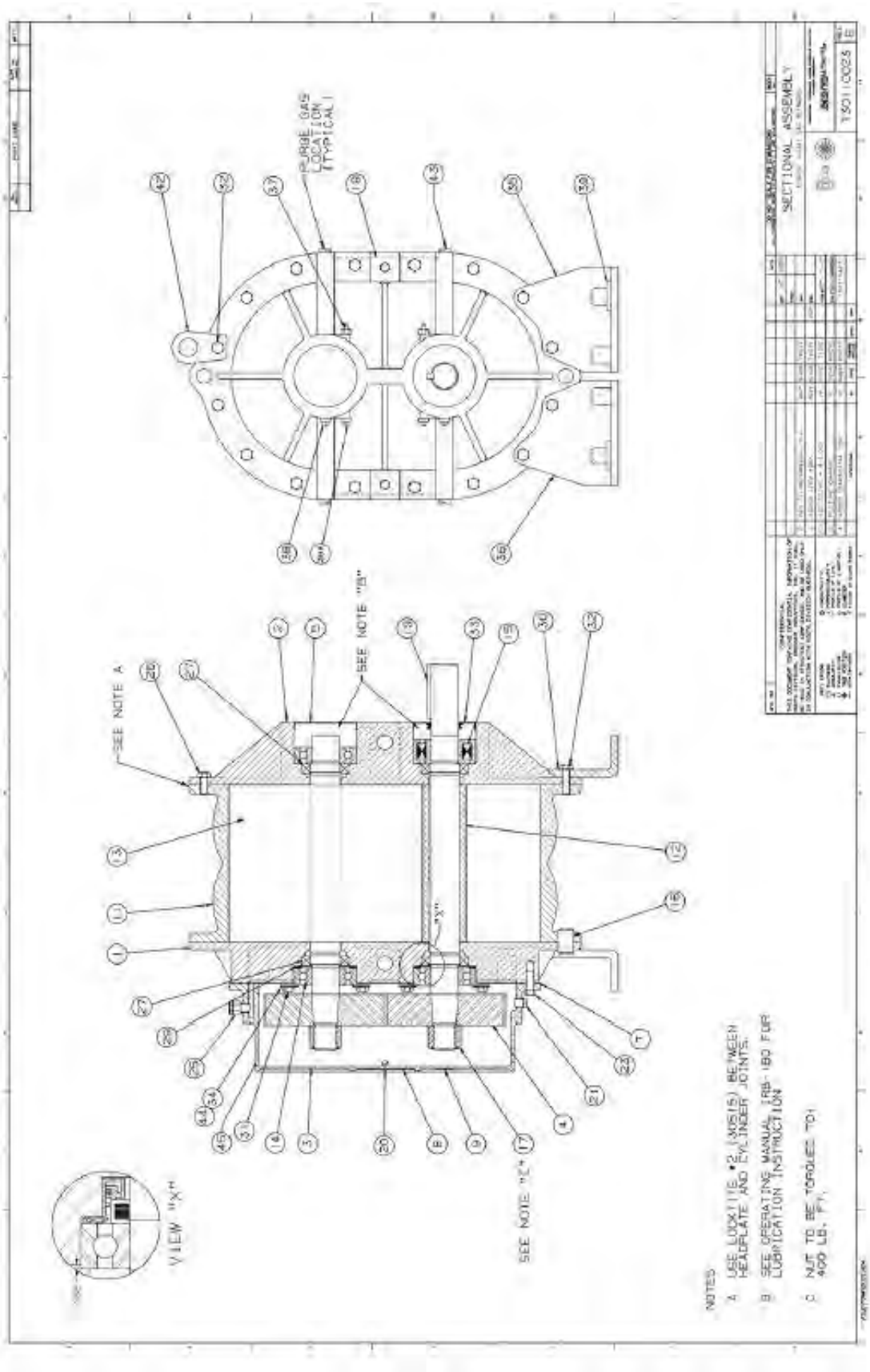
Assembly of Roots Universal RAI-G Series Gas Blowers, 3-1/2" through 5" Gear Diameter



Assembly of Roots Universal RAI Series Gas Blowers, 6" Gear Diameter



Assembly of Roots Universal RAI-G Series Gas Blowers, 3-1/2" through 5" Gear Diameter



Assembly of Roots Universal RAI Series Gas Blowers, 6" Gear Diameter

Roots Universal RAI Series Blowers Parts List 2-1/2" – 5" Gear Diameter
(Refer to drawing #64720023)

Item #	Part Name	Qty.
1	Headplate Gear End	1
2	Headplate Drive End	1
3	Gearbox	1
4	Timing Gears	2
5	Cover-Blind (Plug Opening)	1
7	Gasket, Gear Box	1
11	Cylinder	1
12	Impeller & Shaft Drive	1
13	Impeller & Shaft Driven	1
14	Bearing, Ball	3
15	Bearing, Roller	1
16	Pin, Dowel	4
17	Gear Nut	2
19	Key	1
21	Plug, Pipe	3
23	Screw Hex	6
25	Breather (Plug Vent)	1
26	Screw, Hex	†
27	Seal, Lip Bearing	4
31	Screw, Hex, Nylock	4
32	Screw, Hex	6
33	Seal Lip-Drive	1
34	Clamp Plate	2
35	Foot	2
37	Fitting, Grease	2
38	Fitting, Relief	2
39	Washer Mounting	4
40	Screw Socket	2
42	Screw Hex	2

†Quantities vary by blower.

Roots Universal RAI Series Blowers Parts List 6" & 7" Gear Diameter
(Refer to drawing #64792023)

Item #	Part Name	Qty.
1	Headplate Gear End	1
2	Headplate Drive End	1
3	Gearbox	1
4	Timing Gears	2
5	Cover-Blind (Plug Opening)	1
7	Gasket, Gear Box	1
11	Cylinder	1
12	Impeller & Shaft Drive	1
13	Impeller & Shaft Driven	1
14	Bearing, Ball	3
15	Bearing, Roller	1
16	Pin, Dowel	4
17	Gear Nut	2
19	Key	1
21	Plug, Pipe	3
23	Screw Hex Nylock	8
25	Breather (Plug Vent)	1
26	Screw, Hex	†
27	Seal, Lip Bearing	4
29	Washer, Spring Wavy	2
31	Screw, Hex, Nylock	4
32	Screw, Hex	10
33	Seal Lip-Drive	1
34	Clamp Plate	2
35	Foot	2
37	Fitting, Grease	2
38	Fitting, Relief	2
39	Washer Mounting	4

†Quantities vary by blower.

Roots Universal RAI-DSL Series Blowers Parts List 3-1/2" – 5" Gear Diameter
(Refer to drawing #T30356023)

Item #	Part Name	Qty.
1	Headplate Gear End	1
2	Headplate Drive End	1
3	Gearbox	1
4	Timing Gears	2
7	Gasket, Gear Box, DE Cover	1
11	Cylinder	1
12	Impeller & Shaft Drive	1
13	Impeller & Shaft Driven	1
14	Bearing, Ball	3
15	Bearing, Roller	1
16	Pin, Dowel	4
17	Gear Nut	2
19	Key	1
21	Plug, Pipe	3
23	Screw Hex	6
25	Breather (Plug Vent)	1
26	Screw, Hex	†
27	Seal, Lip Bearing	4
31	Screw, Hex, Nylock	4
32	Screw, Hex	6
33	Seal Lip-Drive	1
34	Clamp Plate	2
35	Foot	2
39	Washer Mounting	4
40	Screw Socket	2
42	Screw Hex	2
48	DE Oil Slinger Set Screw	4
50	Drive End Cover	1
52	Drive End Oil Slinger	2
53	Oil Sight Glass	2

†Quantities vary by blower.

Roots Universal RAI DSL Series Blowers Parts List 6" Gear Diameter
(Refer to drawing #T30382023)

Item #	Part Name	Qty.
1	Headplate Gear End	1
2	Headplate Drive End	1
3	Gearbox	1
4	Timing Gears	2
7	Gasket, Gear Box	1
11	Cylinder	1
12	Impeller & Shaft Drive	1
13	Impeller & Shaft Driven	1
14	Bearing, Ball	3
15	Bearing, Roller	1
16	Pin, Dowel	4
17	Gear Nut	2
19	Key	1
21	Plug, Pipe	3

Item #	Part Name	Qty.
23	Screw Hex Nylock	8
25	Breather (Plug Vent)	1
26	Screw, Hex	†
27	Seal, Lip Bearing	4
31	Screw, Hex, Nylock	4
32	Screw, Hex	10
33	Seal Lip-Drive	1
34	Clamp Plate	2
35	Foot	2
39	Washer Mounting	4
48	DE Oil Slinger Set Screw	4
50	Drive End Cover	1
52	Drive End Oil Slinger	2
53	Oil Sight Glass	2

†Quantities vary by blower.

Roots Universal RAI Series Gas Blowers Parts List
3-1/2" & 5" Gear Diameter
(Refer to drawing #T30099023)

Item Number	Part Name	Quantity
1	Headplate Gear End	1
2	Headplate Drive End	1
3	Gearbox	1
4	Timing Gears	2
5	Cover-Blind (Plug Opening)	1
7	Gasket, Gear Box	1
11	Cylinder	1
12	Impeller & Shaft Drive	1
13	Impeller & Shaft Driven	1
14	Bearing, Ball	3
15	Bearing, Roller	1
16	Pin, Dowel	4
17	Gear Nut	2
19	Key	1
21	Plug, Pipe	3
23	Screw Hex	8
25	Breather (Plug Vent)	1
26	Screw, Hex	14†
27	Seal, Bearing	4
31	Screw, Hex	4
32	Screw, Hex	4
33	Seal Lip-Drive	1
34	Clamp Plate	2
35	Foot	2
37	Fitting, Grease	2
38	Fitting, Relief	2
39	Washer Mounting	4
40	Screw Socket	2
42	Screw Hex	2

†Quantity varies by blower.

Roots Universal RAI Series Gas Blowers Parts List
6" Gear Diameter
(Refer to drawing #T3011023)

Item Number	Part Name	Quantity
1	Headplate Gear End	1
2	Headplate Drive End	1
3	Gearbox	1
4	Timing Gears	2
5	Cover-Blind (Plug Opening)	1
7	Gasket, Gear Box	1
7†	Gasket DE Cover	1
11	Cylinder	1
12	Impeller & Shaft Drive	1
13	Impeller & Shaft Driven	1
14	Bearing, Ball	3
15	Bearing, Roller	1
16	Pin, Dowel	4
17	Gear Nut	2
19	Key	1
21	Plug, Pipe	3
23	Screw Hex Nylock	8
25	Breather (Plug Vent)	1
26	Screw, Hex	14††
27	Seal, Bearing	4
31	Screw, Hex	4
32	Screw, Hex	10
33	Seal Lip-Drive	1
34	Clamp Plate	2
35	Foot	2
37	Fitting, Grease	2
38	Fitting, Relief	2
39	Washer Mounting	4
40	Screw Socket	2
42	Screw Hex	2
43	Plug	8
51	Shoulder Bolt	2
53	Oil Sight Glass	2

†DE cover gasket is not the same as the gasket used on the GE model. You must specify the gasket required when ordering.
††Quantities vary by blower.

Specified Lubricants

Roots Synthetic Oil: ISO-VG-220 Grade	
	Part Number
Quart	813-106-001
Gallon	813-106-002
Case (12 qts)	813-106-008

Roots Synthetic Oil: ISO-VG-320 Grade	
	Part Number
Quart	813-106-004
Gallon	813-106-005
Case (12 qts)	813-106-007

Roots Synthetic Grease: NLGI #2	
	Part Number
14.5 oz. Tube	T200019-001
5 Gallon Pail	T200019-003
Case (30 tubes)	T200019-002

Basic Connection & Drive Shaft Information

Roots Universal RAI (URAI) Air Blowers with Grease Lubricated Drive End

BOM#*	Frame Size	Inlet/Disch Connection	Shaft Diameter (in.)	Bare Weight
65102020	22	1" NPT	0.625	32
65103020	24	2" NPT	0.625	43
71048020	32	1.25" NPT	0.750	69
65105020	33	2" NPT	0.750	74
65106020	36	2.5" NPT	0.750	102
65108020	42	1.5" NPT	0.875	88
65109020	45	2.5" NPT	0.875	109
65110020	47	3" NPT	0.875	128
65112020	53	2.5" NPT	1.125	143
65113020	56	4" NPT	1.125	170
65114020	59	4" NPT	1.125	204
65116020	65	3" NPT	1.375	245
65117020	68	5" NPT	1.375	285
65118020	615	6" Flange	1.375	425
65120020	76	4" NPT	1.562	400
65121020	711	6" Flange	1.562	530
65122020	718	8" Flange	1.562	650

Refer to Specification Sheet S-12K84

Roots URAI DSL Air Blowers with Dual Splash Lubrication

BOM#*	Frame Size	Inlet/Disch Connection	Shaft Diameter (in.)	Bare Weight
T30378020	32	1.25" NPT	0.750	72
T30379020	33	2" NPT	0.750	77
T30380020	36	2.5" NPT	0.750	105
T30352020	42	1.5" NPT	0.875	92
T30353020	45	2.5" NPT	0.875	113
T30354020	47	3" NPT	0.875	132
T30359020	53	2.5" NPT	1.125	148
T30360020	56	4" NPT	1.125	175
T30361020	59	4" NPT	1.125	209
T30384020	65	3" NPT	1.375	250
T30385020	68	5" NPT	1.375	290
T30386020	615	6" Flange	1.375	430

Refer to Specification Sheet S-27S03

Roots Universal RAI air blowers include detachable mounting feet which permit vertical or horizontal installation. The units are center timed for rotation in either direction. The bearings on the URAI are grease lubricated on the drive end and splash lubricated on the gear end. The URAI-DSL is splash lubricated on BOTH ends.

Roots Universal RAI-G Gas Blowers with Grease Lubricated Drive End

BOM#*	Frame Size	Inlet/Disch Connection	Shaft Diameter (in.)	Bare Weight
710480G0	32	1.25" NPT	0.750	69
651050G0	33	2" NPT	0.750	74
651060G0	36	2.5" NPT	0.750	102
651080G0	42	1.5" NPT	0.875	88
651090G0	45	2.5" NPT	0.875	109
651100G0	47	3" NPT	0.875	128
651120G0	53	2.5" NPT	1.125	143
651130G0	56	4" NPT	1.125	170
651140G0	59	4" NPT	1.125	204
651160G0	65	3" NPT	1.375	245
651170G0	68	5" NPT	1.375	285
651180G0	615	6" NPT	1.375	425

Refer to Specification Sheet S-60A01

Roots Universal RAI-G gas blowers include detachable mounting feet which permit vertical or horizontal installation. **Feet are different for vertical and horizontal mounting.** The units are center timed for rotation in either direction. The bearings on the Universal RAI-G are grease lubricated on the drive end and splash lubricated on the gear end. Roots Synthetic Lubricant is recommended.

Basic Connections and Drive Shaft Information

Roots Universal RAI (URAI-J) WHISPAIR Air Blowers

Roots Universal RAI-J WHISPAIR Air Blowers with Grease Lubricated Drive End

BOM#*	Frame Size	Inlet/Disch Connection	Shaft Diameter (in.)	Bare Weight
74065020	33J	2" NPT	0.750	84
74086020	36J	2.5" NPT	0.750	112
74066020	45J	2.5" NPT	0.875	119
74087020	47J	3" NPT	0.875	138
74067020	56J	4" NPT	1.125	180

Refer to Specification Sheet S-33A93

Roots URAI-J-DSL WHISPAIR Air Blowers with Dual Splash Lubrication

BOM#*	Frame Size	Inlet/Disch Connection	Shaft Diameter (in.)	Bare Weight
T30417020	33J	2" NPT	0.750	87
T30418020	36J	2.5" NPT	0.750	115
T30410020	45J	2.5" NPT	0.875	122
T30412020	47J	3" NPT	0.875	141
T30415020	56J	4" NPT	1.125	185

Refer to Specification Sheet S-33A93

Roots URAI-J Metric WHISPAIR Air Blowers with Grease Lubricated Drive End

BOM#*	Frame Size	Inlet/Disch Connection	Shaft Diameter (mm)	Bare Weight
TBD	33J	2" BSP	19	84
740860M0	36J	2.5" BSP	19	112
TBD	45J	2.5" BSP	24	119
TBD	47J	3" BSP	24	138
TBD	56J	4" BSP	28	180

Roots URAI-J-DSL Metric WHISPAIR Air Blowers with Dual Splash Lubrication

BOM#*	Frame Size	Inlet/Disch Connection	Shaft Diameter (mm)	Bare Weight
TBD	33J	2" BSP	19	87
T304660M0	36J	2.5" BSP	19	115
TBD	45J	2.5" BSP	24	122
T304550M0	47J	3" BSP	24	141
TBD	56J	4" BSP	28	185

Roots Universal RAI-J air blowers incorporate the patented WHISPAIR® design in addition to the same features as the original URAI blowers. Roots URAI-J's are centered timed, however the WHISPAIR benefits can only be realized when the jet is located in the discharge position.

Basic Connections and Drive Shaft Information

Roots Universal RAI Metric (URAI-M) Air Blowers with Grease Lubricated Drive End
NOTE: Metric URAI product has metric shaft diameter and connection sizes.

BOM#*	Frame Size	Inlet/Disch Connection	Shaft Diameter (mm)	Bare Weight
651020M0	22	1" BSP	16	32
651030M0	24	2" BSP	16	43
710480M0	32	1.25" BSP	19	69
651050M0	33	2" BSP	19	74
651060M0	36	2.5" BSP	19	102
651080M0	42	1.5" BSP	24	88
651090M0	45	2.5" BSP	24	109
651100M0	47	3" BSP	24	128
651120M0	53	2.5" BSP	28	143
651130M0	56	4" BSP	28	170
651140M0	59	4" BSP	28	204
T30392060	65	3" BSP	32	245
T30394060	68	5" BSP	32	285
T30390060	615	150 NP10	32	425
T30396060	76	4" BSP	38	400
T30398060	711	150 NP10	38	530
T30340060	718	200 NP10	38	650

Roots URAI-DSL Metric Air Blowers with Dual Splash Lubrication

BOM#*	Frame Size	Inlet/Disch Connection	Shaft Diameter (mm)	Bare Weight
T30463060	32	1.25" BSP	19	72
T30464060	33	2" BSP	19	77
T30465060	36	2.5" BSP	19	105
T30451060	42	1.5" BSP	24	92
T30452060	45	2.5" BSP	24	113
T30453060	47	3" BSP	24	132
T30459060	53	2.5" BSP	28	148
T30460060	56	4" BSP	28	175
T30461060	59	4" BSP	28	209
T30467260	65	3" BSP	32	250
T30467360	68	5" BSP	32	290
T30467460	615	150 NP 10	32	430

Roots Universal RAI air blowers include detachable mounting feet which permit vertical or horizontal installation. The units are center timed for rotation in either direction. The bearings on the URAI are grease lubricated on the drive end and splash lubricated on the gear end. The Roots URAI-DSL is splash lubricated on BOTH ends.

MOYNO

Always the Right Solution™

SERVICE MANUAL

MOYNO® 500 PUMPS

300 SERIES
331, 332, 333, 344, 356 AND 367 MODELS

Mechanical Seal Models

Packing Gland Models

DESIGN FEATURES	MODELS				
	33101 34401 33201 35601 33301 36701	**33104 34404 33204 35604 33304 36704**	**33108 33308 33208 34408**	**34411 35611**	**35613**
Housing:	Cast Iron	AISI 316 SS	Nylon	Cast Iron	AISI 316 SS
Pump Rotor:	Chrome plated 416 SS	Chrome plated 316 SS	Chrome plated 416 SS	Chrome plated 416 SS	Chrome plated 316 SS
Pump Stator:	NBR (Nitrile)	NBR (Nitrile)	NBR (Nitrile)	NBR (Nitrile)	NBR (Nitrile)
Shaft:	416 SS	316 SS	416 SS	416 SS	316 SS
Flexible Joint:	Carbon steel/ NBR	316 SS/ NBR	Carbon steel/ NBR	Carbon steel/ NBR	316 SS/ NBR
Bearings:	Ball (sealed)	Ball (sealed)	Ball (sealed)	Ball (sealed)	Ball (sealed)
Mechanical Seal:	Carbon-ceramic	Carbon-ceramic	Carbon-ceramic	---	---
Packing:	---	---	---	Braided PTFE	Braided PTFE

Note: Alternate elastomers available. Refer to Repair/Conversion kit numbers, page 8.

INSTALLATION

Mounting Position. Pump may be mounted in any position. When mounting vertically, it is necessary to keep bearings above seals to prevent possible seal leakage into bearings.

Pre-Wetting. Prior to connecting pump, wet pump elements and mechanical seal or packing by adding fluid to be pumped into suction and discharge ports. Turn shaft over several times in a clockwise direction to work fluid into elements.

Piping. Piping to pump should be self-supporting to avoid excessive strain on pump housings. See Table 1 for suction and discharge port sizes of each pump model. Use pipe "dope" or tape to facilitate disassembly and to provide seal.

Drive. On belt driven units, adjust belt tension to point of non-slip. Do not overtighten.

On direct drive units, coupling components should be aligned and spaced at least 1/16" apart.

Pump rotation must be clockwise when facing shaft to prevent damage to pump. Check direction of rotation before startup.

Water Flush of Packing (356 Models Only). The packing may be either grease lubricated through a grease fitting in the stuffing box or have plumbing connected to the housing to allow a water flush.

Maximum speed is 1750 rpm.

When the material being pumped is abrasive in nature, it may be advantageous to flush the packing to prevent leakage under packing and excessive shaft wear.

Clean water can be injected through a 1/8" NPT tapped hole that normally houses the grease fitting for lubricating the packing. The water can be permitted to leak axially along the shaft in either direction or can be removed from the second tapped hole in the stuffing box. In both cases, the discharge from the stuffing box should be throttled slightly to maintain 10-15 PSI higher pressure in the stuffing box than is present in the discharge housing.

Table 1. Pump Data

Pump Models	331	332	333	344	356	367
Suction Port (NPT)	3/4*	*3/4**	*3/4**	3/4*	1-1/2	2
Discharge Port (NPT)	3/4	3/4	3/4	3/4	1-1/4	2
Discharge Pressure (psig)	150	100	50	40	50	50

*08 versions = 1" NPT

Table 2. Temperature Limits

Elastomer	Temperature Limits
*NBR	10°-160°F
*EPDM	10°-210°F
*FPM	10°-240°F

*NBR = Nitrile
*EPDM = Ethylene-Propylene-Diene Terpolymer
*FPM = Fluoroelastomer

OPERATION

Self-Priming. With wetted pumping elements, the pump is capable of 25 feet of suction lift when operating at 1750 rpm with pipe size equal to port size.

DO NOT RUN DRY. Unit depends on liquid pumped for lubrication. For proper lubrication, flow rate should be at least 10% of rated capacity.

Pressure and Temperature Limits. See Table 1 for maximum discharge pressure of each model. Unit is suitable for service at temperatures shown in Table 2.

Storage. Always drain pump for extended storage periods by removing suction housing bolts and loosening suction housing.

TROUBLE SHOOTING

WARNING: Before making adjustments, disconnect power source and thoroughly bleed pressure from system. Failure to do so could result in electric shock or serious bodily harm.

Failure To Pump.

1. Belt or coupling slip: Adjust belt tension or tighten set screw on coupling.
2. Stator torn; possibly excessive pressure: Replace stator, check pressure at discharge port.
3. Wrong rotation: Rotation must be clockwise when facing shaft.
4. Threads in rotor or on shaft stripped: Replace part. Check for proper rotation.
5. Excessive suction lift or vacuum.

Pump Overloads.

1. Excessive discharge pressure: Check discharge pressure for maximum rating given in Table 1. Check for obstruction in discharge pipe.
2. Fluid viscosity too high: Limit fluid viscosity to 20,000 CP or 100,000 SSU.

Viscosity CP	Limit RPM
1-300	1750
300-1,000	1200
1,000-2,000	700
2,000-5,000	350
5,000-10,000	180
10,000-20,000	100

3. Insufficient motor HP: Check HP requirement.

Noisy Operation.

1. Starved suction: Check fluid supply, length of suction line, and obstructions in pipe.
2. Bearings worn: Replace parts; check alignment, belt tension, pressure at discharge port.
3. Broken flexible joint: Replace part, check pressure at discharge port.
4. Insufficient mounting: Mount to be secure to firm base. Vibration induced noise can be reduced by using mount pads and short sections of hose on suction and discharge ports.

Mechanical Seal Leakage (Mechanical Seal Models Only).

1. Leakage at startup: If leakage is slight, allow pump to run several hours to let faces run in.
2. Persistent seal leakage: Faces may be cracked from freezing or thermal shock. Replace seal.

Packing Leakage (Packing Models Only).

1. Leakage at startup: Adjust packing as outlined in maintenance instructions.

Note: Slight leakage is necessary for lubrication of packing.

2. Persistent leakage: Packing rings and/or shaft may be worn. Replace parts as required.

Pump Will Not Prime.

1. Air leak on suction side: Check pipe connections.

MAINTENANCE

General. These pumps have been designed for a minimum of maintenance, the extent of which is routine lubrication and adjustment of packing. The pump is one of the easiest to work on in that the main elements are very accessible and require few tools to disassemble.

Packing Lubrication (356 Models Only). The zerk fitting on the side of the suction housing leads to the lantern ring halves in the mid-section of the packings. At least once a week, inject a small quantity of good quality grease, such as MPG-2 Multi Purpose Grease (Du Bois Chemical), or equivalent, into the zerk fitting to lubricate the packings.

Note: For Model 34411, lubricate packing by applying a liberal amount of grease during assembly.

Packing Adjustment (Packing Models Only). Packing gland attaching nuts should be evenly adjusted so they are little more than finger tight. Over-tightening of the packing gland may result in premature packing failure and possible damage to the shaft and gland.

When the packing is new, frequent minor adjustments are recommended for the first few hours of operation in order to compress and seat the packing. Be sure to allow slight leakage for lubrication of packing.

When excessive leakage can no longer be regulated by tightening the gland nuts, remove and replace the packings in accordance with the DISASSEMBLY and REASSEMBLY instructions. The entire pump need not be disassembled to replace the packings.

Bearing Lubrication. The prelubricated, fully sealed bearings do not require additional lubrication.

PUMP DISASSEMBLY

WARNING: Before disassembling pump, disconnect power source and thoroughly bleed pressure from system. Failure to do so could result in electric shock or serious bodily harm.

To Disassemble Mechanical Seal Models:

1. Disconnect suction and discharge piping.
2. Remove screws (112) holding suction housing (2) to pump body (1). Remove suction housing and stator (21).
3. Remove rotor (22) from flexible joint (24) by turning counter-clockwise (RH thread). Use 3/16 inch diameter punch to remove rotor pin (45) on Model 36701.
4. Flexible joint (24) can be removed from shaft (26) by using a 3/16 inch allen wrench in end of joint (1/4 inch wrench on 356 Models) and turn counter-clockwise. Use 3/16 inch diameter punch to remove shaft pin (46) on Model 36701.
5. Carefully slide mechanical seal (69) off shaft (26). Carefully pry seal seat out of pump body (1). If any parts of mechanical seal are worn or broken, the complete seal assembly should be replaced. Seal components are matched parts and are not interchangeable.
6. The bearings (29) and shaft (26) assembly can be removed from pump body (1) after snap ring (66) has been removed. To remove the assembly, lightly tap the shaft at threaded end using a block of wood to protect the threads. The bearings may be pressed off the shaft.

To Disassemble Packing Models:

1. Disconnect suction and discharge piping.
2. Remove screws (112) which hold suction housing (2) to pump body (1). Remove suction housing and stator (21).
3. Remove rotor (22) from flexible joint (24) by turning in a counter-clockwise direction (RH thread).
4. Flexible joint (24) can be removed by using a 3/16 inch allen wrench in end of joint (1/4 inch wrench on 356 Models) and turn in a counter-clockwise direction.
5. The packing (42) can be removed without removing the shaft (26) using the following procedure:
   a. Remove gland bolts (47).
   b. Slide gland (41) away from packing (42).
   c. Pull out packing (42) (and lantern ring halves (57) on 356 Models) using a packing removing tool.

   Note: Packing can be removed after shaft has been removed by pushing out from pump side of pump body after gland (41) has been detached.
6. The bearings (29) and shaft (26) assembly can be removed from pump body (1) after snap ring (66) has been removed. To remove the assembly, lightly tap the shaft at threaded end using a block of wood to protect the threads.
7. To disassemble shaft assembly, remove snap ring (66A) from shaft (26) and press bearings (29) and bearing spacer (33) off the shaft.

PUMP ASSEMBLY

To Assemble Mechanical Seal Models:

1. Press bearings (29) on shaft (26), and locate slinger ring (77) near bearing on threaded end of shaft.

Note: When replacing bearings, always press on the inner race when assembling to shaft, and on the outer race when pressing bearings into the housings.

2. Press shaft assembly into pump body (1) securing with snap ring (66).
3. Install mechanical seal (69) using the following procedure:
   a. Clean and oil sealing faces using a clean light oil (not grease).

Caution: Do not use oil on EPDM parts. Substitute glycerin or soap and water.

   b. Oil the outer surface of the seal seat, and push the assembly into the bore in the pump body (1), seating it firmly and squarely.
   c. After cleaning and oiling the shaft, slide the seal body along the shaft until it meets the seal seat.
   d. Install seal spring and spring retainer on shaft.
4. Thread flexible joint (24) into shaft (26) in a clockwise direction (RH thread). On 356 Models, install seal spacer (69A) and washer (116) before threading flexible joint onto shaft in a clockwise direction. On Model 36701, use shaft pin (46) to pin flexible joint (24) to shaft.
5. Thread rotor (22) onto flexible joint (24) in a clockwise direction (RH thread). On Model 36701, pin rotor (22) to joint using rotor pin (45).
6. Slide stator (21) on rotor (22). On 331 and 332 Models, insert rounded end of stator ring (135) into end of stator prior to installing stator on rotor.
7. Secure stator (21) and suction housing (2), with suction port vertically up, to pump body (1) using screws (112).
8. Proceed as in installation instructions.

To Assemble Packing Models:

1. Press bearings (29), with bearing spacer (33) in between, on shaft (26) and secure in place using snap ring (66A).

Note: When replacing bearings, always press on the inner race when assembling to shaft, and on the outer race when pressing bearings into the housings.

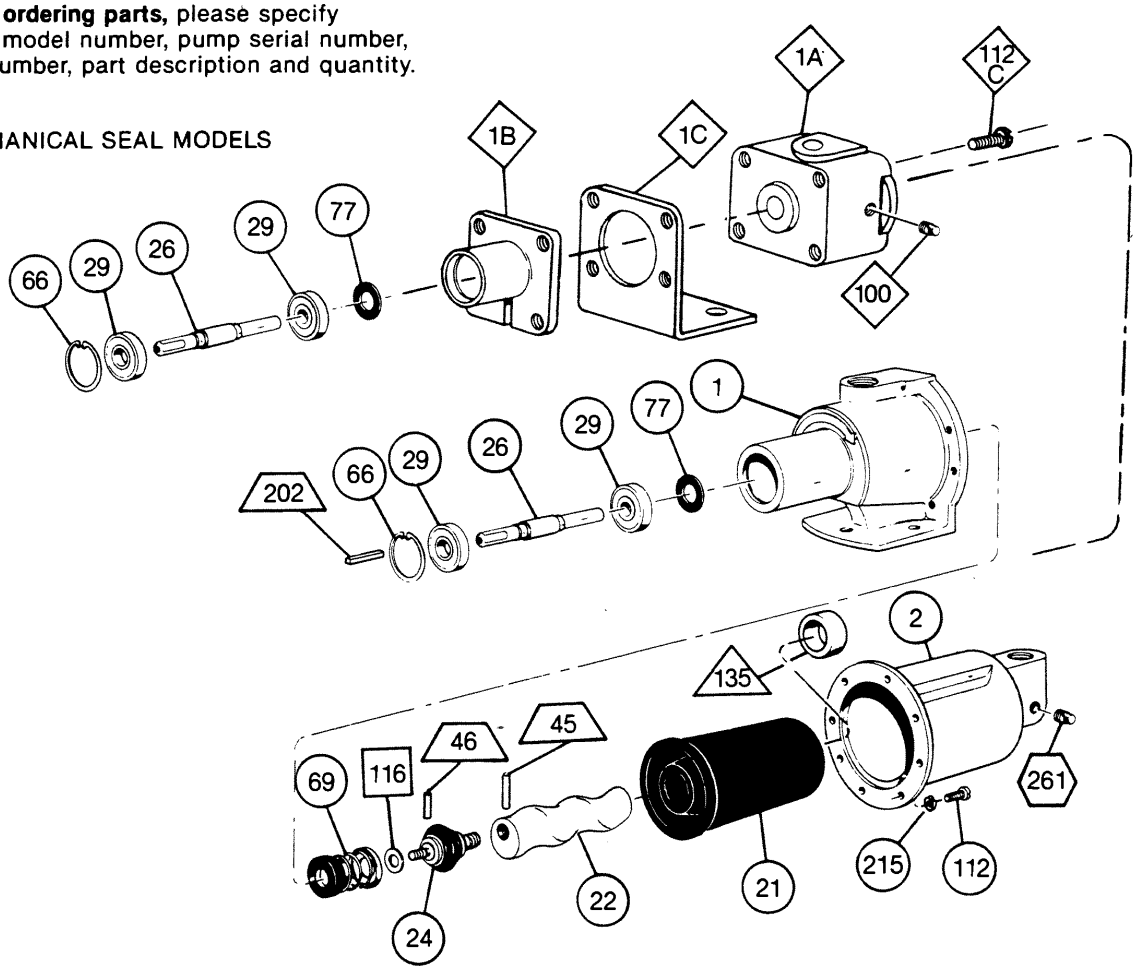
2. Install packing (42) before installing shaft assembly using the following procedure:
   a. Lubricate each individual ring of packing with a grease that is insoluble in the fluid being pumped.
   b. Individually assemble each ring of packing loosely in the packing chamber of the pump body (1). Stagger splits on rings. (Four rings, 3/16 inch square required on Model 34411; four rings, 1/4 inch square and two lantern ring halves (57) assembled between two rings on 356 Models).
   c. Loosely install packing gland (41) on pump body (1) using gland bolts (47).
3. Press shaft assembly into pump body (1) positioning slinger ring (77) between packing gland (41) and bearing end of pump body. Secure the shaft assembly with snap ring (66).
4. Thread flexible joint (24) into shaft (26) in a clockwise direction (RH thread).
5. Thread rotor (22) onto flexible joint (24) in a clockwise direction (RH thread).
6. Slide stator (21) on rotor (22). On 331 and 332 Models, insert rounded end of stator ring (135) into end of stator prior to installing stator on rotor.
7. Secure stator (21) and suction housing (2), with suction port vertically up, to pump body (1) using screws (112).
8. Proceed as in installation instructions.

Note: Adjust newly installed packing as described in maintenance procedure.

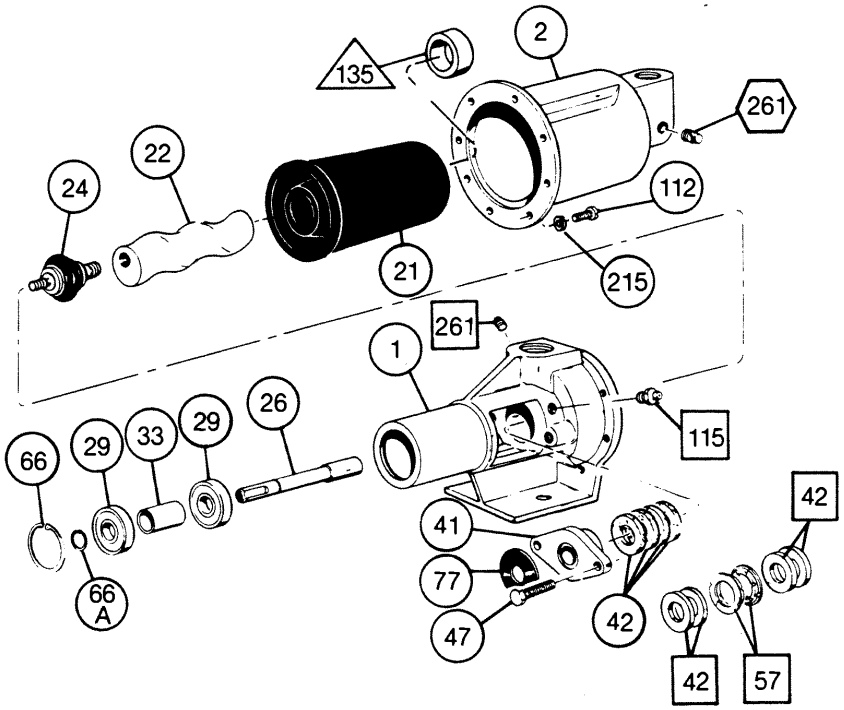
WARNING: Replace belt or coupling guards before reconnecting power.

When ordering parts, please specify pump model number, pump serial number, part number, part description and quantity.

MECHANICAL SEAL MODELS



PACKING MODELS



Used on 332 and 367 only.

Used on 356 only.

Used on 356 and 367 only.

Used on -08 only.

Used on 367 only.

PARTS LIST — 331, 332, 333, AND 344 MODELS

Item No.	Description	Mechanical Seal Models			Packing Gland Models
		33101 33201 33301 34401	**33104 33204 33304 34404**	**33108 33208 33308 34408**	**34411**
1	Pump Body	330-1065-002	330-1910-002		340-1000-001
1A	Discharge Housing			340-2362-000	
1B	Bearing Housing			330-4587-000	
1C	Pump Base			340-2369-000	
2	Suction Housing	330-1064-002	330-1911-002	330-4536-000	330-1064-002
*21	Stator	See Stator section below.			
*22	Rotor	See Rotor section below with circled numbers for each series.			
		①	②	①	①
24	Joint	Carbon Steel/NBR 320-1511-000	316 SS/NBR 320-3759-000	Carbon Steel/NBR 320-1511-000	
26	Drive Shaft	320-1499-000	320-2938-000	320-1499-000	320-2448-000
29	Bearing (2 req.)	630-0502-031			
33	Bearing Spacer				320-1900-000
41	Packing Gland				320-0101-004
42	Packing				340-3396-005
47	Gland Bolt				619-1520-161
66	Snap Ring	320-1506-000			
66A	Snap Ring				320-4182000
69	Mechanical Seal	320-2424-000			
77	Slinger Ring	320-6382-000			320-6384-000
100	Pipe Plug (3 req.)			610-0120-021	
112	Screws (8 req.)	619-1430-103	320-5968-000	619-0860-081	619-1430-103
112C	Screws (4 req.)			61 9-0890-281	
135	Stator Ring (331 -332 only)	320-7812-000			
215	Lock Washer (8 req.)	320-6464-000			

*Recommended spare parts.

STATORS		**Models**			
		331	**332**	**333**	**344**
21	Standard Stator, NBR All Models	340-3501-120	340-3502-120	340-3503-120	340-3504-120
21	EPDM Stator	340-3501-320	340-3502-320	340-3503-320	340-3504-320
21	FPM Stator	340-3501-520	340-3502-520	340-3503-520	340-3504-520
ROTORS					
22	① 416SS - All Models	320-2729-000	330-0906-000	320-1394-000	320-1841-000
22	② 316SS – All Models	320-2933-000	320-2942-000	320-2936-000	320-2934-000

See page 8 for Repair/Conversion Kits

PARTS LIST — 356 AND 367 MODELS

Item No.	Description	Mechanical Seal Models		Packing Gland Models		Mechanical Seal Model	
		35601	35604	35611	35613	36701	36704
1	Pump Body	Cast Iron 340-0636-000	316SS 340-1550-000	Cast Iron 350-0420-000	316SS 350-0491-000	Cast Iron 350-0423-000	316SS 350-0423-007
2	Suction Housing	350-0280-000	350-0489-000	350-0280-000	350-0489-000	350-0302-000	350-0302-007
*21	Stator	NBR 340-3505-120		NBR 340-3505-120		NBR 340-3506-120	
22	Rotor	416SS 320-2304-000	316SS 320-4431-000	416SS 320-2304-000	316SS 320-4431-000	416SS 330-2042-000	316SS 330-3077-000
24	Flex Joint	Carbon Steel 320-1583-000	316SS 320-4427-000	Carbon Steel 320-1583-000	316SS 320-4427-000	Carbon Steel 320-1749-000	316SS 320-4436-000
26	Drive Shaft	320-1759-000	320-4430-000	320-2765-000	320-4435-000	330-1805-000	330-1805-015
29	Bearing (2 req.)	630-0552-051				630-0552-061	
33	Bearing Spacer			320-2764-000			
41	Packing Gland			320-0003-004	320-0003-007		
*42	Packing			340-3396-008			
45	Rotor Pin					320-4439-002	
46	Shaft Pin					320-4439-001	
47	Gland Bolt			619-1530-241			
57	Lantern Ring Half**			320-6585-000			
66	Snap Ring	320-1758-000				320-2794-000	
66A	Snap Ring			320-3533-000			
*69	Mechanical Seal	320-3945-000				320-1750-000	
69A	Seal Spacer	320-4434-000					
77	Slinger Ring	320-6383-000		320-6385-000		320-6385-000	
112	Screws (6 req.)	619-1530-161				619-1530-161	
115	Zerk Fitting			320-2503-001			
135	Stator Spacer	330-7594-000					
202	Shaft Key					611-0040-240	
215	Lock Washer (6 req.)	623-0010-411					
261	Pipe Plug	610-0120-011	610-0420-010	610-0120-011	610-0420-010	610-0120-011	610-0420-010

*Recommended spare parts.
**2 Required

See page 8 for Repair/Conversion Kits

REPAIR/CONVERSION KIT NUMBERS

ELASTOMER REPAIR/CONVERSION KITS

Item No.	Description	331 Models			332 Models		
		NBR	EPDM	FPM	NBR	EPDM	FPM
—	Kit No.	311-9026-000	311-9025-000	311-9054-000	311-9027-000	311-9038-000	311-9055-000
21	• Stator	340-3501-120	340-3501-320	340-3501-520	340-3502-120	340-3502-320	340-3502-520
24	• Joint	320-1511-000‡	320-6367-000†	320-4670-000†	320-1511-000‡	320-6367-000†	320-4670-000†
69	• Seal	320-2424-000	320-6379-000	320-6501-000	320-2424-000	320-6379-000	320-6501-000
Item No.	**Description**	**333 Models**			**344 Models**		
		NBR	EPDM	FPM	NBR	EPDM	FPM
—	Kit No.	311-9029-000	311-9028-000	311-9056-000	311-9031-000	311-9030-000	311-9057-000
21	• Stator	340-3503-120	340-3503-320	340-3503-520	340-3504-120	340-3504320	340-3504520
24	• Joint	320-1511-000‡	320-6367-000†	320-4670-000†	320-1511-000‡	320-6367-000†	320-4670-000†
69	• Seal	320-2424-000	320-6379-000	320-6501-000	320-2424-000	320-6379-000	320-6501-000

t316SS/with appropriate elastomer.
‡Carbon steel. NBR kits are available only with carbon steel joints; a 316SS/NBR joint for 331-344 Models is available as 320-3759-000.

Item No.	Description	356 Models			367 Models		
		NBR	EPDM	FPM	NBR	EPDM	FPM
—	Kit No. (Mech. Seal Models)	311-9033-000	311-9032-000	311-9058-000	311-9060-000	311-9036-000	311-9124-000
21	• Stator	340-3505-120	340-3505-320	340-3505-520	340-3506-120	340-3506-320	340-3506-520
24	• Flex Joint	320-1583-000‡	320-6369-000†	320-4671-000†	320-1749-000‡	320-6378-000‡	3206515-000‡
69	• Seal	320-3945-000	320-6380-000	320-6510-000	320-1750-000	320-6390-000	320-6517-000
45	• Rotor Pins				320-4439-002	320-4439-002	320-4439-002
46	• Shaft Pin				320-4439-001	320-4439-001	320-4439-001
—	Kit No (Packing Gland Models)	311-9035-000	311-9034-000	311-9059-000			
21	• Stator	340-3505-120	340-3505-320	340-3505-520			
24	• Joint	320-1583-000‡	320-6369-000†	320-4671-000†			

†316SS/with appropriate elastomer.
‡Carbon steel. NBR kits are available only with carbon steel joints; a 316SS/NBR joint for Model 35604 and 35613 pumps is available as 320-4427-000; a 316SS/NBR joint for model 36704 is available as 320-4436-000.

ABRASION RESISTANT SEALS

Elastomer	Models		
	331-344	356	36701
NBR	3206460000	3206505000	3206511000
EPDM	3206502000	3206506000	3206512000
FPM	3206503000	3206507000	3206513000

NBR = Nitrile
EPDM = Ethylene-Propylene-Diene Terpolymer
FPM = Fluoroelastomer

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Double The Length Of Your Moyno Pump Warranty For FREE!

For your *free* pump warranty extension, choose from one of the three options below:

1. Go to www.moyno.com and fill out the registration form online

2. Mail this form by placing it in an envelope and sending it to: **Moyno, Inc.**
Attn: Tish Wilson
P. O. Box 960
Springfield, OH 45501-0960
U.S.A.

3. Fax this form to 937-327-3177

Thank you for choosing a Moyno Pump. Please take the time to complete this warranty registration form. Upon receipt of your form, your standard limited warranty on defective material and workmanship will be extended to twice the standard period of time at no additional cost to you. We appreciate your business and look forward to serving you in the future.

LLOYD'S REGISTER QUALITY COMPANY ISO9001 NATIONAL ACCREDITATION OF CERTIFICATION BODIES
CERTIFICATE No. 101442

MOYNO
Always the Right Solution™

Always Insist on Genuine Moyno Replacement Parts!

Moyno® Pump Warranty Registration

Pump Model # _____ Pump Serial # _____
Purchased From _____ Date Purchased _____
Your Name _____ Your Title _____
Your Company Name _____
Address _____
City/State (Province)/Zip Code _____
Phone Number _____ Fax Number _____
E-mail _____

Application for Which This Pump Was Purchased

Material _____ Flow Rate _____ Process Temperature _____
Operating Speed _____ Viscosity _____ pH Value _____
Hours Operated per Day _____ Continuous _____ Intermittent _____
Discharge Pressure _____ Suction Pressure _____ NPSH Available _____
Percent of Solids _____ Particle Size _____ Abrasion Rating _____

How Did You First Hear of Moyno Pumps?

❑ Advertisement ❑ Postcard ❑ Trade Show ❑ Referral
❑ Distributor Salesperson ❑ Previous Experience With Moyno Pumps ❑ Other – Explain Below

Thank You!

APPENDIX B

FIELD MONITORING FORMS

Perma-Fix of South Georgia
1612 James P. Rodgers Circle
Valdosta, GA
EPA ID: GAD093380814

OPERATION AND MAINTENANCE FIELD READINGS

Date: _____ **Techician:** _____

Event: _____ **Time:** _____

_____ _____

AIR SPARGE SYSTEM READINGS

System Operational: **Arrive:** Yes / No **Depart:** Yes / No **AS System Hour Meter (Hrs):** _____

Comp Oil CK: _____ **Comp Lube CK:** _____ **Total System Pressure (psi):** _____ **Heat Exchanger Filter CK:** _____

Compressor Amps: _____ **AS Temp (°F):** _____ **AS Flow (SCFM):** _____

AS MANIFOLD READINGS

	Press (psi) / Flow (cfm)		Press (psi) / Flow (cfm)		Press (psi) / Flow (cfm)
AS-1	/	AS-8	/	AS-14	/
ASI-2	/	AS-9	/	AS-15	/
AS-3	/	AS-10	/	AS-16	/
AS-4	/	AS-11	/	AS-17	/
AS-5	/	AS-12	/	AS-18	/
AS-6	/	AS-13	/	AS-19	/
AS-7	/				

AS WELLHEAD READINGS

	Press (psi)		Press (psi)		Press (psi)
AS-1		AS-8		AS-14	
ASI-2		AS-9		AS-15	
AS-3		AS-10		AS-16	
AS-4		AS-11		AS-17	
AS-5		AS-12		AS-18	
AS-6		AS-13		AS-19	
AS-7					

Perma-Fix of South Georgia
1612 James P. Rodgers Circle
Valdosta, GA
EPA ID: GAD093380814

SVE SYSTEM READINGS

System Operational: **Arrive:** **Yes / No** **Depart:** **Yes / No** **SVE System Hour Meter (Hrs):** _____

PreGAC (ppm):		**MidGAC (ppm):**		**Final Effluent (ppm):**		**Blower Filter CK:**	
SVE Effluent Temp (°C):		**Blower Vac (inWC):**		**ΔP (inWC):**		**Velocity(ft/min):**	
Condensate (gal):		**Blower Amps:**		**Vac (inWC):**		**Flow (SCFM):**	
Air Dilution (%):							

SVE MANIFOLD READINGS

	Vac (inWC) / OVA (ppm)		Vac (inWC) / OVA (ppm)		Vac (inWC) / OVA (ppm)
SVE-1	/	**SVE-5**	/	**SVE-9**	/
SVE-2	/	**SVE-6**	/	**SVE-10**	/
SVE-3	/	**SVE-7**	/	**SVE-11**	/
SVE-4	/	**SVE-8**	/	**SVE-12**	/

SVE WELLHEAD READINGS

	Vac (inWC)		Vac (inWC)		Vac (inWC)
SVE-1		**SVE-5**		**SVE-9**	
SVE-2		**SVE-6**		**SVE-10**	
SVE-3		**SVE-7**		**SVE-11**	
SVE-4		**SVE-8**		**SVE-12**	

MONITORING WELL READINGS

	DTW (ft)	OVA	DO (mg/L)	VAC (inWC)	Bubbles (y/n)	T (°C)
MW-7S						
MW-8S						
MW-9S						
MW-10S						
MW-13S						
MW-24S						
B106						
B108						
B113						
B114						
MP-8						

Notes:
inWC = Inches water column vacuum
ppm= parts per million
SCFM = standard cubic feet per minute
ΔP - differential pressure
cfm = cubic feet per minute
mg/L = milligrams per liter
ft/min = feet per minute
psi = pounds per square inch

APPENDIX C

AS-BUILT DRAWINGS

EXHIBIT I-3

POST-CLOSURE CARE COST ESTIMATE

Attachment I-5a - Post-Closure Cost Estimate
Perma-Fix Environmental Services
Perma-Fix of South Georgia
Financial Assurance - Total Cost Calculation
Permit Renewal
Revised April 2026

	One-Time Cost			Annual Cost	Years	Total Cost
Total Costs - Permit Issuance through Post Remediation Verification				$84,266	10	$ 842,661
Total Costs - Post Verification				$12,937	20	$ 258,736
Total Permit Financial Assurance						**$ 1,101,397**

Financial Assurance - Total Cost Calculation
Permit Renewal
From Permit Issue Through Post-Remediation Verification
Revised April 2026
All costs based on third party performance

				Estimated Quantity	Unit	Unit Rate	Annual Total
A	**Remediation and Verification (Ten Years, Semi-Annual)**						
	1. Monitoring and Reporting						
	a.	Groundwater Sampling					
		i.	Labor (annual - 2 field staff)	196	Hours	$101.93	$19,978
			Labor (semi annual - 2 field staff)	88	Hours	$107.38	$9,449
		ii.	Sampling Equipment				
			2 Submersible Pumps (3 week rental total)	3	Week	$620.00	$1,860
			Sampling Equipment (14 days total)	14	Days	$300.00	$4,200
			Distilled Water (4 gal/well, 65 wells total)	260	Gallons	$2.22	$577
			Teflon Tubing (total feet)	2344	Feet	$2.71	$6,352
		iii.	Annual Purge Water Disposal (per event)	300	Gallons	$2.45	$735
			Semi-Annual Purge Water Disposal (per event)	125	Gallons	$2.45	$306
	b.	Groundwater Analyisis					
		i.	Annual 47 samples VOC 8260B, 7 QA Samples	54	Each	$66.00	$3,564
			Annual 1 Appendix IX sample, 1 QA Sample	2	Each	$1,256.00	$2,512
		ii.	Semi Annual 18 samples VOC 8260B, 3 QA Samples	21	Each	$66.00	$1,386
	c.	Reporting					
			Principal Professional Labor (60 hours per report)	120	Hours	$160.00	$19,200
			Project Professional Labor (10 hours per report)	20	Hours	$100.00	$2,000

1. Maintenance					
a.	Routine and Post-Storm Inspection Labor (semi annual)	8	Hours	$104.66	$837.24
Annual Cost - Remediation and Verification					**$72,958**
	Administration (10%)				$7,295.77
	Contingency (5%)				$4,012.67
Total Annual Cost, 10-Year Rolling					**$84,266**

Financial Assurance - Total Cost Calculation
Permit Renewal
Post-Verification
Revised April 2026
All costs based on third party performance

			Estimated Quantity	Unit	Unit Rate	Annual Total
A	**Post Verification (20 years)**					
	1. Monitoring and Reporting					
	a.	Groundwater Sampling				
		i. Labor (annual - 2 field staff)	20	Hours	$101.93	$2,039
		ii. Sampling Equipment				
		2 Submersible Pump s(1/2 week rental total)	0.5	Week	$620.00	$310
		Sampling Equipment (1 day total)	1	Day	$300.00	$300
		Distilled Water (4 gal/well, 5 wells total)	20	Gallons	$2.22	$44
		Teflon Tubing (total feet)	200	Feet	$2.71	$542
		iii. Annual Purge Water Disposal (per event)	45	Gallons	$2.45	$110
	b.	Groundwater Analyisis				
		i. Annual 5 samples VOC 8260B, 3 QA Samples	8	Each	$66.00	$528
		iii. Annual 1 Appendix IX sample, 1 QA Sample	2	Each	$1,256.00	$2,512
	c.	Reporting				
		i. Principal Hydrogeologist (20 hours per report)	20	Hours	$160.00	$3,200
		Project Professional Labor (8 hours per report)	8	Hours	$100.00	$800
	2. Maintenance					
	a.	Routine and Post-Storm Inspection Labor (semi annual)	8	Hours	$101.93	$815.44
	Annual Cost - Remediation and Verification					**$11,201**
		Administration (10%)				$1,120.07
		Contingency (5%)				$616.04
	Total Annual Cost, 10-Year Rolling					**$12,937**

Attachment I-5b - Post-Closure Care Plan
Perma-Fix Environmental Services
Perma-Fix of South Georgia
Financial Assurance - Total Cost Calculation
Revised April 2026

						Total Cost
Total Costs - Design, Procurement, Installation and Startup						$1,011,184

Total Costs - Two-Year Post-Startup Not Covered in Ongoing Operation Costs						$179,746

				Annual Cost	Years	Total Cost
Total Costs - Ongoing Operation Post-Startup				$102,891	9	$926,023

Total PCCP Financial Assurance						**$2,116,952**

Perma-Fix of South Georgia
Costs - Design, Procurement, Installation and Start-up
Revised April 2026
All costs based on third party performance

				Cost
A	**Final Design**			
			Principal Professional Labor (25 hrs x $160/hr)	$4,000
			Senior Professional Labor (20 hrs x $100/hr)	$2,000
B	**Installation of AS/SVE System, including Wells**			
	1. Well Installation, including Sampling and Analysis			
	a.	Equipment (PID)		$1,280
	b.	Supervisory		
		i.	Onsite Oversight Labor (170 hrs x $179/hr)	$30,430
	c.	Subcontract		
		i.	Well Installation (19 AS, 12 SVE, 3 MW)	$87,685
		ii.	Waste Analytical	$757
	d.	Waste Disposal (two 14T rolloffs)		$12,825
	2. AS/SVE System Installation			
	a.	Supervisory		
		i.	Onsite Oversight Labor (515 hrs x $159/hr)	$81,885
		ii.	Onsite Oversight Labor & Travel (60 hrs x $160/hr)+($340 vehicle)	$9,940
	b.	Subcontract		
		i.	Used Carbon Canister	$8,400
		ii.	Carbon Initial Fill (used canister only)	$3,338
		iii.	Remediation Trailer & 3 Filled GACs	$195,761
		iv.	Surveying	$3,500
		v.	Trenching, Piping	$240,725
		vi.	Soil Baseline Analytical	$9,045
		vii.	Waste Analytical (25 composite samples)	$18,925
		viii.	Electrican	$5,813
		ix.	Private Utilities Markout	$5,465
		x.	Waste Disposal (20 rolloffs)	$138,745
	3. Startup			
	a.	Supervisory		
		i.	Onsite Oversight Labor (44 hrs x $128)	$5,632
		ii.	Onsite Oversight Labor & Travel (10 hrs x $160/hr)+($85 vehicle)	$1,685
	b.	Subcontract		
		i.	TO-15 Vapor Analysis - First Week (6 samples)	$1,248

ii.	AS/SVE Startup D1,D3, Wk1-3	$6,400
Total Costs - Design, Procurement, Installation and Start-up		**$875,484**
Administration (10%)		$87,548
Contingency (5%)		$48,152
Total Burdened - Design, Procurement, Installation and Startup		**$1,011,184**

Perma-Fix of South Georgia
Costs - Two-Year Post-Startup Not Covered in Ongoing Operation Costs
Revised April 2026
All costs based on third party performance

			Estimated Quantity	Unit	Unit Rate	Annual Total
A	**Two-Year Post-Startup Not Covered in Ongoing Operation Costs**					
	1. Monitoring and Reporting					
	Four Quarterly Sampling Events over Two Years (Between Routine Permit Semi-Annual and Annual Sampling Events					
	a. SVE Performance Analysis					
		ii. TO-15 Vapor Analyses, Yr 1 2 samples Wk 2, 3, M1-12	28	Each	$208.00	$5,824
	b. New Reports					
		i. As-Built Report (60 hrs Principal Prof, 12 hrs Project Prof)	1	Each	$10,800.00	$10,800
		ii. O&M Monitoring Plan Report Structure (30 hrs Princ Prof)	1	Each	$4,800.00	$4,800
	2. Carbon Replacement		8	Each	$12,400.00	$99,200
	3. RFI Work Plan					
	a. Develop RFI Work Plan as Required in Permit					
		i. Principal Hydrogeologist	200	Hours	$160.00	$32,000
		Project Professional Labor	30	Hours	$100.00	$3,000
	Annual Cost - Remediation and Verification					**$155,624**
	Administration (10%)					$15,562.40
	Contingency (5%)					$8,559.32
	Total Cost, 2-Year					**$179,746**

Perma-Fix of South Georgia
Ongoing Operation - Nine Year Rolling - Annual Cost
Revised April 2026
All costs based on third party performance

			Estimated Quantity	Unit	Unit Rate	Annual Total
A	**Ongoing Operation - Nine Year Rolling - Annual Cost**					
	1. Monitoring and Reporting					
	Two Quarterly Sampling Events (Between Routine Permit Semi-Annual and Annual Sampling Events					
	a. System Monitoring					
		i. Labor and Materials	12	Months	$2,273.08	$27,277
	b. Groundwater Sampling					
		i. Labor (168 manhours annual)	176	Hours	$107.38	$18,899
		ii. Sampling Equipment				
		Submersible Pump (2 weeks rental annual)	2	Week	$620.00	$1,240
		Sampling Equipment (8 days annual)	8	Days	$300.00	$2,400
		Distilled Water (2 events annual)	2	Events	$160.00	$320
		Teflon Tubing (total feet)	1400	Feet	$2.71	$3,794
		iv. Purge Water Disposal (125 gallons per event)	250	Gallons	$2.45	$613
	c. Groundwater Sampling and AS/SVE System Monitoring					
		i. 36 samples VOC 8260B, 6 QA Samples (annual)	42	Each	$66.00	$2,772
	d. Reporting - Incorporate Quarterly Results into Semi-Annual and Annual Reports					
		i. Principal Hydrogeologist (16 hours per report)	32	Hours	$160.00	$5,120
		Project Professional Labor (6 hour per report)	12	Hours	$100.00	$1,200
	2. Utilities					
	a. Electrical Power		12	Months	$2,059.51	$24,714
	b. Purge Water & Condensate Packaging and Disposal		300	Gal per Yr	$2.45	$735.00
	Annual Cost - Remediation and Verification					**$89,083**
	Administration (10%)					$8,908.35
	Contingency (5%)					$4,899.59
	Total Annual Cost, 9-Year Ongoing Operation (Rolling)					**$102,891**

J. OTHER FEDERAL LAWS

This section identifies other federal laws that may apply to the PFSG facility in accordance with 40 CFR 270.14(b)(20) and 270.3.

J.1. OTHER FEDERAL LAWS [40 CFR 270.14(B)(20) AND 270.3]

The following sections briefly address each federal regulatory act referenced in 40 CFR 270.3 Paragraphs (a) through (e).

J.1.a. THE WILD AND SCENIC RIVERS ACT [40 CFR 270.3(a)]

PFSG is an existing facility originally permitted as a Hazardous Waste Facility in May 1984. There are no established national wild and scenic rivers near the PFSG facility. Therefore, this facility will not have a direct, adverse effect on the values for which a national wild and scenic river would be established.

J.1.b. THE NATIONAL HISTORIC PRESERVATION ACT OF 1966 [40 CFR 270.3(b)]

PFSG is an existing facility originally permitted as a Hazardous Waste Facility in May 1984. PFSG is located in a municipal industrial park. There are no structures near the facility that are in the National Register of Historic Places. Therefore, this facility will not have any adverse effects on properties listed, or eligible for listing, in the National Register of Historic Places.

J.1.c. THE ENDANGERED SPECIES ACT [40 CFR 270.3(c)]

PFSG is an existing facility originally permitted as a Hazardous Waste Facility in May 1984. There have been no endangered species identified in or near the PFSG facility. Therefore, this facility will not jeopardize the continued existence of any endangered or threatened species or adversely affect any critical habitat.

J.1.d. THE COASTAL ZONE MANAGEMENT ACT [40 CFR 270.3(d)]

PFSG is an existing facility originally permitted as a Hazardous Waste Facility in May 1984. PFSG is not located on or near a coastline. Therefore, this facility cannot have an adverse effect on land or water use in a coastal zone.

J.1.e. THE FISH AND WILDLIFE COORDINATION ACT [40 CFR 270.3.(e)]

PFSG is an existing facility originally permitted as a Hazardous Waste Facility in May 1984. Operations at PFSG will not result in the creation of an impoundment, diversion, or other control or modification of any body of water and thus jeopardize any fish or wildlife.

K.CERTIFICATION

The certification and signatory conditions required in accordance with 40 CFR 270.11 (a) and (d) are provided below.

Certification is provided by Kevin Schmuggerow, Vice President, Industrial Business, Perma-Fix Environmental Services, Inc., as a responsible corporate officer in accordance with 40 CFR 270.11 (a).

In Accordance with 40 CFR 270.11 (a) and (d) the following certification is made with respect to:

PART B PERMIT MODIFICATION APPLICATION
Dated April 4, 2025, Revised December 19, 2025

Perma-Fix of South Georgia, Inc., Valdosta, Georgia

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Kevin Schmuggerow Digitally signed by Kevin Schmuggerow
Date: 2025.12.18 13:16:01 -05'00'

Kevin Schmuggerow
Vice President, Industrial Business
Perma-Fix Environmental Services, Inc.

Date

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L. INFORMATION REQUIREMENTS FOR SWMUS

This section provides specific information corresponding to the PFSG facility SWMUs and Areas of Concern (AOC). Regulatory sections addressed below include Title 40 Code of Federal Regulations 264 Subpart F and 270.14(d)(1), (2) and (3).

L.1 DESCRIPTION OF SOLID WASTE MANAGEMENT UNITS [40 CFR 270.14(d)(1)]

Seven SWMUs (SWMUs 1 through 7) have been identified in conjunction with the RCRA Facility Assessment (RFA) conducted in May 1995 (EPD 1995). The facility permit and subsequent permit renewals have historically referenced six HWMUs that were named based on the designated facility operation. The boundaries of the six HWMUs coincide with the boundaries for SMWUs 2 through 7. Because of the proposed Modification, the HWMU 4 has been subdivided to show the proposed separate operational areas, now identified as HWMUs 4A and 4B. These SWMUs/HWMUs are identified below, along with their SWMU number designation from the May 1995 RFA (EPD 1995) and the April 2022 Post-Closure Permit Modification (PFSG 2022).

SWMU	SWMU Description	HWMU	Corresponding HWMU Description#
1A	Stormwater Discharge Area	--	NA
1B	Area West of Tank Farm	--	NA
1C	Cooling Pond	--	NA
1D	Parking Area	--	NA
1E	Area East of Former Drum Sampling and Inspection Pad	--	NA
1F	Paved Area not associated with 1A through 1E	--	NA
2	Former Drum Storage Pad, removed in 2014	2	Former Drum Sampling and Inspection Pad (DSIP), removed in 2014
3	Former Drum Storage and Process Area 1 (DSPA 1), Loading Dock and Unnamed Area, removed in 2014	3	Former Drum Storage and Process Area (DSPA 1), removed in 2014
4	Bulk Storage Tank Farm (BSTF)	4A	Bulk Storage Tank Farm (BSTF)
		4B	Drum Storage Area 3 (DSA 3)
5	Waste Bulking and Unloading Area (WBUA)	5	Waste Bulking and Unloading Area (WBUA) and Loading Dock
			Drum Sampling and Inspection Area (DSIA)
6	Solvent Recovery Area (SRA)	6	Drum Storage and Process Area 2 (DSPA 2)
7	Equipment Storage and Decon Area	7	Solidification and Stabilization Area (SSA)

The location of SWMUs/HWMUs at PFSG are shown on Figure B-3, area and site topography are shown on Figures B-4 and B-4A. Each SWMU is further described below. These descriptions were presented in the Post-Closure Care Plan (Cameron-Cole 2022a).

L.1.1 SWMU 1 – MISCELLANEOUS SOLID WASTE MANAGEMENT AREA

Miscellaneous Solid Waste Management Area was designated by the GEPD to delineate six major subunits (SWMUs 1A through 1F). This SWMU has been designated primarily due to hazardous waste traffic across the site (as opposed to hazardous waste storage) and historic area uses. The subunits of SWMU 1 are discussed in the following sections. The locations are depicted on Figure B-3.

L.1.1.1 SWMU 1A – STORMWATER DISCHARGE AREA

A stormwater discharge outfall is located in the extreme southwest corner of the facility and has been in use since PFSG took ownership of the facility in 1999. Stormwater runoff exits the facility through this outfall and is directed toward the Valdosta Southern Railroad property located to the west of the facility. During an GEPD inspection conducted on June 30, 1989, a discharge of material was noted near the storm drain. GEPD analysis of the sample collected near the storm drain reportedly indicated elevated levels of inorganic constituents. The area is bordered by a low concrete block wall on the south and west and has a drainage grate that directs collected water into the drainage ditch west of the facility. Otherwise, the area consists of soil and vegetation and is an area of about 1,740 ft^2. Water from firefighting efforts in 2011 and 2013 came in contact with soil in this SWMU.

L.1.1.2 SWMU 1B – AREA WEST OF TANK FARM

Compliance inspections were conducted by GEPD on September 2, 1982, and June 19, 1986. The inspection reports noted drums stored in the area to the west of the BSTF. The drums were reported by Ramsey Chemical, the facility owner and operator in the 1980s, to be empty and awaiting reclamation. However, an inspection of the drums noted that the drums contained hazardous waste that had apparently leaked onto the ground surface.

Inspection reports did not detail the nature of the waste stored in the area. The area is currently covered in concrete and was not used for waste management activities under PFSG ownership since 1999. It is an area of approximately 8,260 ft^2.

L.1.1.3 SWMU 1C – COOLING POND

Ramsey Chemical utilized a cooling pond for the storage of coolant water used to operate the distillation units. The pond was an unlined 6,750-gallon aeration basin. Ramsey Chemical discontinued use of the cooling pond and installed a cooling tower in April 1987. Subsequent to the cooling pond closure, soil samples were collected for

analysis of purgeable hydrocarbons by EPA Method 601, purgeable aromatic hydrocarbons by EPA Method 602, semi-volatile organic compounds by EPA Method 610, and the eight RCRA metals using TCLP methodology.

Analytical results reportedly indicated barium was detected at 0.06 milligrams per liter (mg/L). Other target analytes were reportedly below laboratory detection limits for the methods listed above. The pond was filled with clean fill brought from an off-site source, and the cooling tower was put into operation. The area is currently covered in grass and vegetation and was not used for waste management activities under PFSG ownership since 1999. It is an area of approximately 3,610 ft^2.

L.1.1.4 SWMU 1D – PARKING AREA

The northern portion of the property will be used as a gravel parking lot, but in the past, it was used as a parking area for tanker trailers and van trailers. These transport containers were used to transport hazardous waste and were stored in this area until needed. Although hazardous wastes have not been stored in this area, the storage of the transport trailers presents a potential concern for this area. The approximate area is 27,670 $ft^{2.}$

L.1.1.5 SWMU 1E – AREA EAST OF DRUM SAMPLING AND INSPECTION PAD

Prior facility operations included the storage of drums of hazardous waste outside of permitted units. Drums were stored in the area east of the former DSIP. In the 1980s, the area was a gravel surface. Previous owners were required under consent orders to examine soil contamination.

The area is currently covered in concrete and was not used for waste management activities under PFSG ownership since 1999. It is an area of approximately 9,090 ft^2.

L.1.1.6 SWMU 1F – PAVED AREAS NOT ASSOCIATED WITH SWMUS 1A THROUGH 1E

Pursuant to discussions with GEPD, all paved areas not associated with SWMUs 1A through 1E or process-related SWMUs 2 through 7 are herein designated as SWMU 1F (Figure L-1). It includes the employee parking area adjacent to the office building and warehouse, which historically was used for parking personal vehicles. It is a concrete surface with some grassy areas and is approximately 13,943 ft^2. There is also the paved area between the entry gate and the office and warehouse buildings, historically used for truck traffic as well as personal vehicle traffic. It is concrete and has an area of approximately 15,961 ft^2. Another concrete surface lies west of the warehouse building and was used historically for truck traffic and is approximately 15,148 ft^2. The final segment of SWMU 1F is in the southwestern portion of the facility, situated between the Stormwater Discharge Area (SWMU 1A) and SWMU 2. It is turf area of approximately 5,097 ft^2.

L.1.2 SWMU 2– FORMER DRUM STORAGE PAD (HWMU 2 – DRUM SAMPLING AND INSPECTION PAD [DSIP])

This area formerly featured an 8-inch concrete slab over vapor barrier with an 8-inch (in) curb constructed around its perimeter. The area was approximately 47.42 feet by 67 feet (2,893 ft^2). It was covered by a roof to shelter hazardous waste containers from sunlight and to limit accumulation of precipitation.

Drums of hazardous waste were delivered to the pad via a loading dock located at the southeast corner of the storage area. Containers were off-loaded and staged on the pad for inspection and sampling of containers and waste. Containers (drums) were stored on pallets, four drums to a pallet and two layers high (maximum height). Waste treatment processes were not conducted on this pad.

Perma-Fix operated the unit from 1999 to 2013. Prior to Perma-Fix ownership, the unit was operated for similar purposes by previous owners beginning in 1987.

As a result of the GEPD compliance inspection of Ramsey Chemical on March 24, 1987, Ramsey Chemical was cited for treating hazardous waste in the drum storage area. Solvents were being poured onto a crater-shaped pile of Pozzalime, a calcium-magnesium oxide. The reaction between the Pozzalime and the solvent resulted in rapid boiling, smoke and gas emissions. Due to cracks in the pad that existed at the time and lack of a complete containment wall, there is a possibility that soils beneath the area were impacted by the solvent treatments conducted in the past. The March 24, 1987, GEPD inspection resulted in the filing of Consent Order EPD-HW- 367.

The former Drum Storage Pad was demolished in January 2014, after the August 2013 fire at the facility. The unit was subject to RCRA partial closure, including removal of demolished concrete and visibly impacted soils. The area is currently covered in plastic sheeting, with clean fill and vegetative cover over the sheeting. PFSG does not propose to reopen this area for use in this Modification. The location of the former Drum Storage Pad is depicted on Figure B-3.

L.1.3 SWMU 3 – FORMER DRUM STORAGE AND PROCESS AREA 1 (DSPA 1), LOADING DOCK, AND SMALL UNNAMED AREA (HWMU 3 – DRUM STORAGE AND PROCESS AREA [DSPA 1])

This area was located immediately adjacent to the former Drum Storage Pad (SWMU 2). This unit consisted of an 8-inch-thick reinforced concrete slab surrounded with integrally constructed 38-inch high, 6-inch wide, reinforced, cast-in-place concrete walls. This unit measured approximately 80 feet by 150 feet (10,030 ft^2). The entire area was covered by a roof to shield the area from sun and prevent the accumulation of precipitation. An elevated

loading dock, used by semi-trailers, was located along the eastern portion of the unit. The area was constructed in 1988 and removed in 2014.

According to the 1995 RFA, there had been no reported spills in this area; however, due to the nature of the operations conducted in this unit, GEPD has indicated that it is a SWMU of concern. When the facility operated as Ramsey Chemical, this unit did not exist as a process area. At that time it was covered with a base of gravel and cracked asphalt.

Under Perma-Fix ownership, the area was used for the storage of hazardous wastes suitable for fuel blending, and segregation of incompatible wastes in smaller storage cells separated by concrete curbing. The area was used for fuel blending, container consolidation, solids removal and loosepack consolidation.

The Drum Storage and Process Area was demolished in January 2014, after the August 2013 fire at the facility. The unit was subject to RCRA partial closure, including removal of demolished concrete and visibly impacted soils. The area is currently covered in plastic sheeting, with clean fill and vegetative cover over the sheeting. At the time of the emergency response to the 2013 fire, there was damage to the concrete and liquid was observed seeping from under the concrete pad of the area.

Pursuant to discussions with GEPD, the horizontal extent of SWMU 3 has been expanded to include the Loading Dock and Small Unnamed Area to the immediate north of the Loading Dock along the eastern edge of the former boundary of SWMU 3. These sub-units of SWMU 3 are depicted on Figure B-3. PFSG does not propose to reopen SWMU 3 for use under this Modification. However, the PFSG does desire to reconstruct the Loading Dock previously designated under SWMU 3. Therefore, PFSG is proposing for the former Loading Dock to redesignate for inclusion as part of the adjacent Waste Bulking and Unloading Area, to facilitate restoration of the expanded elevated platform and reinstatement of this structure as part of SWMU 5.

L.1.4 SWMU 4 – BULK STORAGE TANK FARM (BSTF) (HWMU 4A – BULK STORAGE TANK FARM [BSTF] AND PROPOSED HWMU 4B-DRUM STORAGE AREA 3 [DSA 3])

This unit was permitted for the storage of hazardous waste in tanks. Investigation of the Bulk Storage Tank Farm unit was conducted by HSA Environmental, Inc. Data resulting from the Tank Farm Assessment were reported by HSA Environmental to GEPD in the "Tank Farm Contamination Assessment Report" (HSA 1995).

This unit consists of a concrete slab surrounded by a 38-inch high, 8-inch-wide reinforced solid concrete block wall. The area is covered by a roof to prevent the accumulation of precipitation. The Tank Farm formerly contained six hazardous waste storage tanks with a combined storage capacity of 90,000 gallons, and four non-hazardous waste

product tanks with a combined capacity of 47,475 gallons. All hazardous waste tanks and associated piping were removed in response to the 2013 fire, but the unit is structurally intact. The area was cleaned and voluntarily entered into post-closure care status.

This area of 7,507 ft^2 includes the intact and permitted Bulk Storage Tank Farm HWMU (2,947 ft^2) that is currently in post-closure care, and Drum Storage Area 3 (4,560ft^2) that was constructed, but not previously permitted for active use.

During GEPD inspections conducted on August 15, 1986, and December 20, 1988, spills and/or leaking tanks within the BSTF area were noted. As a result, Chemical Conservation of Georgia (CCGI) investigated the integrity of the floor slab of the BSTF area, which was reported to GEPD in a document entitled "Contamination Assessment Plan for the Tank Farm Containment Area" (CCGI 1991). This document revealed that the BSTF was underlain by two separate concrete slabs that were separated by approximately one to two inches. This separation was filled with a material that was reportedly old "still bottom" sludge discharged while the facility operated as Ramsey Chemical. Additionally, the second slab is underlain by a layer of similar material. Analytical data collected for the September 6, 1991 report revealed that soil beneath the BTSF area has been impacted. Additionally, in 1988, CCGI reported that upon replacing several sections of the floor slab, the existing containment wall around the BSTF was noted to have numerous cracks and had begun to lean away from the BSTF. The interior of the wall was noted to be filled with sand and not tied to the existing floor slab or footing. Also, it was noted that while operating as Ramsey Chemical, the Tank Farm floor slab had been expanded without tying to the existing slab.

On April 21, 1990, Tank Number 209 was discovered to be leaking. This release resulted in the filing of Consent Order EPD-HW-606. On June 2, 1993, Tank Number 207 overflowed due to failure of the high- level indicator. Due to past management practices and based upon reported leaks within this unit, an investigation of soil and groundwater quality beneath the unit was required. Between July 2001 and January 2003, 103 CY of concrete and 31 CY of soil were removed in the northern portion of the BSTF. All visually impacted soil was removed, resulting in the removal of the top foot of soil. This area was subsequently used to perform an in-situ chemical oxidation pilot, targeting groundwater contamination directly below the area. That pilot was conducted from December 2004 through March 2006, when it was terminated due to poor performance. Because of the excavation, the majority of the northern portion of SWMU 4, referred to as DSA 3 was not covered by concrete. However, new reinforced concrete was placed to cover the portion of DSA 3 in 2010. PFSG proposes to reinstate this unit for active bulk tank and drum storage in this Modification.

This area of 7,507 ft^2 is comprised of the permitted BTSF (SWMU 4) (947 ft^2) and DSA 3 (4,560 ft^2), which was constructed but not previously permitted. PFSG proposes to reopen these areas for use in this Modification. The area will be segregated into two parts: the BSTF (HWMU 4A) on the south side and the DSA 3 (HWMU 4B) on

the north side. Four 20,000-gallon tanks will be constructed in the BSTF. The 6-inch rollover berm will be removed, and containment wall restored at the northwest end of the containment walls. The entire unit is covered with a roof to shade the area from the sun and minimize accumulation of precipitation. The proposed use for DSA 3 is drum storage consistent with that described for SWMU 2. Waste treatment processes will not be conducted in DSA 3. The location of BSTF and DSA 3 are depicted on Figure B-3.

L.1.5 SWMU 5 – WASTE BULKING & UNLOADING AREA (WBUA) (HWMU 5 – WASTE BULKING & UNLOADING AREA [WBUA] AND DRUM SAMPLING AND INSPECTION AREA [DSIA])

This area was used to park trailers for unloading waste and loading blended fuel or reclaimed solvents. This unit is reportedly underlain by an 8- to 10-inch-thick reinforced concrete slab. This unit is surrounded on three sides by a 38-inch high, 8-inch wide, reinforced, solid concrete wall. The east side of the unit is open to allow access to semi-trailers. A 6-inch concrete roll over berm separates this unit from the vehicle traffic areas. The traffic area is sloped away from the berm to prevent rainfall runoff from entering the unit. This unit measures 86 ft by 47 ft and was formerly covered with a roof to shade the area from sun and minimize the accumulation of rainfall. The roof was damaged in 2013 and is currently planned for restoration. The floor slab of this unit is designed to slope to a collection sump located in the southwest corner of the unit. The total area of the unit is 4,048 ft^2.

This unit can simultaneously accommodate three 6,000-gallon bulk liquid tank trailers, which will be loaded and unloaded using portable pumps, filters, and flexible hoses. Incoming trailers will be parked in this area until their contents can be tested and transferred to an appropriate on-site storage tank. While operating as Ramsey Chemical, this area was also used for loading and unloading of wastes; however, at that time, the unit was underlain by gravel and weathered asphalt. GEPD interpreted that these past operations may have presented a potential route of entry for wastes into the subsurface. This area was subject to RCRA closure in February 2016.

PFSG is proposing to reopen this area for use with this Modification. The area will collectively include a Waste Bulking and Unloading Area (WBUA), a Loading Dock, and a Drum Sampling and Inspection Area (DSIA). Containers of hazardous waste will be delivered to the DSIA via the Loading Dock located at the southeast corner of the WBUA. Containers will be off-loaded and staged on the pad for inspection and sampling of waste. Drums will be stored on pallets, four drums to a pallet and two layers high (maximum height). Other containers will also be stored on pallets. Waste treatment processes will not be conducted on this pad. The location of WBUA and DSIA are depicted on Figure B-3.

L.1.6 SWMU 6 – SOLVENT RECOVERY AREA (SRA) (HWMU 6– DRUM STORAGE & PROCESS AREA 2 [DSPA 2])

This area formerly contained a solvent distillation unit and pot still and is underlain by an 8- to 10-inch-thick, reinforced concrete slab. The unit is surrounded on three sides by a 38-inch-high, 8-inch-wide reinforced solid concrete wall. The total area of the unit is 6,880 ft^2. The north side of the unit is open to allow access by trailers. A 6-inch concrete roll over berm separates this unit from the vehicular traffic area located to the north. The traffic area is sloped away from the unit to prevent rainfall runoff from entering the unit. The slab of the unit is sloped away from the unit to flow toward a collection sump located in the southwest corner. The area is covered by a roof to shade the area from sunlight and minimize the accumulation of precipitation. Under past operating procedures, this area was part of the hazardous waste unloading area. During an GEPD inspection conducted May 11 through 12, 1983, a surface spill was noted in this area.

Distillation units were installed in this area prior to 1987. Operation of the distillation units was discontinued in the mid-1990s. The area was also the location for DPSA 2, which was subject to RCRA closure in February 2016. PFSG is proposing to reopen this area for use in this Modification. This area is structurally intact but was cleaned and voluntarily entered into post-closure care status in February 2016.

PFSG is proposing to reinstate this area for active drum processing and storage with this Modification. Following inspection and acceptance, containers received in the WBUA will be moved into this unit for materials processing, including chemical speciation, consolidation, and waste bulking. The location of the Solvent Recovery Area is depicted on Figure B-3.

L.1.7 SWMU 7 – EQUIPMENT STORAGE AND DECON AREA (HWMU 7– SOLIDIFICATION AND STABILIZATION AREA [SSA])

This area was used to store equipment and was proposed for use as a decontamination area in CCGI's Hazardous Waste Facility Permit. The unit consists of an 8- to 10-inch-thick reinforced concrete slab surrounded on three sides by an 8-inch-wide reinforced, solid concrete wall of varying height. The west side of the unit is open to allow access to equipment. The total area of the unit is 1,020 ft^2. The slab of this unit is steeply sloped to the east to facilitate collection of any decontamination residues. The unit is covered with a roof to shade the area from sunlight and minimize the collection of rainfall.

The facility formerly used this area for parking tanker trailers containing hazardous waste. During that time, the base of the unit consisted of gravel and asphalt. According to the RFA (EPD 1995), this unit contained roll-off boxes containing potentially hazardous waste during GEPD's Visual Site Inspection conducted on July 22, 1994. The area was used for waste stabilization and solidification in these bulk containers. This area is structurally intact

but was cleaned and voluntarily entered into post-closure care status in February 2016. PFSG is proposing to reopen this area for use in this Modification. The location of the Equipment Storage and Decon Area is depicted on Figure B-3.

L.2 INFORMATION PERTAINING TO RELEASES [40 CFR 270(d)(2)]

Based on information provided in the Post-Closure Care Permit Application (PFSG 2022), previous permit applications included spill reports dating back to 1993 and the operation of the facility as CCGI. The following spills were reported, and documentation is included in Exhibit L-1.

Date of Release	Quantity of Release	Description
December 9, 1993	110 gallons	UN1993 Waste Flammable Solid, Mineral Spirits
June 2, 1993	200 gallons	UN1993 Waste Flammable Liquid, Xylene, Toluene
August 11, 1992	200 gallons	UN1993 Waste Flammable Liquid, Acetone, Toluene

In addition to these historical releases, there were instances of release of fire suppression water from incidents on January 29, 2011, February 14, 2013, and August 14, 2013. The January 2011 incident involved a fire in an end-dump trailer. Fire-fighting water escaped secondary containment during the response to this incident. The February 2013 release incident involved the following materials:

- 8,900 pounds of plywood contaminated with lead from a firing range
- 5,892 pounds of flammable solids
- 3,676 pounds of paint-related materials

An unknown quantity of fire suppression water escaped from the facility near the stormwater outfall, and 6,000 gallons of the same liquid was collected and sent for fuel blending.

During the August 2013 incident, an unknown quantity of suppression water was released from the facility through the stormwater outfall. Approximately 60,000 gallons of water were collected from the stormwater retention area, and 40,000 gallons of liquid from secondary containment in the Drum Storage and Process Area. Additional information for these recent incidents is included in Exhibit L-1.

TABLE

Table L-1 Permitted Units

SWMU	Permitted Unit	Permitted Process	Process Description	Construction	Square Footage
SWMU 3	Drum Sampling and Inspection Area	RCRA Storage	Containers	8" concrete/vapor barrier	2893
SWMU 4	Drum Storage and Process Area 1	RCRA Storage	Containers		10030
SWMU 4	Drum Storage and Process Area 1	RCRA Treatment	Consolidation		
SWMU 4	Drum Storage and Process Area 1	RCRA Treatment	Solids Removal	8" concrete/vapor barrier	
SWMU 4	F3 / F4 Blend Pots	RCRA Treatment	Fuel Blending		
SWMU 4	F3 / F4 Blend Pots	RCRA Storage	Tanks		
SWMU 5	Bulk Storage Tank Farm	RCRA Storage	Tanks	Multiple concrete slabs	2947
SWMU 5	Drum Storage and Process Area 3	RCRA Storage	Containers	8" concrete/vapor barrier	4560
SWMU 6	Waste Bulking and Unloading Area	RCRA Treatment	Consolidation	8" concrete/vapor barrier	
SWMU 6	Waste Bulking and Unloading Area	RCRA Storage	Containers/Tankers		3637
SWMU 7	Drum Storage and Process Area 2	RCRA Storage	Containers	2x4" concrete slabs	6800
SWMU 7	Drum Storage and Process Area 2	RCRA Treatment	Consolidation	separated by vapor barrier	
SWMU 8	Solidification and Stabilization Area	RCRA Treatment	Solidification		
SWMU 8	Solidification and Stabilization Area	RCRA Treatment	Stabilization	8" concrete	
SWMU 8	Solidification and Stabilization Area	RCRA Storage	Containers		2185

EXHIBITS

EXHIBIT L-1

ELECTRONIC CD-ROM COPY OF DESCRIPTION OF INCIDENTS

August 11, 1992 Spill Report

Chemical Conservation of Georgia, Inc.

1612 James P. Rodgers Circle, Valdosta, Georgia 31601

(912) 244-0474 • FAX: (912) 333-0328

August 20, 1992

Ms. Jan Simmons
Environmental Specialist
Georgia Department of Natural Resources
Environmental Protection Division
Floyd Tower East, Suite 1154
205 Butler Street, Southeast
Atlanta, GA 30334

Certified Mail Return
Receipt Requested

RE : Reported Spill on August 11, 1992, Spill Number 081192-02

Dear Ms. Simmons :

This is a report of a spill submitted under GA.L 1988, Chapter 14.

Location : Drum Processing Area - Contained Area

Date : August 11, 1992

Time : Spill - 08:50 A.M.
Cleanup - 02:30 P.M. (Completed)

Type of waste : Waste Flammable Liquid, N.O.S.
Flammable liquid UN1993
(Acetone,Toluene) D001 D035 F003 F005

Quantity : 200 Gallons

Details : While blending hazardous waste fuels into a blending tank a reaction occurred. This reaction generated heat, polymerization of some of the material in the tank and a bubbling action. The combination of these three by-products from the reaction resulted in 200 gallons being spilled from the blending tank into the secondary containment area.

This reaction was caused by the mixing of free zinc, water, air and organic compounds.

Corrective Action : CCGI will not accept material with high concentrations of free active metals in the future. New and old generators will be screened for this type of material by using CCGI's profiling system and a visual inspection will be done on all incoming material to look for free active metals. All profiles

with high concentrations of active metals will be rejected and all material coming into the plant with high concentrations of active metals will be rejected.

The company does not consider this an incident which may endanger health or the environment under section I,C,4 of it's permit.

The following agencies were notified :

Valdosta Fire Department
Contact - Captain Cook
Phone - 912-333-1835

Georgia Department of Natural Resources
Contact - Alex House
Phone - 404-656-4300

Sincerely

Micheal Downey
Facility Manager

cc : Bill Labadie
Peter O'Rourke
Armando Gonzalez

June 2, 1993 Spill Report

Chemical Conservation of Georgia, Inc.

1612 James P. Rodgers Circle, Valdosta, Georgia 31601

(912) 244-0474 • FAX: (912) 333-0328

June 12. 1993

Ms. LaVern Ajanaku
Environmental Specialist
Georgia Department of Natural Resources
Environmental Protection Division
Floyd Tower East, Suite 1154
205 Butler Street, Southeast
Atlanta, GA 30334

Certified Mail Return
Receipt Requested

RE: Reported spill on June 02, 1993, Spill Number 060293-11

Dear Ms. Ajanaku:

This is a report of a spill submitted under GA.L 1988, Chapter 14.

Location: Tank Farm Area - Contained Area

Date: June 02, 1993

Time: Spill - 10:15 P.M
Cleanup - 12:05 A.M. (Completed)

Type of waste: Waste Flammable Liquid, N.O.S.
Flammable Liquid (Xylene, Toluene)
UN1993 D001 D035 F003 F005

Quantity: 200 Gallons

Details: While processing material into tank # 207 the volume indicator failed and allowed the tank to be overfilled. The problem was discovered immediately. Processing operations into the tank were halted and cleanup procedures were put into action.

Corrective Action: The volume indicator on tank # 207 was repaired and all other tanks will be given a detailed inspection for level indicator problems.

The company does not consider this an incident which may endanger health or the environment under Section I,C,4 of it's permit.

Chemical Conservation of Georgia, Inc.

1612 James P. Rodgers Circle, Valdosta, Georgia 31601

(912) 244-0474 • FAX: (912) 333-0328

June 12, 1993

Ms. LaVern Ajanaku
Environmental Specialist
Georgia Department of Natural Resources
Environmental Protection Division
Floyd Tower East, Suite 1154
205 Butler Street, Southeast
Atlanta, GA 30334

Certified Mail Return
Receipt Requested

RE: Reported spill on June 02, 1993, Spill Number 060293-11

Dear Ms. Ajanaku:

This is a report of a spill submitted under GA.L 1988, Chapter 14.

Location: Tank Farm Area - Contained Area

Date: June 02, 1993

Time: Spill - 10:15 P.M
Cleanup - 12:05 A.M. (Completed)

Type of waste: Waste Flammable Liquid, N.O.S.
Flammable Liquid (Xylene, Toluene)
UN1993 D001 D035 F003 F005

Quantity: 200 Gallons

Details: While processing material into tank # 207 the volume indicator failed and allowed the tank to be overfilled. The problem was discovered immediately. Processing operations into the tank were halted and cleanup procedures were put into action.

Corrective Action: The volume indicator on tank # 207 was repaired and all other tanks will be given a detailed inspection for level indicator problems.

The company does not consider this an incident which may endanger health or the environment under Section I,C,4 of it's permit.

December 9, 1993 Spill Report

Chemical Conservation of Georgia, Inc.

1612 James P. Rodgers Circle, Valdosta, Georgia 31601

(912) 244-0474 • FAX: (912) 333-0328

December 22, 1993

Ms. Laverne Ajanaku
Environmental Specialist
Georgia Department of Natural Resources
Environmental Protection Division
Floyd Tower East, Suite 1154
205 Butler Street, Southeast
Atlanta, GA 30334

Certified Mail Return
Receipt Requested

RE: Reported incident on December 9, 1993, Report Number 120993-01

Dear Ms. Ajanaku:

This is a report of an incident submitted under GA.L 1988, Chapter 14.

Location: Drum Storage Area - Contained Area

Date: December 9, 1993

Time: Discovered - 06:00 A.M.
Resolved - 06:20 A.M.

Type of material involved: RQ Waste Flammable Solid, n.o.s.
Mineral Spirits
4.1 UN1325 PGII D001

Quantity of material involved: Two drums (55 gallon drums)

Drum tracking numbers: L68-010 and L68-008

Details: Two drums were discovered in the Drum Storage Area that were undergoing an exothermic reaction. The employee who discovered the incident notified the Emergency Coordinator (EC), collected the proper safety equipment and placed two fire extinguishers near the drums for precautionary reasons.

The employee removed the two drums from the Drum Storage Area to prevent other drums from becoming involved in the incident. The drums were placed on a concrete area outside of the Drum Storage Area.

The EC inspected the two drums and determined that each drum had a reaction occurring in the top of each drum. The EC performed a compatibility test on the material in the two drums with water and determined that the material was compatible with water.

A water layer was placed in the top of each drum. This stopped the reaction and ended the incident. The drums were sampled and monitored for several hours. There were no additional problems with these two drums. The drums were placed back into the Drum Storage Area. All other drums in the Drum Storage Area were checked to verify that no other drums had difficulty. None was found.

These two drums were generated from the consolidation of solid waste from one generator. Generator information is as follows:

Bassett Furniture Industries of North Carolina
NCD 000 276 154
Manifest # 00147
Approval # BASG3541

This incident was caused by an exothermic reaction in the drums. Due to the extent of the reaction and the amount of water that was added to the drums, the exact cause of the reaction can not be determined.

Corrective Action: A compatibility test will be conducted on all solid material that is going to be processed by consolidation. This additional test in CCGI's processing procedure will eliminate this type of incident.

The company does not consider this an incident which may endanger health or the environment under Section I,C.4 of its permit.

The following agency was notified:

Georgia Department of Natural Resources
Contact: Cathy Musial
Phone #: 404-656-4300

Sincerely

Micheal Downey
Facility Manager

cc: Jean Tolman
William Labadie
Armando Gonzalez

January 29, 2011 Incident Report

INCIDENT / NEAR MISS/STOP WORK ORDER REPORT

Report Number:	Date: (XX/XX/XXXX)	Time: (24 hour format)	Shift: (Day/Night)
☒IR- 01032012-001-PFSG ☐NM- ☐SW-	12/29/2011	13:30	Day

Issued (prepared by):	Area (location of incident):	Area/Supervisor/Coordinator/Manager:
Lason Kirkland	Waste Bulking Area	Ivory Sapp

☒ **INCIDENT**
- ☒ Compliance Related
- ☐ Permit or License Requirement Related

☐ **NEAR MISS**
- ☒ Equipment Related
- ☒ Safety Related

☐ **STOP WORK ORDER**
- ☐ Personnel Related
- ☐ Visitor Related

INCIDENT / NEAR MISS / STOP WORK ORDER DESCRIPTION *(Please attach additional pages if necessary)*

See attached

CAUSAL EVALUATION *(Please attach additional pages if necessary)*

See attached

	POSSIBLE CONTRIBUTING FACTOR
☐	Supervisor
☐	Training (below required level)
☒	Weather Related
☐	Procedural Awareness
☐	Design
☐	Maintenance
☐	Operation
☐	Improper Assembly
☐	Fatigue
☐	Substance Abuse
☐	Position Qualification
☐	Work Environment/Location
☐	Inattention to Detail
☐	Process Knowledge
☐	Non-Adherence to Work Order Task Instruction

See Attachment

	ESTIMATED COSTS	
☒	Labor (total hours)	20
☒	Administrative (total	20
☒	Materials Used	$23,000 (End-dump replacement)
☒	Disposal	$4000
☐	Downtime	
☐	Medical	

Note
- All applicable costs of an incident shall be calculated at each level, by the parties involved as defined by the category listed above.
- When the cost is based on hours, enter the number of hours required.
- When the cost is based on materials, disposal, process downtime or medical, estimate this in a dollar value format.

Attach Photos as Applicable

Reviewed By (Signature and Date):

☐ Area Supervisor	☒ General Manager	☒ EH&S Manager	☐ Maintenance

Report Prepared by:	MP2 Work Order Number:	Issue Date:
Kurt Fogleman	N/A	1/13/2012

Attachment to Incident Report 01032012-001

Incident Description:

On Dec. 29, 2011, Perma-Fix of South Georgia personnel were loading waste into an end-dump trailer. This material included used PPE, drum liners, empty containers that had held lab samples and other hazardous solids. At approximately 1:30 pm, Ivory Sapp observed smoke coming from an end-dump trailer as though something inside was smoldering. When he went to look inside the container the material started burning. The resulting fire burned the sides of the end-dump trailer, causing severe damage to the trailer.

Non-essential personnel were evacuated while operations personnel attempted to suppress the fire, but the fire system did not have sufficient pressure. The fire department was summoned, arriving at approximately 1:40, and was able to extinguish the fire in a matter of 2-3 minutes.

The trailer was partially removed from the Waste Bulking Area tin order to improve fire department access to the fire. Runoff from fire suppression was directed to the SW corner of the facility, where the stromwater drain was closed. Water was collected using a portable vacuum unit and placed in Tank 210 onsite. Approximately 200 gallons of water were collected. No waste or water was released from the facility, and there was no release of waste or threat to human health or the environment offsite.

Contributing Factors:

The fire was related to the flammable nature of the materials, and possibly oxygen enrichment.

A contributing factor to the need to summon the fire department was the lack of pressure in the fire suppression system. It appeared that there was blockage in the system from ice caused by freezing temperatures.

Causal Evaluation:

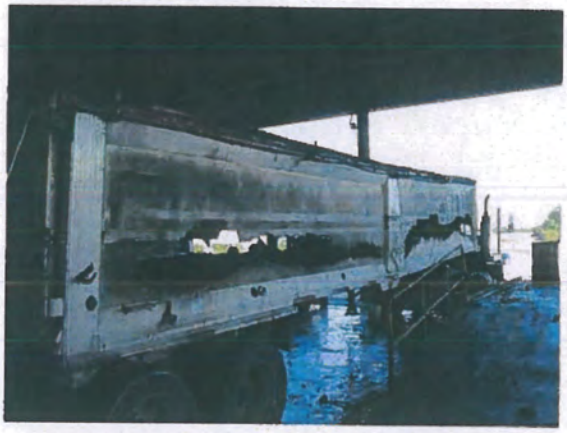
While there was no reaction from the bulking of solids or liquids from the lab samples, it is suspected that residual flammable liquids in the sample containers formed vapors that caught fire. The smoldering observed by facility personnel indicates spontaneous combustion of flammable vapors.

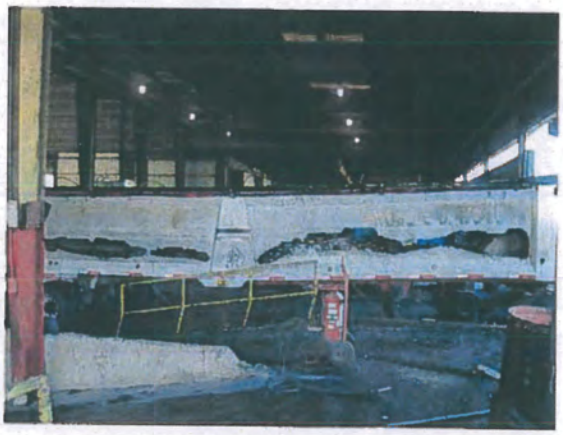
Where waste samples were not spontaneously combustible while contained in sample jars, empty jars with small amounts of residual materials may have become spontaneously combustible due to more available oxygen relative to volatilized flammable compounds.

Prevention of Recurrence:

In the future, facility personnel will bulk all samples in batches and do compatibility testing prior to the lab sample being disposed of. Empty sample jars will be rinsed with water and all liquids will be disposed of by fuel blending. Rinsing was not performed previously as an effort to accomplish waste minimization, but will be implemented for health and safety reasons.

Photos:





February 14, 2013 Incident Report

PermaFix®
environmental services

1612 James P. Rodgers Cir. Valdosta, Georgia 31601

Report to GAEPD Relating to Implementation of the Contingency Plan on February 14, 2013

Hazardous Waste Facility Permit HW-020 (S&T)
GAD 093 380 814

Perma-Fix of South Georgia Facility
1612 James P. Rodgers Cir.
Valdosta, Georgia 31601

Prepared by

Kurt Fogleman
Environmental Health and Safety Manager
Perma-Fix Southeast Region
1940 NW 67th Place
Gainesville, FL 32653
(352) 395-1356

In accordance with conditions I.C.4 and I.C.5 of Hazardous Waste Facility Permit HW-020 (S&T), Perma-Fix of South Georgia is providing the following information related to the implementation of the facility contingency plan on February 14, 2013.

Owner Name

The facility is owned by Perma-Fix of South Georgia, Inc., a subsidiary of Perma-Fix Environmental Services, Inc. Perma-Fix of South Georgia is a hazardous waste facility registered with the EPA ID number GAD 093 380 814. It is located at the facility, with the same address and phone number as listed for the facility below.

Facility Address

The facility is located at:
1612 James P. Rodgers Circle
Valdosta, GA 31601
The facility phone number is (229) 244-0474.

Date and Time of Incident

The fire began at approximately 10:45 am on Thursday, February 14th, 2013. As Emergency Coordinator, Lason Kirkland directed two workers to begin attempts to suppress the fire while the fire department was summoned and remaining personnel were evacuated to the rally point. The fire department responded to the emergency and arrived as the onsite response was ready. Site personnel turned over fire suppression activities to the fire department. The fire was extinguished at approximately 1:45 pm.

Type of Incident

The incident was a fire in a trailer of hazardous debris and solids that was consolidated for transportation offsite. The trailer was located in the Waste Bulking and Unloading Area.

Name & Quantity of Materials Involved

Materials involved in the incident included the following:

8900 pounds of plywood contaminated with lead from a firing range
5892 pounds of flammable solids
3676 pounds of paint-related materials

Based on the investigation following the fire, it is believed that some of the containers profiled as empty still contained flammable liquids that contributed to the fire. Screening with a photoionization detector indicated pockets of volatile organics in the flammable solids that were separated from the plywood after the fire.

Extent of Injuries

There were no injuries as a result of this incident.

Assessment of Hazards to Human Health and the Environment

The actual hazards inside the facility at the time of the incident were fire and smoke from the fire. Personnel were evacuated in response to the fire and smoke hazard. The potential hazards included airborne hazards due to the fire and the combustion products. Evacuation addressed these potential hazards. An additional potential hazard was the threat of a spreading fire. The trailer was partially moved out of the consolidation area so that firefighters could reach the fire, and so that it did not spread to tanks or storage areas. Fire suppression water was a potential hazard inside the facility, but it was collected for characterization and disposal.

The hazard outside the facility was the potential of release of fire suppression water. The fire marshal inspected an area outside of the facility with the facility manager and collected samples of water that may have been released. A Georgia EPD representative collected samples from the lower stormwater outfall area to assess potential release of contaminants. Perma-Fix of South Georgia collected duplicate samples for analysis as well. There was no actual danger from the fire outside of the facility.

Estimated Quantity and Disposition of Recovered Material Resulting from the Incident

Perma-Fix separated plywood from other materials in the trailer, including the flammable solids. Water from fire suppression was collected in a tanker, and totaled 6,000 gallons. The water will gradually be consolidated with other liquids into outgoing tankers for disposal. The plywood was containerized and the flammable solids along with other materials were placed in a metal roll-off with a closed lid. This material will be shipped to US Ecology in Texas on manifest 010629237JJK next week. A copy of the manifest is attached.

Steps Taken or Planned to Reduce, Eliminate, and Prevent Recurrence

Immediately after the fire, facility personnel separated plywood from the other materials, which consisted of flammable solids, paint related materials and empty containers. This separated potential fire-causing materials from a fuel source. Flammable solids were placed in a metal roll-off with a lid that was closed once the container was loaded to prevent ignition.

Planned measures to reduce, eliminate and prevent recurrence include changes to operational procedures and the introduction of new equipment in the consolidation process.

Current procedures for consolidation into a trailer involve placing drum quantities directly into the trailer using a forklift. Planned operational changes will shift to smaller scale consolidation in intermediate containers. By consolidating on a smaller scale, fire and reaction risks can be observed and prevented while in the incipient stages. Instead of a trailer-wide reaction, a cubic yard quantity can be addressed by operations personnel. A fire in a smaller consolidation container could be suppressed using fire extinguishers or other suppressant.

By consolidating smaller quantities, operations personnel can screen the waste more effectively for non-conforming wastes that may lead to fire or other reaction. Liquids could be more easily detected and dealt with, as opposed to the current practice where a forklift operator may be too far from the consolidation to see non-conformances.

The planned measures implement practices and equipment used at the Perma-Fix of Florida facility in Gainesville, FL. The Perma-Fix of Florida facility has successfully performed similar consolidation activities over the past 20 years with no large scale incidents of fire or reaction. Consolidation containers will be transferred to Perma-Fix of South Georgia, and training on new consolidation procedures will be performed by the end of March 2013.

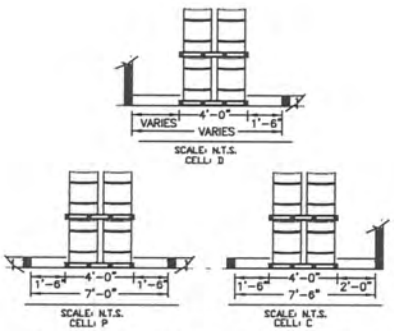
Attachments

Attachment 1: Site Diagram Showing Location of Incident
Attachment 2: Consolidation Logs and Profiles for Materials Involved in Fire
Attachment 3: Outbound Manifest Showing Disposition of Materials Involved in Fire
Attachment 4: Fire Department Report
Attachment 5: Photographs of Containers to be used in Future Consolidation Activities

Attachment 1

Site Diagram Showing Location of Incident

HAZARDOUS WASTE STORAGE	
TANK #	GALLONS
42	4,000
209	19,485
210	19,485
TOTAL	42,970



CONTAINER STORAGE DETAILS (TYP.)

NOTE: FOR CONTAINER STORAGE CELLS I, S, AND N, THE MINIMUM AISLE SPACE BETWEEN CONTAINMENT WALL/CURB AND PALLETS, AS WELL AS BETWEEN ANY TWO ROWS OF PALLETS, WILL BE 2 FEET.

Location of Fire

LEGEND

12	AISLE IDENTIFICATION
XXX.XX	ELEVATION (SITE DATUM)
40	NUMBER OF 55 GAL. DRUMS IN AISLE
	DRUM STORAGE ON PALLET
	COLOR INDICATES PROPOSED FEATURES

CONTAINER STORAGE AND PROCESSING AREAS
Perma-Fix of South Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Georgia 30601

DRAWN BY:	DATE:	REVISION #
BAH	5/18/06	
BAH	8/31/06	1
SJR	12/30/08	2
BAH	2/20/09	3
BAH	9/2/09	4
JFW	3/9/10	5

Attachment 2

Consolidation Logs and Profiles for Materials Involved in Fire

PFSG Bulk Shipment Summary

Shipment: SV53165 **Disposal Facility:** US ECOLOGY TEXAS (5-1801)
Shipped: **EPA ID:** TXD069452340
Manifest #: **Cost:**

Manifest Line: SV53165-1
DOT Shipping Name: Hazardous waste, solid, n.o.s. (Xylenes, Toluene)
Waste Codes:

0000 D001 D004 D005 D006 D007 D008 D009 D010 D011 D012 D013 D014 D015 D016 D017 D018 D019 D020 D021 D022 D023 D024 D025 D026 D027 D028 D035 D038 D039 F001 F002 F003 F005 F006 F019 U188 U196

Transfer From: D-696
Date: 2/15/2013
Volume (Gal): 3540.06
Weight (Lbs): 29513.48

Inventory Item	Manifest #	Approval	CT - CS	VOLUME	UM	WEIGHT	UM	DOT Name	est Price
DV155794-1	8029881JJK	AV75603	CM - 4400	2135.06	GAL	8900.00	LBS	Hazardous waste, solid, n.o.s. (WOOD / LEAD)	$4,005
Waste Codes:	D008								
DV155503-1	10629139JJ	AV54954	DM - 55	50.00	GAL	500.22	LBS	Waste Paint related material	$255
Waste Codes:	D001 D035 F003 F005								
DV155433-9	10629116JJ	AV65252	DF - 30	25.00	GAL	77.12	LBS	Waste Solids containing flammable liquid, n.o.s. (NAPHTHA / PETROLEUM	
Waste Codes:	D001 D035								
DV155690-2	8841676JJK	AV75260	DM - 55	50.00	GAL	195.92	LBS	Hazardous waste, solid, n.o.s. (Mercury)	$150
Waste Codes:	D009								
DV155690-1	8841676JJK	AV75260	DM - 55	50.00	GAL	195.92	LBS	Hazardous waste, solid, n.o.s. (Mercury)	$150
Waste Codes:	D009								
DV155692-1	8841662JJK	AV75523	DF - 55	50.00	GAL	195.92	LBS	Hazardous waste, solid, n.o.s. (MERCURY)	
Waste Codes:	D009								

PFSG Bulk Shipment Summary

Inventory Item	Manifest #	Approval	CT - CS	VOLUME	UM	WEIGHT	UM	DOT Name	est Price
DV155690-3	8841676JJK	AV75260	DM - 55	50.00	GAL	195.92	LBS	Hazardous waste, solid, n.o.s. (Mercury)	$150
Waste Codes:	D009								
DV155674-58	10628533JJ	AVAG1854	DM - 55	50.00	GAL	625.28	LBS	Hazardous waste solid, n.o.s.(Toluene, Methanol)	
Waste Codes:	D001 D022 F003 F005								
DV155674-57	10628533JJ	AVAG1856	DM - 55	50.00	GAL	625.28	LBS	Hazardous waste solid, n.o.s. (Toluene, Cadmium, Styrene)	
Waste Codes:	D001 D006 D022 F003 F005								
DV155674-59	10628533JJ	AVAG1854	DM - 55	50.00	GAL	625.28	LBS	Hazardous waste solid, n.o.s.(Toluene, Methanol)	
Waste Codes:	D001 D022 F003 F005								
DV155670-2	10628539JJ	AV62155	DM - 55	50.00	GAL	396.01	LBS	Non Regulated Material (Coolant & Oil Dry)	$200
Waste Codes:	0000								
DV155721-1	10973801JJ	PF1041	DF - 15	15.00	GAL	150.07	LBS	Waste Flammable solids, organic, n.o.s. (PARAFFIN / XYLENE)	
Waste Codes:	D001 F003								
DV155650-15	10628528JJ	UNIG2017	DM - 55	50.00	GAL	354.32	LBS	RQ, Hazardous waste solid, n.o.s. (METHYL ETHYL KETONE)	$295
Waste Codes:	D035 F003								
DV155788-5	9310344JJK	AV69192	DM - 55	50.00	GAL	354.32	LBS	Waste Paint related material	
Waste Codes:	D001 D035								
DV155650-14	10628528JJ	UNIG2017	DM - 55	50.00	GAL	354.32	LBS	RQ, Hazardous waste solid, n.o.s. (METHYL ETHYL KETONE)	$295
Waste Codes:	D035 F003								
DV155507-57	10629149JJ	AVAG1854	DM - 55	50.00	GAL	625.28	LBS	Hazardous waste solid, n.o.s.(Toluene, Methanol)	
Waste Codes:	D001 D022 F003 F005								

PFSG Bulk Shipment Summary

Inventory Item	Manifest #	Approval	CT - CS	VOLUME	UM	WEIGHT	UM	DOT Name	est Price
DV155507-58	10629149JJ	AVAG1854	DM - 55	50.00	GAL	625.28	LBS	Hazardous waste solid, n.o.s.(Toluene, Methanol)	
Waste Codes:	D001 D022 F003 F005								
DV155507-55	10629149JJ	AVAG1856	DM - 55	50.00	GAL	625.28	LBS	Hazardous waste solid, n.o.s. (Toluene, Cadmium, Styrene)	
Waste Codes:	D001 D006 D022 F003 F005								
DV155507-56	10629149JJ	AVAG1856	DM - 55	50.00	GAL	625.28	LBS	Hazardous waste solid, n.o.s. (Toluene, Cadmium, Styrene)	
Waste Codes:	D001 D006 D022 F003 F005								
DV155550-1	10628506JJ	AV54221	DM - 55	30.00	GAL	212.59	LBS	Hazardous waste, solid, n.o.s.(Acetone,Xylene)	$280
Waste Codes:	D035 F003 F005								
DV155849-1	10973933JJ	AV75700	DF - 15	5.00	GAL	35.43	LBS	Waste Flammable solids, organic, n.o.s. (XYLENE / ALCOHOL)	
Waste Codes:	D001 F003 F005								
DV155849-2	10973933JJ	AV75700	DF - 15	5.00	GAL	35.43	LBS	Waste Flammable solids, organic, n.o.s. (XYLENE / ALCOHOL)	
Waste Codes:	D001 F003 F005								
DV155788-6	9310344JJK	AV69192	DM - 55	50.00	GAL	354.32	LBS	Waste Paint related material	
Waste Codes:	D001 D035								
DV155035-2	10629030JJ	AV74759	DF - 55	40.00	GAL	170.07	LBS	Hazardous waste, solid, n.o.s. (PERCHLOROETHYLENE / FILTERS)	$296
Waste Codes:	D039 F002								
DV155500-2	10629144JJ	UTIG5821	DM - 55	50.00	GAL	500.22	LBS	Waste Paint related material(Barium)	$115
Waste Codes:	D001 D005								
DV155607-1	10628517JJ	ELEG4082	DM - 55	50.00	GAL	212.59	LBS	RQ, Waste Paint related material	$125
Waste Codes:	D001 D007 D035 F003 F005								
DV155607-3	10628517JJ	ELEG4082	DM - 55	50.00	GAL	212.59	LBS	RQ, Waste Paint related material	$125
Waste Codes:	D001 D007 D035 F003 F005								

PFSG Bulk Shipment Summary

Inventory Item	Manifest #	Approval	CT - CS	VOLUME	UM	WEIGHT	UM	DOT Name	est Price
DV155607-2	10628517JJ	ELEG4082	DM - 55	50.00	GAL	212.59	LBS	RQ, Waste Paint related material	$125
Waste Codes:	D001 D007 D035 F003 F005								
DV155650-12	10628528JJ	UNIG2193	DM - 55	50.00	GAL	333.48	LBS	Waste Paint related material	$95
Waste Codes:	D001 D035 F003 F005								
DV155650-5	10628528JJ	UNIG2193	DM - 55	50.00	GAL	333.48	LBS	Waste Paint related material	$95
Waste Codes:	D001 D035 F003 F005								
DV150609-7	9310069JJK	AV71214	DF - 5	5.00	GAL	35.43	LBS	Non-Regulated Material (RESPIRATOR CARTRIDGES)	$38
Waste Codes:									
DV155650-3	10628528JJ	UNIG2193	DM - 55	50.00	GAL	333.48	LBS	Waste Paint related material	$95
Waste Codes:	D001 D035 F003 F005								
DV155650-2	10628528JJ	UNIG2193	DM - 55	50.00	GAL	333.48	LBS	Waste Paint related material	$95
Waste Codes:	D001 D035 F003 F005								
DV155814-3	10973928JJ	PF1253	DF - 30	30.00	GAL	300.13	LBS	Waste Flammable solids, organic, n.o.s. (PARAFFIN / ALCOHOL)	$154
Waste Codes:	D001								

Total Items: 34 Total Vol.: 3540.06 Total Wt.: 19862.33 Est Rev. $7,137

Notice of Approval

165848-1 / ANN859
256-236-8641
ANNISTON PLATING/METAL FINISH
1301 PARKWOOD DRIVE
ANNISTON, AL 36201

165848-1 / ALD983191859
TAMMI GRACE 256-236-8641
ANNISTON PLATING/METAL FINISH
1301 PARKWOOD DRIVE
ANNISTON, AL 36201

Thank you for your submission of the Perma-Fix Waste Profile Form. We have evaluated your waste stream, and it has been approved for management at a fully-permitted TSDF. Listed below, and on the attached pages, please find the pertinent information for the proper disposal of the waste. Pricing is included along with a copy of the analysis (if applicable), standard terms and conditions, and container shipment requirements. By shipping under this approval, you agree to the price set forth in this approval. In addition, you may be subject to additional fees or rejection should the shipped waste stream not conform to the specifications of this Waste Profile.

TSD Facility: PERMA FIX OF SOUTH GEORGIA
Profile # / Approval #: AV62155 /
RCRA/EPA Waste Codes: 0000

Authorized: 12/16/2009
Expires: 12/16/2010

DOT Description: Non Regulated Material (Coolant & Oil Dry)

Product	Common Description	Price	Unit	Container	Min. Charge
LF-SLD-03	COOLANT & OIL DRY	$200.00	DM	DM 55	

Optional Charges (if Applicable)

As required per 40 CFR 264.12(.b), this letter serves as notification that Perma-Fix has the appropriate permits in place to accept and manage your waste(s). Due in part to our permit, non-conforming waste may be rejected at a rate of $250.00, plus round trip transportation if the discrepancy cannot be resolved via manifest corrections or price adjustments.

We appreciate your interest in our company and we look forward to assisting you with the disposal of your waste. To place an order, please contact our customer service department. Our telephone number is (229) 244-0474 in Valdosta, GA.

Sincerely,

lason Kirkland
Operations Manager
Perma-Fix of South Georgia

Perma-Fix of South Georgia
Compliance Review

PROFILE: AV62155

Customer Service Review Approved _____ Rejected _____ Date _____

Profile: AV62155 7

Generator: ANNISTON PLATING/METAL FINISH. EPA ID: ALD983191859

Bill To: ANNISTON PLATING/METAL FINISH. Reference: ANN859

Comments: _____

Changes Authorized By: _____ Copy Requested: _____ Yes____ No ____

Compliance Officer Approval Approved LK. Rejected _____ Date 12/16/09

DPT Shipping Name: Non Regulated Material (Coolant & Oil Dry)

UN/NA #

Form Code:

Hazard Class:

Packing Group:

Waste Codes:

0000

Combustible Liquid: _____ Non-Regulated: _____

Biennial: Source: G32 Form: W310 MMC: H141 Origin: _____ TRI Attached: Y / N

Two Major Hazardous Components: _____

Comments: _____

Price Approval Approved _____ Rejected _____ Date 12/16/09

Container Sizes: 55

Planned Disposal: 6 PR11 LF-SLD-03 Process Code: P6A

Comments: _____

$200

Facility Approval Approved _____ Rejected _____ Date _____

Class Code: _____

Comments: _____

PermaFix® environmental services

PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. RODGERS CIRCLE - VALDOSTA, GA 31601
229-244-0474 Fax: 229-333-0328

Waste Material Profile

Profile: AV62155

A: GENERATOR INFORMATION

Generator	ANNISTON PLATING/METAL FINISH.	Contact Name	TAMMI GRACE
Address	1301 PARKWOOD DRIVE	Contact Phone	256-236-8641
City, St, Zip	ANNISTON AL 36201	Contact Fax	
Phone			
Fax	256-236-0673		
EPA ID	ALD983191859		

B: BILL TO INFORMATION

Billing To	ANNISTON PLATING/METAL FINISH.	Contact Name	TAMMI GRACE
Address	1301 PARKWOOD DRIVE	Contact Phone	
City, St., Zip	ANNISTON AL 36201	Contact Fax	
Phone			
Fax	256-236-0673		
EPA ID	ALD983191859		

C: COMMON NAME OF THE WASTE

Waste Name: COOLANT & OIL DRY

Generating Process: waste coolant and absorbant from spill

IS THIS WASTE:

	YES/NO		YES/NO		YES/NO
Spent	Y	Spill	Y	Household waste?	N
Virgin	N	Labpack	N	Soil from UST removal?	N
Off-Spec	N	Subject to an exemption?	N	Other?	N
WWT sludge	N				

D: HAZARDOUS CHARACTERISTICS

Is this waste:

	YES/NO
Radioactive	N
Bio-Hazard	N
Polymerizable	N

Does this waste contain:

	YES/NO
Asbestos	N
PCB's > 50 ppm	N
Hexavalent Chrome	N
HOC's > 1000 ppm	N
VOC's > 500 ppmw	N

Friable = N

E: PHYSICAL DATA

Odor: MILD
pH: 7.1 - 12.4 PH
BTU/lb: < 5000 BTU/LB
% Water % by vol: 5 - 10 PCT
Flash Point: NA F
Spec. Grav: .8 1 SP.GR.
Chloride % by wt: < 2 PPM

Solid 85 - 90 PCT
Sludge -
Liquid 10 - 15 PCT
Debris

Dust ☐ Granular ☐ Chunks ☐ Monolith ☐
Pumpable N Pourable Y
Free Liquids 10 25 PCT Viscosity ☐ (Hi, Med, Low)

F: COMPOSITION OF WASTE

Coolant & oil	10 - 15	PCT
absorbants & oil dry	85 - 90	PCT

G. WASTE CHARACTERIZATION

	YES/NO
1. Is this a listed EPA RCRA hazardous waste (F, K, P, U) as defined in 40 CFR 261.30	N
2. a.) Is this a liquid waste with a flash point < 140F as defined in 40 CFR 261.21 (D001)	N
b.) Is this an ignitable solid as defined in 40 CFR 261.21 (D001)	N
c.) Is this an oxidizer as defined in 49 CFR 173.127 (D001)	N
d.) If yes to a, b, or c. Is this a High TOC waste	N
3. a.) Is this a liquid waste with a pH < 2 or > 12.5 (D002)	N
b.) Is this a liquid waste that corrodes steel as defined in 40 CFR 261.22 (D002)	N

4. Is this a reactive waste as defined in 40 CFR 261.23 (D003)
   If yes, specify the subcategory: Water Reactive ☐ Air Reactive ☐ Explosive ☐ Other Reactive ☐

Reactive Cyanide: conc. _____ Reactive Sulfide: conc. _____

Waste Code	Constituent	Reg. Level	Actual Conc.	Waste Code	Constituent	Reg. Level	Actual Conc.
D004	Arsenic	5.0		D024	m-Cresol	200	
D005	Barium	100		D025	p-Cresol	200	
D006	Cadmium	1.0		D026	Cresol(o, m, p)	200	
D007	Chromium	5.0		D027	1, 4 Dichlorobenzene	7.5	
D008	Lead	5.0		D028	1, 2-Dichloroethane	0.5	
D009	Mercury	0.2		D029	1, 1-Dichloroethylene	0.7	
D010	Selenium	1.0		D030	2, 4-Dinitrotulene	0.13	
D011	Silver	5.0		D031	Heptachlor	0.008	
D012	Endrin	0.02		D032	Hexachlorobenzene	0.13	
D013	Lindane	0.4		D033	Hexachlorobutadiene	0.5	
D014	Methoxychlor	10		D034	Hexachloroethane	3	
D015	Toxaphene	0.5		D035	Methyl Ethyl Ketone	200	
D016	2, 4 - D	10		D036	Nitrobenzene	2	
D017	2, 4, 5 - T (Silvex)	1		D037	Pentachlorophenol	100	
D018	Benzene	0.5		D038	Pyridine	5	
D019	Carbon Tetrachloride	0.5		D039	Tetrachloroethylene	0.7	
D020	Chlordane	0.03		D040	Trichloroethylene	0.5	
D021	Chlorobenzene	100		D041	2, 4, 5-Trichlorophenol	400	
D022	Chloroform	6.0		D042	2, 4, 6-Trichlorophenol	2	
D023	o-Cresol	200		D043	Vinyl Chloride	0.2	

Based on: Total Analysis [N] TCLP Analysis [N] Generator Knowledge [N]

	YES/NO
5. Is this a EPA Toxic Waste (D004 - D043) as defined in 40 CFR 261.24?	N
If D009: Is the total Mercury concentration above 260 ppm?	N
* If this is a D001, D002, D003(selected) or D004 - D043 does it contain any of the Underlying Hazardous Constituents (UHC) above Universal Treatment Standards (UTS)?	N
If Yes, include a UTS/UHC form with the profile	
6. Is this waste a Dioxin or Furan per 40 CFR 261.31?	N
7. a.) Is this a Non-Hazardous Waste?	Y
FOR WASTE DISPOSAL AT PERMA-FIX OF MICHIGAN ONLY:	
b.) Is this a hazardous waste by state regulation only?	N
c.) Is this a Michigan Act 451 listed hazardous waste?	N

If you answered Yes to any question in Section G, enter the appropriate waste code(s) on the lines below.

Waste Codes: 0000

Please list any Toxic Release Inventory Constituents per EPCRA Section 313 not identified above.

Waste Material Profile

PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. RODGERS CIRCLE - VALDOSTA, GA 31601
229-244-0474 Fax: 229-333-0328

Profile: AV62155

H. BENZENE NESHAP 40 CFR 61, SUBPART FF (Hazardous waste with Benzene Only)

If question 1, 2, or 3 is No, proceed to section I.

	YES/NO
1. Is this waste stream generated at a facility with a SIC code listed under NESHAP, or a TSDF that treats NESHAP waste? SIC Code _____ listed codes: (2800-2899, 2911, or 3312)	N
2. Does the waste contain > 10% water?	N
3. Is the total Annual Benzene quantity from the facility waste greater that 1 Mg/Yr (2,200 lbs/yr)?	N

If Question 1, 2, or 3 is No, proceed to section I.

4. What is the total Benzene concentration in Your Waste? _____

(Do not use TCLP results. Acceptable laboratory methods include 8020, 8260, 602, and 624)

5. What is the TAB quantity for the generator facility? _____ Mg/Yr

I. PACKAGING/QUANTITY

Container Type/Size: DM 55

Rate of Generation: 1 GAL per OT

J. DOT SHIPPING INFORMATION

Enter the proper DOT shipping name from 49 CFR 172.101 table.

Non Regulated Material (Coolant & Oil Dry)

List 2 major components: _____

Hazard Class _____ UN/NA Code _____ PG _____

K. ATTACHMENTS (Check all that apply and include with profile)

[N] UST/UHC Form	[N] Process Flow Diagram	[N] Generator authorization	[N] Organic Peroxide addendum
[N] Analysis	[N] PCB source statement	[N] Labpack inventory sheet	
[N] Additional Description	[N] Material Safety Data Sheet	[N] Land Disposal Notification	

L. CERTIFICATION

I hereby certify that all the information submitted in this and all attached documents are complete and accurate. All known and suspected hazards have been disclosed. By signing below, I give Perma-Fix Environmental Services, Inc., and all of its subsidiaries, permission to make minor changes to this profile prior to its acceptance should they find an error or omission.

Printed Name: Philip Martin Signature: _____ Date: 12-16-09

** Signatures other than the generator are required to submit an approved authorization letter from the generator to certify this profile.

INTERNAL USE ONLY: Approval Review: 1 _____ 2 _____ 3 _____

Profile ID Number AV62155 Approval Status: S Form Code:

Waste Codes: 0000

DOT: Non Regulated Material (Coolant & Oil Dry)

Destination/Consolidation Code Price DM Initial

Outbound Approval _____ Facility

Notes:

Perma-Fix of Orlando	Perma-Fix of Michigan	Perma-Fix of South Georgia	Perma-Fix Treatment Services	Perma-Fix of Dayton
FLD980559728	MID095903194	GAD093380614	OKD000402396	OHD004274031

Notice of Approval

167483-1 / ELE374
TONY MAROSKA 321-727-0633
ELECTRONIC SHEETMETAL CRAFTMAN
3675 W. NEW HAVEN AVE.
MELBOURNE, FL 32904

167483-1 / FLD067834374
TONY MAROSKA 321-727-0633
ELECTRONIC SHEETMETAL CRAFTMAN
3675 W. NEW HAVEN AVE.
MELBOURNE, FL 32904

Thank you for your submission of the Perma-Fix Waste Profile Form. We have evaluated your waste stream, and it has been approved for management at a fully-permitted TSDF. Listed below, and on the attached pages, please find the pertinent information for the proper disposal of the waste. Pricing is included along with a copy of the analysis (if applicable), standard terms and conditions, and container shipment requirements. By shipping under this approval, you agree to the price set forth in this approval. In addition, you may be subject to additional fees or rejection should the shipped waste stream not conform to the specifications of this Waste Profile.

TSD Facility: PERMA FIX OF SOUTH GEORGIA
Profile # / Approval #: ELEG4082 / ELEG4082
RCRA/EPA Waste Codes: D001 D007 D035 F003 F005

Authorized: 02/01/2002
Expires: 08/03/2011

DOT Description: RQ, Waste Paint related material, 3, UN1263, II

Product	Common Description	Price	Unit	Container	Min. Charge
FS-LIQ-02	PAINT/ THINNER (CHROME)	$125.00	DM	55	

Optional Charges (if Applicable)

As required per 40 CFR 264.12(.b), this letter serves as notification that Perma-Fix has the appropriate permits in place to accept and manage your waste(s). Due in part to our permit, non-conforming waste may be rejected at a rate of $250.00, plus round trip transportation if the discrepancy cannot be resolved via manifest corrections or price adjustments.

We appreciate your interest in our company and we look forward to assisting you with the disposal of your waste. To place an order, please contact our customer service department. Our telephone number is (229) 244-0474 in Valdosta, GA.

Sincerely,

Jason Kirkland
Operations Manager
Perma-Fix of South Georgia

PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. RODGERS CIRCLE, VALDOSTA, GA 31601
, 228-244-0474 Fax: 229-333-0326
GAD093380814

WASTE PROFILE RENEWAL

Customer:
ELECTRONIC SHEETMETAL CRAFTMAN
3675 W. NEW HAVEN AVE.
MELBOURNE, FL 32904
TONY MAROSKA 321-727-0633

FAX: 321-951-4037

Generator:
ELECTRONIC SHEETMETAL CRAFTMAN
3675 W. NEW HAVEN AVE.
MELBOURNE, FL 32904
TONY MAROSKA 321-727-0633

FAX: 321-951-4037

Dear Generator / Customer:

This notification is required by 40 CFR part 264.13 / 265.13 and the Waste Analysis Plan of the above named TSDF and must be repeated annually for each waste stream managed by the named TSDF.

Wastestream Identification:

PROFILE NUMBER:	ELEG4082
DESCRIPTION:	RQ, Waste Paint related material
COMMON NAME:	PAINT/ THINNER (CHROME)
GEN. PROCESS:	
WASTE CODES:	D001, D007, D035, F003, F005
EXPIRATION:	2/1/2003

Composition
(Chrome, Methyl Ethyl Ketone)

Sign and date this original to:

Certification: I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Tony Maroska — Certified By
VICE PRESIDENT — Title
8/3/10 — Date

Please check the appropriate box below.

☒ RENEW WITHOUT CHANGE. Sign and return.

☐ RENEW WITH CHANGE. Complete new profile and indicate changes in waste generating process and/or wastestream that are different from information last submitted. Sign and return.

☐ CANCEL this wastestream approval. Sign and return.

If you should have any questions, please call your broker or Sales Representative.

TSDF Management: (TSDF LAB USE ONLY) Salesrep: GREG COWART/ SE03
Notes:
AUTHORIZED BY: Date: 8/3/10 2nd Auth: Date:
Form Code: Product code: TR INTER-CO Source: Process Code: TRANSFER Cons. Code:
Outbound Approval #: FJ-03-07 Unit Charge: $125- 3rd Auth. F-F1 Unit Cost:

H061 W209 FOCIS FS-CQ-02 F-F1 ✓

Chemical Conservation of Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Georgia 31601
EPA ID: GAD093380814
1-912-244-0474

GAD981236490
UNION TANK CAR COMPANY
400 S. Blanchard St.

PERMAFIX

ATTN:Beth
PERMA-FIX - ORLANDO
10100 Rocket Blvd.
Orlando, FL
32824

Valdosta, GA
31601
01/05/18
Gary Rowe
912 244-4125

Re: Approval Number :UNIG2193

Dear Generator/Customer:

Please be advised that the waste stream described below has been accepted for processing at our facility in Valdosta, Ga. Chemical Conservation of Georgia has all the appropriate local, state, and federal permits to process this waste stream.

1. Proper Shipping Name :RQ Waste Paint Related Material
2. Technical Name :
3. Hazard Class :3, PG II
4. D.O.T. ID. :UN1263
5. EPA Waste Code(s) :F003 F005 D001 D035
6. Add'l Description :# 9062

paint

IA

7. Price*: 40.00 /55 Gallon Drum
*(PROCESSING ONLY price is valid for a period of 30 days from date of issue and subject to change without notice.)

Chemical Conservation of Georgia, Inc. (CCGI) reserves the right to reject any and all waste on receipt at our facility. A properly completed manifest, drum labels, and proper shipping drum or container is required for all shipments.

The above Approval Number MUST appear on all manifests (in box J), drum labels, and correspondence concerning this material. This will speed up processing time at our site, reduce risk of rejection, and increase safety of employees sampling your waste.

If you have questions concerning this approval please call the Valdosta facility at (912) 244-0474 and ask for one of our customer service representatives.

Any changes in the composition of this waste stream, process design modification, etc., should be reported to CCGI to determine if additional sampling and analysis is required.

We look forward with confidence to being of service to you.

Sincerely,

Micheal Downey
Facilities Manager

Chemical Conservation of Georgia, Inc.
A Subsidiary of Perma-Fix Environmental
1612 James P. Rodgers Circle, Valdosta Georgia 31601
(912) 244-0474 FAX: (912) 333-0328

CUSTOMER SERVICE REVIEW: Approved: JH Rejected: Date: 5/18/01

Profile Number: UNIG 2193 EPA ID Number: GAD981236490

Generator: UNION TANK CAR

Broker: PERMA-FIX ORLANDO Ref No: 3002

Comments:

COMPLIANCE OFFICER REVIEW: Approved: JH Rejected: Date: 5/18/01

Proper Shipping Name: RQ WASTE PAINT RELATED MATERIAL

DOT Number: UN1263 EPA Waste Codes: F003 F005 D001, D035

Form Code: B203 Hazard Class: X 3 4.1 9 6.1 Other

Classification code: 1A Combustible Liquid Non-Regulated

Package Group: I II X III

Two Major Hazardous Components N/A

SALES COORDINATOR REVIEW: Approved: JH Rejected: Date: 5-18-01

Container Size: 5, 10, 20, 30, 55, 85 PALLET LAB PACK Price: 400.00

Planned Disposal:

Comments:

Facility Review: Approved: Rejected: Date:

Comments:

☐ Chemical Conservation Corp.
10190 Rocket Blvd. - Orlando, FL 32824
407-859-4441 Fax: 407-855-1812

☐ Portus-Fix of Michigan, Inc.
18550 Allen Rd. - Brownstown, MI 48192
800-282-9281 Fax: 734-282-1685

☒ Chemical Conservation of Georgia
1612 James P. Rodgers Circle - Valdosta
912-244-0474 Fax: 912-333-0328

WASTE MATERIAL PROFILE

Please Print

A: GENERATOR: Union Tank car EPA ID: GAD981236490
400 S. Blanchard Street Valdosta, Georgia 31601
SITE ADDRESS STATE ZIP
Same
MAILING ADDRESS STATE ZIP

CONTACT: Gary Rowe PHONE: 912-244-4125 FAX: 912-244-6036

B: BILL TO:
MAILING ADDRESS STATE ZIP

CONTACT: PHONE: FAX:

C: COMMON NAME OF THE WASTE (PLEASE PRINT) Paint Waste
GENERATING PROCESS (attach flow diagram if available): cleanup of paint equipment

IS THIS WASTE:

	YES	NO		YES	NO
Spent	☒	☐	Spill	☐	☒
Virgin	☐	☒	Labpack	☐	☒ (Attach Inventory Sheet)
Off-Spec	☐	☒	Subject to an exemption?	☐	☐ (Check Below)
WWT sludge	☐	☒			

☐ Household waste? ☐ Soil from UST removal ☐ Other?

D: COMPOSITION OF WASTE: List all chemical/compounds. Provide MSDS's or analysis if available.

Chemicals/compounds	%	Chemicals/compounds	%	Chemicals/compounds	%
Ethyl acetate	10-20	Polyamine	0-25		
MEK	20-40	Toluene	15-20		
Paint Pigment	10-50	Xylene	5-15		

Total Must = 100

E: HAZARDOUS CHARACTERISTICS:

Is this waste a:	YES	NO		
Radioactive	☐	☒		
Bio-Hazard	☐	☒		
Polymerizable	☐	☒		
Does this waste contain asbestos	☐	☒	→	☐ Friable ☐ Non Friable?
PCB's > 50 ppm	☐	☒	→	Conc? ppm
Hexavalent Chromic	☐	☒	→	Conc? ppm
HOC's >1000ppm	☐	☒	→	Conc? ppm
VOC's > 500ppmw	☒	☐	→	Conc? ppmw (both 5d & 2d subpart ad) ☐

F: PHYSICAL DATA:

Odor	Flash Point	pH	Spec. Grav.	BTU/lb.	Chloride % by wt.	Water % by vol.
Strong ☐	<73 ☐	<2 ☐	0.8 ☐	<5000 ☐	<2 ☒	<5 ☒
Mild ☒	73-99 ☐	2.1-7 ☐	0.8-1.0 ☒	5-10000 ☐	2-5 ☐	5-10 ☐
None ☐	100-139 ☒	7.1-12.6 ☒	1.1-1.7 ☐	>10000 ☒	5-8 ☐	10-15 ☐
Describe	140-200 ☐	>12.5 ☐	>1.7 ☐		8-11 ☐	15-20 ☐
	>200 ☐	N/A ☐			11-14 ☐	20-25 ☐
	N/A ☐				>14 ☐	>25 ☐

State: Solid ___ % → Dust ☐ Granular ☐ Chunks ☐ Monolith ☐ In Gals ___
Sludge ___ % → Pumpable: ☒ Yes ☐ No Pourable: ☒ Yes ☐ No ☐ In Gals ___
Liquid 100 % → Free liquids: ☐ Yes ☐ No Viscosity: ☒ Low ☐ Medium ☐ High
Debris ___ % → Describe (size & content):

REV 7/6/00

#9062

[redacted]

C: WASTE CHARACTERIZATION:

		YES	NO
1	Is this a listed EPA RCRA hazardous waste (F,K,P,U) as defined in 40 CFR 261.30	☐	☒
2 a.	Is this a liquid waste with a flash point <140F as defined in 40 CFR 261.21 (D001).	☐	☒
b.	Is this an ignitable solid as defined in 40 CFR 261.21.(D001)	☐	☒
c.	Is this an oxidizer as defined in 40 CFR 173.127. (D001)	☐	☒
d.	If yes to a,b, or c. Is this a High TOC waste	☐	☐
3 a.	Is this a liquid waste with a pH<2 or >12.5. (D002)	☐	☒
b.	Is this a liquid waste that corrodes steel as defined in 40 CFR 261.22 (D002).	☐	☒
4	Is this a reactive waste as defined in 40 CFR 261.23. (D003)	☐	☒

If yes, check the subcategory: ☐ Water Reactive ☐ Air Reactive ☐ Explosive ☐ Other Reactive

Reactive Cyanide: conc. _____ ppm Reactive Sulfide: conc. _____ ppm

Waste Code	Constituent	< Than	Reg Level	> Than	Conc	Waste Code	Constituent	< Than	Reg Level	> Than	Conc
D004	Arsenic	☒	5.0	☐		D024	m-Cresol	☒	200	☐	
D005	Barium	☒	100	☐		D025	p-Cresol	☒	200	☐	
D006	Cadmium	☒	1.0	☐		D026	Cresol(o, m, p)	☒	200	☐	
D007	Chromium	☒	5.0	☐		D027	1,4 Dichlorobenzene	☒	7.5	☐	
D008	Lead	☒	5.0	☐		D028	1,2-Dichloroethane	☒	0.5	☐	
D009	Mercury	☒	0.2	☐		D029	1,1-Dichloroethylene	☒	0.7	☐	
D010	Selenium	☒	1.0	☐		D030	2,4-Dinitrotoluene	☒	0.13	☐	
D011	Silver	☒	5.0	☐		D031	Heptachlor	☒	0.008	☐	
D012	Endrin	☒	0.02	☐		D032	Hexachlorobenzene	☒	0.13	☐	
D013	Lindane	☒	0.4	☐		D033	Hexachlorobutadiene	☒	0.5	☐	
D014	Methoxychlor	☒	10	☐		D034	Hexachloroethane	☒	3.0	☐	
D015	Toxaphene	☒	0.5	☐		D035	Methyl Ethyl Ketone	☒	200	☐	2040
D016	2,4 - D	☒	10	☐		D036	Nitrobenzene	☒	2.0	☐	
D017	2,4,5-TP(Silvex)	☒	1	☐		D037	Pentachlorophenol	☒	100	☐	
D018	Benzene	☒	0.5	☐		D038	Pyridine	☒	5.0	☐	
D019	Carbon Tetrachloride	☒	0.5	☐		D039	Tetrachloroethylene	☒	0.7	☐	
D020	Chlordane	☒	0.03	☐		D040	Trichloroethylene	☒	0.5	☐	
D021	Chlorobenzene	☒	100	☐		D041	2,4,5-Trichlorophenol	☒	400	☐	
D022	Chloroform	☒	6.0	☐		D042	2,4,6-Trichlorophenol	☒	2.0	☐	
D023	o-Cresol	☒	200	☐		D043	Vinyl Chloride	☒	0.2	☐	

Based on: Total Analysis ☐ TCLP Analysis ☐ Generator Knowledge ☐

		YES	NO
5	Is this a EPA Toxic Waste (D004-D043)* as defined in 40 CFR 261.24?	☒	☐
	If D009: Is the total Mercury concentration above 260 ppm?	☐	☒
	* If this is a D001, D002, D003(selected) or D004-D043 does it contain any of the Underlying Hazardous Constituents (UHC) above Universal Treatment Standards(UTS)?	☐	☒
	If Yes, include a UTS/UHC form with the profile		
6	Is this waste a Dioxin Or Furan per 40 CFR 261.31?	☐	☒
7 a.	Is this a Non-Hazardous Waste?	☐	☒
	FOR WASTE DISPOSAL AT PERMA-FIX OF MICHIGAN ONLY:		
b.	Is this a hazardous Waste by state regulation only	☐	☒
c.	Is this a Michigan Act 451 listed hazardous waste?	☐	☒

If you answered Yes to any question in Section C, enter the appropriate waste code(s) on the lines below.

Waste Codes: D001 D035 F003 F005

Please list any Toxic Release Inventory Constituents per EPCRA Section 313 not identified above.

_____

_____

#7062

REV 7/6/00

H. BENZENE/NESHAP 40 CFR 61, SUBPART FF (Hazardous waste with Benzene Only)

If question 1,2 or 3 is No, proceed to section I.

	YES	NO
1 Is this waste stream generated at a facility with a SIC code listed under NESHAP, or a TSDF that treats NESHAP waste? SIC Code _____ listed codes: (2800-2899, 2911, or 3312)	☐	☑
2 Does the waste contain > 10% water	☐	☑
3 Is the total Annual Benzene quantity from the facility waste greater than 10 Mg/Yr (2,200lbs/yr). If Question 1,2, or 3 is No, proceed to Section I	☐	☑

4 What is the total Benzene concentration in Your Waste? _____ % or _____ ppmw.
(Do not use TCLP results. Acceptable laboratory methods include 8020, 8240, 8260, 602, and 624)

5 What is the TAB quantity for the generator facility? _____ Mg/Year

I. PACKAGING/ QUANTITY

1 Non-Bulk ☐ 1 gal ☐ 5 gal ☑ 55 gal ☐ 85 gal ☐ Other _____
Cubic Yard ☐ Boxes ☐ Bags ☐ Totes ☐ Pallets ☐ Other _____
Quantity 85 x 55 Per: ☐ Month ☐ Quarter ☑ Year ☐ Once

2 Bulk ☐ Tanker ☐ Van Truck ☐ Rolloff ☐ Dump Trailer ☐ Closed Top ☐ Open Top
☐ Gallons ☐ Pounds ☐ Yards ☐ Tons
Quantity _____ lbs. Per: ☐ Month ☐ Quarter ☐ Year ☐ Once

J. DOT SHIPPING INFORMATION:

Enter proper DOT shipping name from 49 CFR 172.101 table:

RQ Waste Paint Related Material

List 2 major components: MEK, Toluene

Hazard Class 3 (UN)/NA code 1263 PG 2

K. ATTACHMENTS: (Check all that apply and include with profile)

☐ UTS/UHC Form ☐ Process Flow Diagram ☐ Generator authorization
☐ Analysis ☐ PCB source statement ☐ Labpack inventory sheet
☐ Additional Description ☐ Material Safety Data Sheet ☐ Land Disposal Notification

L. CERTIFICATION:

I hereby certify that all the information submitted in this and all attached documents is complete and accurate. All known and suspected hazards have been disclosed. By signing below, I give Perma-Fix Environmental Services, Inc., and all of its subsidiaries, permission to make minor changes to this profile prior to its acceptance should they find an error or omission.

Printed Name: L GARY ROWE Signature: L Gary Rowe Date: 5/18/01

**Signatures other than the generator are required to submit an approved authorization letter from the generator to certify this profile

INTERNAL USE ONLY: Review 1 _____ 2 _____ 3 _____

Profile I.D. No. _____ APPROVED ☐ REJECTED ☐ Form Code B _____

Waste Codes _____

DOT _____

Destination: Flammable Liquids (Fuel Blendable) Greater than 8,000 BTU/LB — $ 75.00 per 55 gal Drum

Out Bound

Notes: Flammable Liquids (Dispersible sludge greater than 25gallons — $150.00 per 55 gal Drum

Chemical Cap FLD98055 Flammable Liquids (Solids and non-dispersible sludge) — $275.00 per 55 gal Drum

Georgia

REV 7/6/00

#9062

Hill W002 Cadell LF-SLD-03 F-01 ✓

Chemical Conservation of Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Georgia 31601
EPA ID: GAD093380814
1-912-244-0474

GAD981236490
UNION TANK CAR COMPANY
400 S. Blanchard St.

~~PERMAFIC~~
ATTN:Beth
PERMA-FIX - ORLANDO
10100 Rocket Blvd.
Orlando, FL
32824

Valdosta, GA
31601
01/04/30
Gary Rowe
912 244-4125

Re: Approval Number :UNIG2017

Dear Generator/Customer:

Please be advised that the waste stream described below has been accepted for processing at our facility in Valdosta, Ga. Chemical Conservation of Georgia has all the appropriate local, state, and federal permits to process this waste stream.

1. Proper Shipping Name :Hazardous Waste Solid, n.o.s.
2. Technical Name :Methyl Ethyl Ketone
3. Hazard Class :9, PG III
4. D.O.T. ID. :NA3077
5. EPA Waste Code(s) :F005 D035
6. Add'l Description :# 8857

Rog

7. Price*: 250.00 /55 Gallon Drum
*(PROCESSING ONLY price is valid for a period of 30 days from date of issue and subject to change without notice.)

Chemical Conservation of Georgia, Inc. (CCGI) reserves the right to reject any and all waste on receipt at our facility. A properly completed manifest, drum labels, and proper shipping drum or container is required for all shipments.

The above Approval Number MUST appear on all manifests (in box J), drum labels, and correspondence concerning this material. This will speed up processing time at our site, reduce risk of rejection, and increase safety of employees sampling your waste.

If you have questions concerning this approval please call the Valdosta facility at (912) 244-0474 and ask for one of our customer service representatives.

Any changes in the composition of this waste stream, process design modification, etc., should be reported to CCGI to determine if additional sampling and analysis is required.

We look forward with confidence to being of service to you.

Sincerely,

Micheal Downey
Facilities Manager

Chemical Conservation of Georgia, Inc.
A Subsidiary of Perma-Fix Environmental
1612 James P. Rodgers Circle, Valdosta, Georgia 31601
(912) 244-0474 FAX: (912) 333-0328

CUSTOMER SERVICE REVIEW: Approved: JA Rejected: _____ Date: 4/30/01

Profile Number: UNIG 2007 EPA ID Number: GAD981236490

Generator: UNION TANK CAR

Broker: PERMA-FIX ORLANDO Ref No: 8857

Comments:

COMPLIANCE OFFICER REVIEW: Approved: JA Rejected: _____ Date: 4/30/01

Proper Shipping Name: HAZARDOUS WASTE SOLID, N.O.S.

DOT Number: NA3077 EPA Waste Codes: F005 D035

Form Code: B310 Hazard Class: ___ 3 ___ 4.1 X 9 ___ 6.1 ___ Other

Classification code: _____ _____ Combustible Liquid _____ Non-Regulated

Package Group: ___ I ___ II X III

Two Major Hazardous Components: METHYL ETHYL KETONE

SALES COORDINATOR REVIEW: Approved: JA Rejected: _____ Date: 4-30-01

Container Size: 5, 10, 20, 30, 55, 85, PALLET, LAB PACK Price: 5P. 250.00

Planned Disposal:

Comments: vago-

Facility Review: Approved: _____ Rejected: _____ Date: _____

Comments:

☐ Chemical Concentration Corp.
10100 Reunion Blvd. - Orlando, FL 32824
407-859-1441 Fax: 407 855-3913

☐ Petro-Rx of Michigan, Inc.
38550 Allen Rd. - Brownstown, MI 48192
Fax: 734-288-1686

☑ Chemical Conservation of Georgia
1612 James P. Rodgers Circle - Valdosta
912-244-8474 Fax: 912-333-9338

WASTE MATERIAL PROFILE

Please Print

A: GENERATOR: Union Tank Car Company EPA ID: GAD 982 23648
900 South Standard Street Valdosta Ga 31601
SITE ADDRESS STATE ZIP
Same
MAILING ADDRESS STATE ZIP
CONTACT: Gary Rowe PHONE: 912-244-4125 FAX: 912-244-6036

B: BILL TO:
MAILING ADDRESS STATE ZIP
CONTACT: PHONE: FAX:

C: COMMON NAME OF THE WASTE (PLEASE PRINT): Logs
GENERATING PROCESS (attach flow diagram if available): Cleaning of Paint Cars

D: COMPOSITION OF WASTE: List all chemical/compounds. Provide MSDS or analysis if available.

Chemicals/compounds	%	Chemicals/compounds	%	Chemicals/compounds	%
Logs Contaminated with MEK	100				
				Total Must =	100

E: HAZARDOUS CHARACTERISTICS:

Is this waste a:	YES	NO			
			Radioactive		
			Biohazard		
			Polymerizable		
Does this waste contain			asbestos		
			PCB's > 50 ppm		
			Hexavalent Chromium		
			HOC's >1000ppm		
			VOC's > 500ppm		

☐ Friable ☐ Non Friable?
Class? ppm
Class? ppm
Class? ppm
Class? ppm (Specify Meth 304 & 305 analysis req)

F: PHYSICAL DATA:

Odor	Flash Point	pH	Spec. Grav.	BTU/lb.	Chloride % by wt.	Water % by wt.
☐ Strong	☐ <73	☐ <2	☐ 0.8	☐ <5000	☐ <2	☐ <5
☐ Mild	☐ 73-99	☐ 2.1-7	☐ 0.8-1.0	☐ 5-10000	☐ 2-5	☐ 5-10
☑ None	☐ 100-139	☑ 7.1-12.4	☐ 1.1-1.7	☐ >10000	☐ 5-8	☐ 10-15
☐ Describe	☐ 140-200	☐ >12.5	☐ >1.7		☐ 8-11	☐ 15-20
	☐ >200	☐ N/A			☐ 11-14	☐ 20-25
	☐ N/A				☐ >14	☐ >25

Solids: 100 % → Dust: ☐ Pumpable: ☐ Yes ☐ No Corrosive: ☐ Yes ☐ No Cyanide: ☐ Yes ☐ No Monolith: ☐ In Cake
Sludge: % → Free liquids: ☐ Yes ☐ No Viscosity: ☐ Low ☐ Medium ☐ High
Liquid: % → Describe/size & content):
Debris: % →

REV 7/8/00

#8857 For Truck

RUSH

2017

G. WASTE CHARACTERIZATION

1 Is this a listed EPA RCRA hazardous waste (F,K,P,U) as defined in 40 CFR 261.30 — YES ☐ NO ☐

2 a. Is this a liquid waste with a flash point <140F as defined in 40 CFR 261.21 (D001).
b. Is this an ignitable solid as defined in 40 CFR 261.21.(D001)
c. Is this an ignitor as defined in 40 CFR 173.127. (D001)
d. If you ans a,b, or c. Is this a High TOC waste

3 a. Is this a liquid waste with a pH<2 or >12.5. (D002)
b. Is this a liquid waste that corrodes steel as defined in 40 CFR 261.22 (D002).

4 Is this a reactive waste as defined in 40 CFR 261.23. (D003)
If yes, check the subcategory: ☐ Water Reactive ☐ Air Reactive ☐ Explosive ☐ Other Reactive
Reactive Cyanide: conc. _____ ppm Reactive Sulfide: conc. _____ ppm

Waste Code	Constituent	< Than	Reg Level	> Than	Conc	Waste Code	Constituent	< Than	Reg Level	> Than	Conc
D004	Arsenic	☐	5.0	☐		D024	m-Cresol	☐	200	☐	
D005	Barium	☐	100	☐		D025	p-Cresol	☐	200	☐	
D006	Cadmium	☐	1.0	☐		D026	Cresol(s, m, p)	☐	200	☐	
D007	Chromium	☐	5.0	☐		D027	1,4 Dichlorobenzene	☐	7.5	☐	
D008	Lead	☐	5.0	☐		D028	1,2-Dichloroethane	☐	0.5	☐	
D009	Mercury	☐	0.2	☐		D029	1,1-Dichloroethylene	☐	0.7	☐	
D010	Selenium	☐	1.0	☐		D030	2,4-Dinitrotoluene	☐	0.13	☐	
D011	Silver	☐	5.0	☐		D031	Heptachlor	☐	0.008	☐	
D012	Endrin	☐	0.02	☐		D032	Hexachlorobenzene	☐	0.13	☐	
D013	Lindane	☐	0.4	☐		D033	Hexachlorobutadiene	☐	0.5	☐	
D014	Methoxychlor	☐	10	☐		D034	Hexachloroethane	☐	3.0	☐	
D015	Toxaphene	☐	0.5	☐		D035	Methyl Ethyl Ketone	☐	200	☐	
D016	2,4 - D	☐	10	☐		D036	Nitrobenzene	☐	2.0	☐	
D017	2,4,5-TP (Silvex)	☐	1	☐		D037	Pentachlorophenol	☐	100	☐	
D018	Benzene	☐	0.5	☐		D038	Pyridine	☐	5.0	☐	
D019	Carbon Tetrachloride	☐	0.5	☐		D039	Tetrachloroethylene	☐	0.7	☐	
D020	Chlordane	☐	0.03	☐		D040	Trichloroethylene	☐	0.5	☐	
D021	Chlorobenzene	☐	100	☐		D041	2,4,5-Trichlorophenol	☐	400	☐	
D022	Chloroform	☐	6.0	☐		D042	2,4,6-Trichlorophenol	☐	2.0	☐	
D023	o-Cresol	☐	200	☐		D043	Vinyl Chloride	☐	0.2	☐	

Based on: Total Analysis ☐ TCLP Analysis ☐ Generator Knowledge ☐

5 Is this a EPA Toxic Waste (D004-D043)* as defined in 40 CFR 261.24? — YES ☐ NO ☐
If D009: Is the total Mercury concentration above 260 ppm? ☐ ☐
* If this is a D001, D012, D013(solvent) or D004-D043 does it contain any of the Underlying Hazardous Constituents (UHC) above Universal Treatment Standards(UTS)? ☐ ☐
If Yes, complete a UTS/UHC form with the profile.
6 Is this waste a Dioxin Or Furan per 40 CFR 261.31? ☐ ☐
7 a. Is this a Non-Hazardous Waste? ☐ ☐
FOR WASTE DISPOSAL AT PERMA-FIX OF MICHIGAN ONLY:
b. Is this a hazardous Waste by state regulation only ☐ ☐
c. Is this a Michigan Act 451 listed hazardous waste? ☐ ☐

If you answered Yes to any questions in Section G, enter the appropriate waste code(s) on the lines below.

Waste Codes: F005 D035 _____ _____ _____ _____ _____

Please list any Toxic Release Inventory Compounds per EPCRA Section 313 not listed above.

_____

_____

REV 7/6/00

F8857

H. BENZENE NESHAP 40 CFR 61. SUBPART FF (Hazardous waste with Benzene Only)
If question 1,2 or 3 is No, proceed to section I.

	YES	NO
1 Is this waste stream generated at a facility with a SIC code listed under NESHAP, or a TSDF that treats NESHAP waste? SIC Code _____ listed codes: (2900-2999, 2911, or 3313)	☐	☑
2 Does the waste contain > 10% water	☐	☑
3 Is the total Annual Benzene quantity from the facility waste greater than 10Mg/Yr (2,200lbs/yr). If Question 1,2, or 3 is No, proceed to Section I	☐	☑

4 What is the total Benzene concentration in Your Waste? _____ % or _____ ppmw.
(Do not use TCLP results. Acceptable laboratory methods include 8020, 8240, 8260, 602, and 624)

5 What is the TAB quantity for the generator facility? _____ Mg/Year

I. PACKAGING/ QUANTITY

1 Non-Bulk: ☐ 1 gal ☐ 5 gal ☑ 55 gal ☐ 85 gal ☐ Other _____
Dump Yard ☐ Boxes ☐ Bags ☐ Tubs ☐ Pallets ☐ Other _____
Quantity 1 Per: ☐ Month ☐ Quarter ☑ Year ☐ Once

2 Bulk: ☐ Tanker ☐ Vac Truck ☐ Rolloff ☐ Dump Trailer ☐ Closed Top ☐ Open Top
☐ Gallons ☐ Pounds ☐ Yards ☐ Tons
Quantity 1 lbs. Per: ☐ Month ☐ Quarter ☐ Year ☐ Once

J. DOT SHIPPING INFORMATION:
Enter proper DOT shipping name from 49 CFR 172.101 tables

Hazardous Waste Solid NOS

List 2 major components: Rage MEKP

Hazard Class 9 UN/NA code 3077 PG 3

K. ATTACHMENTS: (Check all that apply and include with profile)

☐ UTS/LHC Form ☐ Process Flow Diagram ☐ Generator authorization
☐ Analysis ☐ PCB source statement ☐ Labpack inventory sheet
☐ Additional Description ☐ Material Safety Data Sheet ☐ Land Disposal Notification

L. CERTIFICATION:
I hereby certify that all the information submitted in this and all attached documents is complete and accurate. All known and suspected hazards have been disclosed. By signing below, I give Perma-Fix Environmental Services, Inc., and all of its subsidiaries, permission to make minor changes to this profile prior to its acceptance should they find an error or omission.

Printed Name: GARY ROWE Signature: Gary Rowe Date: April 30, 20

**Signatures other than the generator are required to submit an approved authorization letter from the generator to certify this profile

INTERNAL USE ONLY: Review 1 _____ 2 _____ 3 _____

Profile I.D. No. _____ APPROVED ☐ REJECTED ☐ Form Code B _____

Waste Code _____

DOT _____

Destination/Consolidation Code _____ Price & Initial _____

Out Bound Approval _____ Facility _____

Notes: 275.00 H

Chemical Conservation Corp. FL D980869718 | Perma-Fix of Michigan, Inc. MID076950124 | Chemical Conservation of Georgia GA0000380814

REV 7/6/00

#8857

Notice of Approval

171067-1 / STE702
TIM FRANKLIN 229-243-0702
STEWARD MACHINE COMPANY, INC.
2431 AIRPORT ROAD SOUTH
BAINBRIDGE, GA 39817

171067-1 / GACESQG39817
TIM FRANKLIN 229-243-0702
STEWARD MACHINE COMPANY, INC.
2431 AIRPORT ROAD SOUTH
BAINBRIDGE, GA 39817

Thank you for your submission of the Perma-Fix Waste Profile Form. We have evaluated your waste stream, and it has been approved for management at a fully-permitted TSDF. Listed below, and on the attached pages, please find the pertinent information for the proper disposal of the waste. Pricing is included along with a copy of the analysis (if applicable), standard terms and conditions, and container shipment requirements. By shipping under this approval, you agree to the price set forth in this approval. In addition, you may be subject to additional fees or rejection should the shipped waste stream not conform to the specifications of this Waste Profile.

TSD Facility: PERMA FIX OF SOUTH GEORGIA
Profile # / Approval #: AV54954 /
RCRA/EPA Waste Codes: D001 D035 F003 F005

Authorized: 05/08/2007
Expires: 05/06/2008

DOT Description: Waste Paint related material, 3, UN1263, III

Product	Common Description	Price	Unit	Container	Min. Charge
FS-SLG-02	PAINT WASTE ZINC SLUDGE	$250.00	DM	55	

Optional Charges (if Applicable)
TRANSPORTATION INCLUDED IN BASE PRICE DM

As required per 40 CFR 264.12(.b), this letter serves as notification that Perma-Fix has the appropriate permits in place to accept and manage your waste(s). Due in part to our permit, non-conforming waste may be rejected at a rate of $250.00, plus round trip transportation if the discrepancy cannot be resolved via manifest corrections or price adjustments.

We appreciate your interest in our company and we look forward to assisting you with the disposal of your waste. To place an order, please contact our customer service department. Our telephone number is (229) 244-0474 in Valdosta, GA.

Sincerely,

Dave Haley
Facility Manager
Perma-Fix of South Georgia

Perma-Fix of South Georgia
Compliance Review

PROFILE: AV54954

Customer Service Review Approved _____ Rejected _____ Date _____

Profile: AV54954 /

Generator: STEWARD MACHINE COMPANY, INC. EPA ID: GACESQG39817

Bill To: STEWARD MACHINE COMPANY, INC. Reference: STE702

Comments: _____

Changes Authorized By: _____ Copy Requested: _____ Yes____ No ____

Compliance Officer Approval Approved DH Rejected _____ Date 5/8/07

DPT Shipping Name: Waste Paint related material

UN/NA # UN1263

Form Code:

Hazard Class: 3

Packing Group: III

Waste Codes:

D001 D035 F003 F005

Combustible Liquid: _____ Non-Regulated: _____

Biennial: Source: _____ Form: W209 MMC: H061 Origin: _____ TRI Attached: Y / N

Two Major Hazardous Components: _____

Comments: _____

Price Approval Approved _____ Rejected _____ Date _____

Container Sizes: SLG

Planned Disposal: Fuels FS-~~[illegible]~~.02 Process Code: F.F1

Comments: $250 ~~[illegible]~~ (T+O)

Facility Approval Approved _____ Rejected _____ Date _____

~~Class Code:~~

Comments: _____

PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. RODGERS CIRCLE - VALDOSTA, GA 31601
229-244-0474 Fax: 229-333-0328

Waste Material Profile

Profile: AV54954

A: GENERATOR INFORMATION

Generator	STEWARD MACHINE COMPANY, INC.	Contact Name	TIM FRANKLIN
Address	2431 AIRPORT ROAD SOUTH	Contact Phone	229-243-0702
City, St, Zip	BAINBRIDGE GA 39817	Contact Fax	
Phone	229-243-0702		
Fax	229-246-0705		
EPA ID	GACESQG39817		

B: BILL TO INFORMATION

Billing To	STEWARD MACHINE COMPANY, INC.	Contact Name	TIM FRANKLIN
Address	2431 AIRPORT ROAD SOUTH	Contact Phone	229-243-0702
City, St., Zip	BAINBRIDGE GA 39817	Contact Fax	
Phone	229-243-0702		
Fax	229-246-0705		
EPA ID	GACESQG39817		

C: COMMON NAME OF THE WASTE

Waste Name: PAINT WASTE ZINC SLUDGE
Generating Process: CLEANING OF EQUIPMENT

IS THIS WASTE:

	YES/NO		YES/NO		YES/NO
Spent	Y	Spill	N	Household waste?	N
Virgin	N	Labpack	N	Soil from UST removal?	N
Off-Spec	N	Subject to an exemption?	N	Other?	N
WWT sludge	N				

D: HAZARDOUS CHARACTERISTICS

		YES/NO		
Is this waste:	Radioactive	N		
	Bio-Hazard	N		
	Polymerizable	N		
Does this waste contain:	Asbestos	N	———	Friable = N
	PCB's > 50 ppm	N		
	Hexavalent Chrome	N		
	HOC's > 1000 ppm	N		
	VOC's > 500 ppmw	Y		

E: PHYSICAL DATA

Odor: -
Flash Point: < 73 F
pH: 2.1 - 7 PH
Spec. Grav: .8 - 1 SP.GR.
BTU/lb: 5000 - 10000 BTU/LB
Chloride % by wt: < 2 PCT
% Water % by vol: < 5 PCT

Solid -
Sludge = 95 PCT
Liquid = 5 PCT
Debris -

Dust ☐ Granular ☐ Chunks - Monolith ☐
Pumpable N Pourable N
Free Liquids ☐ Viscosity HIGH (Hi, Med, Low)

F: COMPOSITION OF WASTE

COMPOSITION	LOW VALUE	IND.	HI VALUE	UM	ALTERNATE VALUE
GLYCOL ETHER, TOLUENE, NAPTHA, ACETONE, METHANOL,	30	-	60	PCT	
PAINT PIGMENTS	40	-	70	PCT	
ZINC DUST		=	10	PCT	

PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. RODGERS CIRCLE - VALDOSTA, GA 31601
229-244-0474 Fax: 229-333-0328

Waste Material Profile

Profile: AV54954

G. WASTE CHARACTERIZATION

	YES/NO
1. Is this a listed EPA RCRA hazardous waste (F, K, P, U) as defined in 40 CFR 261.30	Y
2. a.) Is this a liquid waste with a flash point < 140F as defined in 40 CFR 261.21 (D001)	Y
b.) Is this an ignitable solid as defined in 40 CFR 261.21 (D001)	N
c.) Is this an oxidizer as defined in 49 CFR 173.127 (D001)	N
d.) If yes to a, b, or c. Is this a High TOC waste	Y
3. a.) Is this a liquid waste with a pH < 2 or > 12.5 (D002)	N
b.) Is this a liquid waste that corrodes steel as defined in 40 CFR 261.22 (D002)	N
4. Is this a reactive waste as defined in 40 CFR 261.23 (D003)	N

If yes, specify the subcategory: Water Reactive [-] Air Reactive [-] Explosive [-] Other Reactive [-]

Reactive Cyanide: conc. _____ Reactive Sulfide: conc. _____

Waste Code	Constituent	Reg. Level	Actual Conc.	Waste Code	Constituent	Reg. Level	Actual Conc.
D004	Arsenic	5.0	< 5 MG/L	D024	m-Cresol	200	< 200 MG/L
D005	Barium	100	< 100 MG/L	D025	p-Cresol	200	< 200 MG/L
D006	Cadmium	1.0	< 1 MG/L	D026	Cresol(o, m, p)	200	< 200 MG/L
D007	Chromium	5.0	< 5 MG/L	D027	1, 4 Dichlorobenzene	7.5	< 7.5 MG/L
D008	Lead	5.0	< 5 MG/L	D028	1, 2-Dichloroethane	0.5	< .5 MG/L
D009	Mercury	0.2	< .2 MG/L	D029	1, 1-Dichloroethylene	0.7	< .7 MG/L
D010	Selenium	1.0	< 1 MG/L	D030	2, 4-Dinitrotulene	0.13	< .13 MG/L
D011	Silver	5.0	< 5 MG/L	D031	Heptachlor	0.008	< .008 MG/L
D012	Endrin	0.02	< .02 MG/L	D032	Hexachlorobenzene	0.13	< .13 MG/L
D013	Lindane	0.4	< .4 MG/L	D033	Hexachlorobutadiene	0.5	< .5 MG/L
D014	Methoxychlor	10	< 10 MG/L	D034	Hexachloroethane	3	< 3 MG/L
D015	Toxaphene	0.5	< .5 MG/L	D035	Methyl Ethyl Ketone	200	200 > MG/L
D016	2, 4 - D	10	< .13 MG/L	D036	Nitrobenzene	2	< 2 MG/L
D017	2, 4, 5 - T (Silvex)	1	< 1 MG/L	D037	Pentachlorophenol	100	< 100 MG/L
D018	Benzene	0.5	< .5 MG/L	D038	Pyridine	5	< 5 MG/L
D019	Carbon Tetrachloride	0.5	< .5 MG/L	D039	Tetrachloroethylene	0.7	< .7 MG/L
D020	Chlordane	0.03	< .03 MG/L	D040	Trichloroethylene	0.5	< .5 MG/L
D021	Chlorobenzene	100	< 100 MG/L	D041	2, 4, 5-Trichlorophenol	400	< 400 MG/L
D022	Chloroform	6.0	< 6 MG/L	D042	2, 4, 6-Trichlorophenol	2	< 2 MG/L
D023	o-Cresol	200	< 200 MG/L	D043	Vinyl Chloride	0.2	< .2 MG/L

Based on: Total Analysis [N] TCLP Analysis [N] Generator Knowledge [Y]

	YES/NO
5. Is this a EPA Toxic Waste (D004 - D043) as defined in 40 CFR 261.24?	Y
If D009: Is the total Mercury concentration above 260 ppm?	N
* If this is a D001, D002, D003(selected) or D004 - D043 does it contain any of the Underlying Hazardous Constituents (UHC) above Universal Treatment Standards (UTS)?	N
If Yes, include a UTS/UHC form with the profile	
6. Is this waste a Dioxin or Furan per 40 CFR 261.31?	N
7. a.) Is this a Non-Hazardous Waste?	N
FOR WASTE DISPOSAL AT PERMA-FIX OF MICHIGAN ONLY:	
b.) Is this a hazardous waste by state regulation only?	N
c.) Is this a Michigan Act 451 listed hazardous waste?	N

If you answered Yes to any question in Section G, enter the appropriate waste code(s) on the lines below.

Waste Codes: D001 D035 F003 F005

Please list any Toxic Release Inventory Constituents per EPCRA Section 313 not identified above.

PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. RODGERS CIRCLE - VALDOSTA, GA 31601
229-244-0474 Fax: 229-333-0328

Waste Material Profile

Profile: AV54954

H. BENZENE NESHAP 40 CFR 61, SUBPART FF (Hazardous waste with Benzene Only)

If question 1, 2, or 3 is No, proceed to section I.

	YES/NO
1. Is this waste stream generated at a facility with a SIC code listed under NESHAP, or a TSDF that treats NESHAP waste? SIC Code _____ listed codes: (2600-2699, 2911, or 3312)	N
2. Does the waste contain > 10% water?	N
3. Is the total Annual Benzene quantity from the facility waste greater that 10 Mg/Yr (2,200 lbs/yr)?	N

If Question 1, 2, or 3 is No, proceed to section I.

4. What is the total Benzene concentration in Your Waste? _____
(Do not use TCLP results. Acceptable laboratory methods include 8020, 8260, 602, and 624)
5. What is the TAB quantity for the generator facility? _____ Mg/Yr

I. PACKAGING/QUANTITY

Container Type/Size: DM 55
Rate of Generation: 2 DM per YR

J. DOT SHIPPING INFORMATION

Enter the proper DOT shipping name from 49 CFR 172.101 table.

Waste Paint related material

List 2 major components: _____

Hazard Class 3 UN/NA Code UN1263 PG III

K. ATTACHMENTS (Check all that apply and include with profile)

N	UST/UHC Form	N	Process Flow Diagram	N	Generator authorization
N	Analysis	N	PCB source statement	N	Labpack inventory sheet
N	Additional Description	N	Material Safety Data Sheet	N	Land Disposal Notification

L. CERTIFICATION

I hereby certify that all the information submitted in this and all attached documents are complete and accurate. All known and suspected hazards have been disclosed. By signing below, I give Perma-Fix Environmental Services, Inc., and all of its subsidiaries, permission to make minor changes to this profile prior to its acceptance should they find an error or omission.

Printed Name: Kenneth R Lusk Sr Signature: _____ Date: 5/7/07

** Signatures other than the generator are required to submit an approved authorization letter from the generator to certify this profile.

INTERNAL USE ONLY: Approval Review: 1 _____ 2 _____ 3 _____

Profile ID Number AV54954 Approval Status: P Form Code:
Waste Codes D001 D035 F003 F005
DOT Waste Paint related material
Destination/Consolidation Code _____ Price & Initial _____
Outbound Approval _____ Facility _____
Notes: _____

Notice of Approval

780268278-1 / PAS249
BILL RODRIGUEZ 727-847-8194
PASCO CO. BOARD OF COUNTY COM.
38053 LIVE OAK AVE.
DADE CITY, FL 33523

780268279-1 / FLD984174847
BILL RODRIGUEZ 727-847-8041
PASCO CO. SOLID WASTE EAST
9626 HANDCART RD,
DADE CITY, FL 33525

Thank you for your submission of the Perma-Fix Waste Profile Form. We have evaluated your waste stream, and it has been approved for management at a fully-permitted TSDF. Listed below, and on the attached pages, please find the pertinent information for the proper disposal of the waste. Pricing is included along with a copy of the analysis (if applicable), standard terms and conditions, and container shipment requirements. By shipping under this approval, you agree to the price set forth in this approval. In addition, you may be subject to additional fees or rejection should the shipped waste stream not conform to the specifications of this Waste Profile.

TSD Facility: PERMA FIX OF SOUTH GEORGIA
Profile # / Approval #: AV65252 /
RCRA/EPA Waste Codes: D001 D035

Authorized: 01/11/2011
Expires: 02/19/2013

DOT Description: Waste Solids containing flammable liquid, n.o.s. (NAPHTHA / PETROLEUM DISTILLATES), 4.1, UN3175, II

Product	Common Description	Price	Unit	Container	Min. Charge
FS-CAN-03	FLAMMABLE SOLIDS LOOSEPACK (ADHESIVES)	$215.00	DM	55	

Optional Charges (if Applicable)

FS-CAN-03	FLAMMABLE SOLIDS LOOSEPACK (ADHESIVES)	$150.00	DF	30	
FS-CAN-03	FLAMMABLE SOLIDS LOOSEPACK (ADHESIVES)	$75.00	DF	5	

As required per 40 CFR 264.12(.b), this letter serves as notification that Perma-Fix has the appropriate permits in place to accept and manage your waste(s). Due in part to our permit, non-conforming waste may be rejected at a rate of $250.00, plus round trip transportation if the discrepancy cannot be resolved via manifest corrections or price adjustments.

We appreciate your interest in our company and we look forward to assisting you with the disposal of your waste. To place an order, please contact our customer service department. Our telephone number is (229) 244-0474 in Valdosta, GA.

Sincerely,

Lason Kirkland
General Manager
Perma-Fix of South Georgia

PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. RODGERS CIRCLE, VALDOSTA, GA 31601
, 229-244-0474 Fax: 229-333-0328
GAD093380814

WASTE PROFILE RENEWAL

Customer:
PASCO CO. BOARD OF CC
38053 LIVE OAK AVE.
DADE CITY, FL 33523
BILL RODRIGUEZ 727-847-8194
Fax

Generator: ORL
PASCO CO. SOLID WASTE EAST
9626 HANDCART RD,
DADE CITY, FL 33525
BILL RODRIGUEZ 727-847-8041
Fax 727-847-8064

Dear Generator / Customer:

This notification is required by 40 CFR part 264.13 / 265.13 and the Waste Analysis Plan of the above named TSDF and must be repeated annually for each waste stream managed by the named TSDF.

Wastestream Identification:

PROFILE NUMBER: AV65252
DESCRIPTION: Waste Solids containing flammable liquid, n.o.s. (NAPHTHA / PETROLEUM DISTILLATES)
COMMON NAME: FLAMMABLE SOLIDS LOOSEPACK (ADHESIVES)
GEN. PROCESS: HOUSEHOLD HAZARDOUS WASTE COLLECTION
WASTE CODES: D001, D035
EXPIRED: 1/5/2012

Composition

ACETONE 0 - 10 PCT
ADHESIVES & RESINS IN CANS = 100 PCT
ALCOHOLS (IPA, MeOH) 0 - 5 PCT
ASPHALT EMULSION/ROOF TAR 10 - 20 PCT
CYCLOHEXANONE, TETRAHYDROFURAN 1 - 5 PCT
EPOXY RESINS 10 - 20 PCT
ETHYL ACETATE/BUTYL ACETATE 0 - 5 PCT

Sign and date this original to:

Certification: I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Certified By | ENV PRO MGR (Title) | 12-30-11 (Date)

Please check the appropriate box below.

- [x] **RENEW WITHOUT CHANGE.** Sign and return.
- [ ] **RENEW WITH CHANGE.** Complete new profile and indicate changes in waste generating process and/or wastestream that are different from information last submitted. Sign and return.
- [ ] **CANCEL** this wastestream approval. Sign and return.

If you should have any questions, please call your broker or Sales Representative.

TSDF Management: (TSDF LAB USE ONLY) Salesrep: GLENN BYER
Notes:
AUTHORIZED BY: Date: 1/7/12 2nd Auth: Date:
Form Code: W606 Product ode: FS-CAN-03 Source: G11 Process Code: F-S1 Cons. Code:
Outbound Approval # Unit Charge: 3rd Auth. Unit Cost:

Hill W310 Landfill LF-[illegible]-03 F-01
SLD

CORRECTED
shipping name

Chemical Conservation of Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Georgia 31601
EPA ID: GAD093380814
1-912-244-0474

ALD983168097
AVANTI POLAR LIPIDS INC.
700 Industrial Park Drive

CHE728
ATTN:William Labadie
CHEMICAL CONSERVATION CORP
10100 Rocket Blvd.
Orlando, Florida
32824

Albaster, AL
35007
97/03/26
Lisa Myler
205-663-2494

Re: Approval Number :AVAG1854

Dear Generator/Customer:

Please be advised that the waste stream described below has been accepted for processing at our facility in Valdosta, Ga. Chemical Conservation of Georgia has all the appropriate local, state, and federal permits to process this waste stream.

1. Proper Shipping Name :Hazardous Waste Solid, n.o.s.
2. Technical Name :Methanol, Toluene
3. Hazard Class :9, PG III
4. D.O.T. ID. :NA3077
5. EPA Waste Code(s) :F003 F005 D022
6. Add'l Description :CC# 1547

7. Price*: 250.00 /55 Gallon Drum
*(PROCESSING ONLY price is valid for a period of 30 days from date of issue and subject to change without notice.)

Chemical Conservation of Georgia, Inc. (CCGI) reserves the right to reject any and all waste on receipt at our facility. A properly completed manifest, drum labels, and proper shipping drum or container is required for all shipments.

The above Approval Number MUST appear on all manifests (in box J), drum labels, and correspondence concerning this material. This will speed up processing time at our site, reduce risk of rejection, and increase safety of employees sampling your waste.

If you have questions concerning this approval please call the Valdosta facility at (912) 244-0474 and ask for one of our customer service representatives.

Any changes in the composition of this waste stream, process design modification, etc., should be reported to CCGI to determine if additional sampling and analysis is required.

We look forward with confidence to being of service to you.

Sincerely,

Micheal Downey
Facilities Manager

Chemical Conservation of Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Georgia 31601
EPA ID: GAD093380814
1-912-244-0474

ALD983168097
AVANTI POLAR LIPIDS INC.
700 Industrial Park Drive

CHE728
ATTN:William Labadie
CHEMICAL CONSERVATION CORP
653 Rocket Blvd.
Orlando, Florida
32824

Albaster, AL
35007
91/05/07
Lisa Myler
205-663-2497

Re: Approval Number :AVAG1854

Dear Generator/Customer:

Please be advised that the waste stream described below has been accepted for processing at our facility in Valdosta, Ga. Chemical Conservation of Georgia has all the appropriate local, state, and federal permits to process this waste stream.

1. Proper Shipping Name :~~RQ Waste Flammable Solid, n.o.s.~~ Hazardous Waste Liquid, N.O.S.
2. Technical Name :Methanol, Toluene
3. Hazard Class :4.1, PGII 9 III NA3077
4. D.O.T. ID. :UN1325
5. EPA Waste Code(s) :F003 F005 D001 D022 Methanol Toluene
6. Add'l Description :CC# 1547 MG 3.22-97
7. Price*: 250.00 /55 Gallon Drum

*(PROCESSING ONLY price is valid for a period of 30 days from date of issue and subject to change without notice.)

Chemical Conservation of Georgia, Inc. (CCGI) reserves the right to reject any and all waste on receipt at our facility. A properly completed manifest, drum labels, and proper shipping drum or container is required for all shipments.

The above Approval Number MUST appear on all manifests (in box J), drum labels, and correspondence concerning this material. This will speed up processing time at our site, reduce risk of rejection, and increase safety of employees sampling your waste.

If you have questions concerning this approval please call the Valdosta facility at (912) 244-0474 and ask for one of our customer service representatives.

Any changes in the composition of this waste stream, process design modification, etc., should be reported to CCGI to determine if additional sampling and analysis is required.

~~We look forward with confidence to being of service to you.~~

Sincerely,

Micheal Downey
Facilities Manager

RUSH

CHEMICAL CONSERVATION OF GEORGIA, INC.

CUSTOMER SERVICE REVIEW: APPROVED _____ REJECTED JH DATE 6-1-94

PROFILE NUMBER AVAG 1854 EPA ID NO: ALD 1983 168 097

GENERATOR Avanti Polar Lipids Inc.

BROKER Chem-Con REF NO 1547

COMMENTS Should be DOT11 -

COMPLIANCE OFFICER REVIEW: APPROVED MD REJECTED _____ DATE 6-1-94

PROPER SHIPPING NAME: RQ Waste Flammable solid, n.o.s

DOT NUMBER UN1325 EPA WASTE CODES D001 D022 F003 F005

FORM CODE B403 HAZARD CLASS: ___3 X 4.1 ___9 ___6.1 ___OTHER

___ COMBUSTIBLE LIQUID ___ NON-REGULATED

PACKAGE GROUP: ___I ___II X III

TWO MAJOR HAZARDOUS COMPONENTS: Methanol Toluene

SALES COORDINATOR REVIEW: APPROVED J. REJECTED _____ DATE 6-1-94

CONTAINER SIZE 55 PRICE F.P. 250.00

PLANNED DISPOSAL MSP

COMMENTS: [redacted] one that Patrick called you about.

FACILITY MANAGER REVIEW: APPROVED M REJECTED _____ DATE 6-1-94

COMMENTS: _____

CHEMICAL CONSERVATION CORPORATION
653 Rocket Boulevard
Orlando, Florida 32824
Phone: 407-859-4441 Fax: 407-855-2812
FLD 980 559 728

Rush CG

CHEMICAL CONSERVATION OF GEORGIA, INC.
1612 James P. Rodgers Circle
Valdosta, Georgia 31601
Phone: 912-244-0474 Fax: 912-333-0328
GAD 093 380 814

MATERIAL WASTE PROFILE

Approval # 1547 Previous Approval # _____ Log In Date(s) _____ S.P. 300.00

Note: To process this form all sections must be completed. Lab pack must complete Sections A, B, E, F, G, H, I and L. Please use comment section when not enough space in appropriate section.

A) GENERATOR/INVOICING INFORMATION/ USE N/A FOR NOT APPLICABLE. PLEASE PRINT. PLEASE READ INSTRUCTIONS.

GENERATOR NAME: Avanti Polar Lipids Inc
GENERATOR US EPA ID: AL D 983 168 917

MAILING ADDRESS: 700 Industrial Park Drive (Bldg. or P.O. Box # / Street) Alabaster (City) AL (State) 35007 (Zip Code)

SITE ADDRESS: Same (Bldg. # / Street / City / State / Zip Code)

CONTACT NAME: Lisa Myles PHONE: 205-663-2497 FAX: _____

INVOICING NAME: _____

MAILING ADDRESS: _____ (Bldg. or P.O. Box # / Street / City / State / Zip Code)

CONTACT NAME: _____ PHONE: _____ FAX: _____

B) WASTE INFORMATION/

DESCRIPTION/NAME OF WASTE: Silica Gel Waste

EXPLAIN INCIDENT, SERVICE OR MANUFACTURING PROCESS GENERATING THE WASTE: Manufacturing Lipids

DESCRIBE GENERATOR INDUSTRY/BUSINESS TYPE IF RELATED TO WASTE: Manufacturing Lipids

Enter Y/N for Yes or No in blank spaces. Was the waste: Used, as a solvent? N, or Unused (contaminated, residues, expired shelf life, off-spec., or discarded)? N, or Unused and spilled (contaminant and/or contaminated media)? N

C) COMPOSITION OF WASTE/ Disclose chemicals and/or materials in waste (must total 100%)

CHEMICALS AND / OR MATERIALS	PERCENT	CHEMICALS AND / OR MATERIALS	PERCENT	CHEMICALS AND / OR MATERIALS	PERCENT
Silica	40-60 ppm	Toluene	0-2 ppm		
Alumina	40-60 ppm	Water	0-2 ppm		
Chloroform	0-2	Acetone	0-2 ppm		
Methanol	0-2				

If waste is a mixture of products, indicate percent and attach MSDS for each product. If waste is generated by a manufacturing process or service disclose raw materials used, indicate percent and attach MSDS for each material. Please attach existing analysis reports on the waste, products or raw materials. If this is a lab-pack, one form must be completed for every container and a packing sheet must be attached.

D) PHYSICAL DATA/
Describe form and color: Solid / White / yellow

HEATING VALUE (IN BTU/LB) EXACT _____ ___<5,000 ___5,000-10,000 ✓>10,000

ODOR: Strong ___ Mild ✓ None ___ Describe: Solid

STATE Free Liquids? ✓No ___Yes Solids? 100 %: Pls. indicate: Powder ___ Granular ___ Rock ___ Sticky ___

SLUDGE (IN GALS): ___<5 ___5-10 ___10-20 ___20-30 ___30-40 ✓>40

VISCOSITY: Low ___ Medium ✓ High ___ Pumpable? Yes ___ No ✓

SPECIFIC GRAVITY: ___<0.8 ✓0.8-1.0 ___1.1-1.7 ___>1.7

pH Exact _____: ___≤2 ___2.1-7 ✓7.1-12.4 ___≥12.5

CHLORIDE (BY WT.%): ✓<2 ___2-5 ___5-8 ___8-11 ___11-14 ___>14

WATER (BY VOL %): ✓<5 ___5-10 ___10-15 ___15-20 ___20-25 ___25-30 ___>30

FLASH POINT Test Method: Open Cup ___ Close Cup ___: ___<73°F ✓73-99.99°F ___100-139.99°F ___140-200°F ___>200°F EXACT _____

E) HAZARDOUS CHARACTERISTICS/

Indicate if this waste:

Is Radioactive	NO ✓	YES ___
Is Explosive	NO ✓	YES ___
is Bio-hazardous	NO ✓	YES ___
Reacts with water	NO ✓	YES ___
Reacts with air	NO ✓	YES ___
Is Reactive	NO ✓	YES ___ ; if Yes, is it Stable? NO ___ YES ___; is it Polymerizable? NO ___ YES ___

Indicate if waste contains any of below:

			QUANTITY	UNITS
PCB	NO ✓	YES ___		
Dioxin	NO ✓	YES ___		
Cyanides	NO ✓	YES ___		
Sulfides	NO ✓	YES ___		

Explain necessary precautions when handling the waste: _____

pr3

H111 W310 Landfill LF-SLD-03 F-01

CORRECTED waste codes

Chemical Conservation of Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Georgia 31601
EPA ID: GAD093380814
1-912-244-0474

ALD983168097
AVANTI POLAR LIPIDS INC.
700 Industrial Park Drive

CHE728
ATTN:Beth
PERMA-FIX - ORLANDO
10100 Rocket Blvd.
Orlando, FL
32824

Albaster, AL
35007
97/03/11
Dennis Graves
205-663-2497

199

Re: Approval Number :AVAG1856

Dear Generator/Customer:

Please be advised that the waste stream described below has been accepted for processing at our facility in Valdosta, Ga. Chemical Conservation of Georgia has all the appropriate local, state, and federal permits to process this waste stream.

1. Proper Shipping Name :**Hazardous Waste Solid, n.o.s.**
2. Technical Name :**Styrene, Chloroform**
3. Hazard Class :**9 PG III**
4. D.O.T. ID. :**NA3077**
5. EPA Waste Code(s) :**F005 F003 D006 D022**
6. Add'l Description :**CC# 1545**

7. Price*: 250.00 /55 Gallon Drum
*(PROCESSING ONLY price is valid for a period of 30 days from date of issue and subject to change without notice.)

Chemical Conservation of Georgia, Inc. (CCGI) reserves the right to reject any and all waste on receipt at our facility. A properly completed manifest, drum labels, and proper shipping drum or container is required for all shipments.

The above Approval Number MUST appear on all manifests (in box J), drum labels, and correspondence concerning this material. This will speed up processing time at our site, reduce risk of rejection, and increase safety of employees sampling your waste.

If you have questions concerning this approval please call the Valdosta facility at (912) 244-0474 and ask for one of our customer service representatives.

Any changes in the composition of this waste stream, process design modification, etc., should be reported to CCGI to determine if additional sampling and analysis is required.

We look forward with confidence to being of service to you.

Sincerely,

Micheal Downey
Facilities Manager

CORRECTED
shipping name

Chemical Conservation of Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Georgia 31601
EPA ID: GAD093380814
1-912-244-0474

ALD983168097
AVANTI POLAR LIPIDS INC.
700 Industrial Park Drive

CHE728
ATTN:William Labadie
CHEMICAL CONSERVATION CORP
10100 Rocket Blvd.
Orlando, Florida
32824

Albaster, AL
35007
97/03/11
Lisa Myler
205-663-2497

Re: Approval Number :AVAG1856

Dear Generator/Customer:

Please be advised that the waste stream described below has been accepted for processing at our facility in Valdosta, Ga. Chemical Conservation of Georgia has all the appropriate local, state, and federal permits to process this waste stream.

J. Proper Shipping Name :Hazardous Waste Solid, n.o.s.
2. Technical Name :Styrene, Chloroform
3. Hazard Class :9 PG III
4. D.O.T. ID. :NA3077
5. EPA Waste Code(s) :F005 D006 D022
6. Add'l Description :CC# 1545

7. Price*: 250.00 /55 Gallon Drum
*(PROCESSING ONLY price is valid for a period of 30 days from date of issue and subject to change without notice.)

Chemical Conservation of Georgia, Inc. (CCGI) reserves the right to reject any and all waste on receipt at our facility. A properly completed manifest, drum labels, and proper shipping drum or container is required for all shipments.

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Any changes in the composition of this waste stream, process design modification, etc., should be reported to CCGI to determine if additional sampling and analysis is required.

We look forward with confidence to being of service to you.

Sincerely,

Micheal Downey
Facilities Manager

Chemical Conservation of Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Georgia 31601
EPA ID: GAD093380814
1-912-244-0474

ALD983168097
AVANTI POLAR LIPIDS INC.
700 Industrial Park Drive

CHE728
ATTN:William Lebadie
CHEMICAL CONSERVATION CORP
653 Rocket Blvd.
Orlando, Florida
32824

Albaster, AL
35007
91/05/07
Lisa Myler
205-663-2497

Re: Approval Number :AVAG1856

Dear Generator/Customer:

Please be advised that the waste stream described below has been accepted for processing at our facility in Valdosta, Ga. Chemical Conservation of Georgia has all the appropriate local, state, and federal permits to process this waste stream.

1. Proper Shipping Name :RQ Waste Flammable Solid, n.o.s.
2. Technical Name :Styrene, Chloroform
3. Hazard Class :4.1, PGII
4. D.O.T. ID. :UN1325
5. EPA Waste Code(s) :F005 D001 D006 D022
6. Add'l Description :CC# 1545

7. Price*: 250.00 /55 Gallon Drum
*(PROCESSING ONLY price is valid for a period of 30 days from date of issue and subject to change without notice.)

Chemical Conservation of Georgia, Inc. (CCGI) reserves the right to reject any and all waste on receipt at our facility. A properly completed manifest, drum labels, and proper shipping drum or container is required for all shipments.

The above Approval Number MUST appear on all manifests (in box J), drum labels, and correspondence concerning this material. This will speed up processing time at our site, reduce risk of rejection, and increase safety of employees sampling your waste.

If you have questions concerning this approval please call the Valdosta facility at (912) 244-0474 and ask for one of our customer service representatives.

Any changes in the composition of this waste stream, process design modification, etc., should be reported to CCGI to determine if additional sampling and analysis is required.

We look forward with confidence to being of service to you.

Sincerely,

Micheal Downey
Facilities Manager

RUSH

CHEMICAL CONSERVATION OF GEORGIA, INC.

CUSTOMER SERVICE REVIEW: APPROVED MH REJECTED _____ DATE 6-1-94

PROFILE NUMBER AUAG 1856 EPA ID NO: ALD/983/168/097

GENERATOR Avanti Polar Lipids, Inc.

BROKER Chem-Con REF NO 1545

COMMENTS _____

COMPLIANCE OFFICER REVIEW: APPROVED MH REJECTED _____ DATE 6-1-94

PROPER SHIPPING NAME: RQ Waste Flammable Solid, N.O.S.

DOT NUMBER UN1325 EPA WASTE CODES D001 D006 D022 F005

FORM CODE B403 HAZARD CLASS: ___3 X 4.1 ___9 ___6.1 ___OTHER

___ COMBUSTIBLE LIQUID ___ NON-REGULATED

PACKAGE GROUP: ___I ___II X III

TWO MAJOR HAZARDOUS COMPONENTS: Styrene Chloroform

SALES COORDINATOR REVIEW: APPROVED JA REJECTED _____ DATE 6-1-94

CONTAINER SIZE 55 PRICE SP. 250.00

PLANNED DISPOSAL MSP

COMMENTS: ~~Waste to~~ the one Patrick called you about

FACILITY MANAGER REVIEW: APPROVED MH REJECTED _____ DATE 6-1-94

COMMENTS: _____

FIXATION 250.00 INC

CHEMICAL CONSERVATION CORPORATION
653 Rocket Boulevard
Orlando, Florida 32824
Phone: 407-859-4441 Fax: 407-855-2812
FLD 980 559 728

RUSH 6D

CHEMICAL CONSERVATION OF GEORGIA, INC. 30.00
1612 James P. Rodgers Circle
Valdosta, Georgia 31601
Phone: 912-244-0474 Fax: 912-333-0328
GAD 093 380 814

MATERIAL WASTE PROFILE

Approval # 1545 Previous Approval # _____ Log In Date(s) _____ S.P. 300.00

Note: To process this form all sections must be completed. Lab pack must complete Sections A, B, E, F, G, H, I and L. Please use comment section when not enough space in appropriate section.

A) GENERATOR/INVOICING INFORMATION/ LIPIDS USE N/A FOR NOT APPLICABLE. PLEASE PRINT. PLEASE READ INSTRUCTIONS.

GENERATOR NAME: Avanti Polar Lipids, Inc. GENERATOR US EPA ID: A|L|0|9|8|3|1|6|8|0|9|7|

MAILING ADDRESS: 700 Industrial Park Drive (Bldg. or P.O. Box #) Alabaster (City) Al (State) 35007 (Zip Code)

SITE ADDRESS: Same (Bldg. #) (Street) (City) (State) (Zip Code)

CONTACT NAME: Lisa Myles PHONE: 205-663-2497 FAX: 205 663-0756

INVOICING NAME: Same

MAILING ADDRESS: (Bldg. or P.O. Box #) (Street) (City) (State) (Zip Code)

CONTACT NAME: PHONE: FAX:

B) WASTE INFORMATION/

DESCRIPTION/NAME OF WASTE: Chromatography Ion Exchange waste

EXPLAIN INCIDENT, SERVICE OR MANUFACTURING PROCESS GENERATING THE WASTE: Manufacturing Lipids

DESCRIBE GENERATOR INDUSTRY/BUSINESS TYPE IF RELATED TO WASTE: Manufacturing Lipids

Enter Y/N for Yes or No in blank spaces. Was the waste: **Used**, as a solvent? Y, or **Unused** (contaminated, residues, expired shelf life, off-spec., or discarded)? N, or **Unused** and spilled (contaminant and/or contaminated media)? N

C) COMPOSITION OF WASTE/ Disclose chemicals and/or materials in waste (must total 100%)

CHEMICALS AND / OR MATERIALS	PERCENT	CHEMICALS AND / OR MATERIALS	PERCENT	CHEMICALS AND / OR MATERIALS	PERCENT
CALCIUM	0-2 appx	Dimethyl FORMAMIDE	0-2 appx		
CHLOROFORM	0-2 appx	TOLUENE	0-2 appx		
Methanol	0-2 appx	Styrene based RESIN	80-100 appx		
Water	0-2 appx				

If waste is a mixture of products, indicate percent and attach MSDS for each product. If waste is generated by a manufacturing process or service disclose raw materials used, indicate percent and attach MSDS for each material. Please attach existing analysis reports on the waste, products or raw materials. If this is a lab-pack, one form must be completed for every container and a packing sheet must be attached.

D) PHYSICAL DATA/ Describe form and color: Solid / Brown

HEATING VALUE (IN BTU/LB) EXACT ____ ____<5,000 ____5,000-10,000 Y >10,000

ODOR	STATE Free Liquids? Y No ___ Yes	SLUDGE (IN GALS)	VISCOSITY	SPECIFIC GRAVITY
Strong ___ Mild Y None ___	Solids? 100 %. Pls. Indicate:	___<5 ___5-10 ___10-20	Low ___ Medium Y High ___	Y <0.8 Y 0.8-1.0
Describe: Solid	Powder ___ Granular Y Rock ___ Sticky ___	___20-30 ___30-40 Y >40	Pumpable? Yes ___ No Y	___1.1-1.7 ___>1.7

pH Exact ____	CHLORIDE (BY WT.%)	WATER (BY VOL %) Y <5	FLASH POINT Test Method: Open Cup ___ Close Cup ___
___≤2 ___2.1-7	___<2 Y 2-5 ___5-8	___5-10 ___10-15 ___15-20	___<73°F Y 73-99.99°F ___100-139.99°F
Y 7.1-12.4 ___ ≥12.5	___8-11 ___11-14 ___>14	___20-25 ___25-30 ___>30	___140-200°F ___>200°F EXACT ____

E) HAZARDOUS CHARACTERISTICS/

Indicate if this waste:

Is Radioactive	NO Y	YES ___
is Explosive	NO Y	YES ___
is Bio-hazardous	NO Y	YES ___
Reacts with water	NO Y	YES ___
Reacts with air	NO Y	YES ___
Is Reactive	NO Y	YES ___ ; if Yes, is it Stable? NO___ YES ___; is it Polymerizable? NO___ YES ___

Indicate if waste contains any of below:

			QUANTITY	UNITS
PCB	NO Y	YES ___		
Dioxin	NO Y	YES ___		
Cyanides	NO Y	YES ___		
Sulfides	NO Y	YES ___		

Explain necessary precautions when handling the waste: _____

pr3

Notice of Approval

780266464-1 / COA419
LINDY MILLER 251-928-5768
COASTAL WASTE SERVICES
6483 VAN BUREN STREET
DAPHNE, AL 36526

780278524-1 / ALCESQG36615
ALAN HALL 251-438-8888
ST MOBILE AEROSPACE ENGINEERING, INC.
2100 9TH ST.
MOBILE, AL 36615

Thank you for your submission of the Perma-Fix Waste Profile Form. We have evaluated your waste stream, and it has been approved for management at a fully-permitted TSDF. Listed below, and on the attached pages, please find the pertinent information for the proper disposal of the waste. Pricing is included along with a copy of the analysis (if applicable), standard terms and conditions, and container shipment requirements. By shipping under this approval, you agree to the price set forth in this approval. In addition, you may be subject to additional fees or rejection should the shipped waste stream not conform to the specifications of this Waste Profile.

TSD Facility: PERMA FIX OF SOUTH GEORGIA
Profile # / Approval #: AV71214 /
RCRA/EPA Waste Codes:

Authorized: 02/27/2012
Expires: 02/23/2013

DOT Description: Non-Regulated Material (RESPIRATOR CARTRIDGES), .

Product	Common Description	Price	Unit	Container	Min. Charge
LF-SLD-03	RESPIRATOR CARTRIDGES	$37.50	DF	5	

Optional Charges (if Applicable)

TRANSPORTATION CHARGE	$15.00	DF	5
STOP CHARGE	$50.00	LOAD	
GEORGIA HAZARDOUS WASTE TAX/DRUM	$0.50	LOAD	

As required per 40 CFR 264.12(.b). this letter serves as notification that Perma-Fix has the appropriate permits in place to accept and manage your waste(s). Due in part to our permit, non-conforming waste may be rejected at a rate of $250.00, plus round trip transportation if the discrepancy cannot be resolved via manifest corrections or price adjustments.

We appreciate your interest in our company and we look forward to assisting you with the disposal of your waste. To place an order, please contact our customer service department. Our telephone number is (229) 244-0474 in Valdosta, GA.

Sincerely,

Lason Kirkland
General Manager
Perma-Fix of South Georgia

Perma-Fix of South Georgia
Compliance Review

PROFILE: AV71214

Customer Service Review Approved _____ Rejected _____ Date _____

Profile: AV71214 /

Generator: ST MOBILE AEROSPACE ENGINEERING, INC. EPA ID: ALCESQG36615

Bill To: COASTAL WASTE SERVICES Reference: COA419

Comments: _____

_____

Changes Authorized By: _____ Copy Requested: _____ Yes ___ No ___

Compliance Officer Approval Approved LK, Rejected _____ Date 2/27/12

DPT Shipping Name: Non-Regulated Material (RESPIRATOR CARTRIDGES)

UN/NA #

Form Code:

Hazard Class:

Packing Group:

Waste Codes:

Combustible Liquid: _____ Non-Regulated: _____

Biennial: Source: G15 Form: W310 MMC: H141 Origin: _____ TRI Attached: Y / N

Two Major Hazardous Components: _____

Comments: _____

Price Approval Approved LK Rejected _____ Date 2/27/12

Container Sizes: 50F

Planned Disposal: Landfill LC-SLB-03 Process Code: PGA

Comments: $37.50

Facility Approval Approved _____ Rejected _____ Date _____

Class Code: _____

Comments: _____

PermaFix environmental services

- [ ] Michigan Facility, 18550 Allen Road, Brownstown, MI 48192 - MID096963194 - 800-282-9251- Fax 734 286-6440
- [ ] Orlando Facility, 10100 Rocket Blvd., Orlando, FL 32824 - FLD980559728 - 800-345-6393 - Fax 407-855-2812
- [x] Valdosta Facility, 1612 James P. Rodgers Circle, Valdosta, GA 31601- GAD093380814 - (229) 229-2474 - Fax 229-244-0474
- [ ] Dayton Facility, 300 South West End Ave., Dayton, OH 45427 - OHD004274031 - (800) 543-3670 - Fax 937-268-9059
- [ ] Tulsa Facility, 2700 South 25th West Avenue, Tulsa, OK 74107 - OKD000402396 - (918) 582-9595 - Fax (918) 582-6618

WASTE MATERIAL PROFILE

Please Print

A: GENERATOR: ST Mobile Aerospace Engineering, Inc. EPA ID: ALD983176520

2100 9th Street Mobile (SITE ADDRESS) AL (STATE) 36615 (ZIP)

2100 9th Street Mobile (MAILING ADDRESS) AL (STATE) 36615 (ZIP)

CONTACT: Alan Hall PHONE: (251) 438-8888 FAX (251) 438-8892

E-Mail Address:

B: B: BILL TO: Coastal Waste Services

6483 Van Buren Street Suite 202 Daphne (MAILING ADDRESS) AL (STATE) 36526 (ZIP)

CONTACT: Lindy Miller PHONE: (251) 447-0526 FAX (251) 217-2055

E-Mail Address: lmiller@coastalwaste.net

C: COMMON NAME OF THE WASTE (PLEASE PRINT) Respirator Cartridges

GENERATING PROCESS (attach flow diagram if available):

Discarded used respirator cartridges.

IS THIS WASTE:

	NO	YES		NO	YES	
Spent	[ ]	[x]	Spill	[x]	[ ]	
Virgin	[x]	[ ]	Labpack	[x]	[ ]	(Attach Inventory Sheet)
Off-Spec	[x]	[ ]	Subject to an exemption?	[ ]	[x]	(Check Below)
WWT sludge	[x]	[ ]	[ ] Household waste?	[ ] Soil from UST removal	[x] Other?	Universal Waste Batteries

D: COMPOSITION OF WASTE: List all chemical/compounds. Provide MSDS's or analysis if available.

Chemicals/compounds	%	Chemicals/compounds	%	Chemicals/compounds	%
Respirator Cartridges	100				
(w/ Metal, plastic, Carbon)					
				Total Must =	100

E: HAZARDOUS CHARACTERISTICS:

		NO	YES		
Is this waste:	Radioactive	[x]	[ ]		
	Bio-Hazard	[x]	[ ]		
	Polymerizable	[x]	[ ]		
Does this waste contain:	Asbestos	[x]	[ ]	→	[ ] Friable [ ] Non Friable?
	PCB's > 50 ppm	[x]	[ ]	→	Conc? ____ ppm
	Hexavalent Chrome	[x]	[ ]	→	Conc? ____ ppm
	HOC's >1000ppm	[x]	[ ]	→	Conc? ____ ppm
	VOC's > 500ppmw	[x]	[ ]	→	Conc? ____ ppmw(both 264 & 265 subpart cc)

F: PHYSICAL DATA:

		Odor	Flash Point	pH	Spec. Grav.	BTU/lb.	Chloride % by wt.	Water % by vol.
Layer	Single	Strong [ ]	<73 [ ]	<2 [ ]	<0.70 [ ]	< 4999 [x]	<2 [x]	<5 [x]
Color	Varies	Mild [ ]	73-99 [ ]	2.1-5.0 [ ]	0.71-0.81 [ ]	5k-9999 [ ]	2-5 [ ]	5-10 [ ]
Source Code	G15	None [x]	100-139 [ ]	5.1-9.0 [ ]	0.82-0.95 [ ]	10k-15000 [ ]	5-8 [ ]	10-15 [ ]
Form Code	W310	Describe	140-199 [ ]	9.1-12.4 [ ]	0.96-1.01 [ ]	>15001 [ ]	8-11 [ ]	15-20 [ ]
			>200 [x]	>12.5 [ ]	1.02-1.09 [ ]		11-14 [ ]	20-25 [ ]
			N/A [ ]	N/A [x]	1.10-1.20 [ ]		>14 [ ]	>25 [ ]
					>1.20 [x]			

If Known Complete: Exact ____ Exact ____ Exact ____ Exact ____ Exact ____ Exact ____ %

Physical State:

Solid	100 % →	Dust [ ]	Granular [ ]	Chunks [x]	Monolith [ ]	in Gals	
Sludge	% →	Pumpable: [ ] Yes [x] No		Pourable: [ ] Yes [x] No	[ ] in Gals		
Liquid	% →	Free liquids: [ ] Yes [ ] No		Viscosity: [ ] Low(Water)	[ ] Medium(Oil)	[x] High(Syrup)	
Gas	% →	Aerosol [ ]	Cylinder [ ] →	Dia.: ____ Qty: ____	Valve Condition:		
Debris	100 % →	Describe(size & content):	Respirator Cartrdges				

Top

Next

AV71214

G: WASTE CHARACTERIZATION:

	YES	NO
1 Is this a listed EPA RCRA hazardous waste (F,K,P,U) as defined in 40 CFR 261.30	☐	☑
2 a. Is this a liquid waste with a flash point <140F as defined in 40 CFR 261.21 (D001).	☐	☑
b. Is this an ignitable solid as defined in 40 CFR 261.21 (D001)	☐	☑
c. Is this an oxidizer as defined in 49 CFR 173.151 (D001)	☐	☑
d. Is this an ignitable compressed gas as defined in 40 CFR 261.21 (D001)	☐	☑
e. If yes to a,b, or c. Is this a High TOC waste	☐	☐
3 a. Is this a liquid waste with a pH<2 or >12.5. (D002)	☐	☑
b. is this a liquid waste that corrodes steel as defined in 40 CFR 261.22 (D002).	☐	☑
4 Is this a reactive waste as defined in 40 CFR 261.23. (D003)	☐	☑

If yes, check the subcategory: ☐ Water Reactive ☐ Air Reactive ☐ Explosive ☐ Other Reactive
☐ Reactive Cyanide: conc. _____ ppm ☐ Reactive Sulfide: conc. _____ ppm

Waste Code	Constituent	< Than	Reg Level	> Than	Conc	Waste Code	Constituent	< Than	Reg Level	> Than	Conc
D004	Arsenic	☑	5.0	☐		D024	m-Cresol	☑	200	☐	
D005	Barium	☑	100	☐		D025	p-Cresol	☑	200	☐	
D006	Cadmium	☑	1.0	☐		D026	Cresol(o,, m, p)	☑	200	☐	
D007	Chromium	☑	5.0	☐		D027	1,4 Dichlorobenzene	☑	7.5	☐	
D008	Lead	☑	5.0	☐		D028	1,2-Dichloroethane	☑	0.5	☐	
D009	Mercury	☑	0.2	☐		D029	1,1-Dichloroethylene	☑	0.7	☐	
D010	Selenium	☑	1.0	☐		D030	2,4-Dinitrotoluene	☑	0.13	☐	
D011	Silver	☑	5.0	☐		D031	Heptachlor	☑	0.008	☐	
D012	Endrin	☑	0.02	☐		D032	Hexachlorobenzene	☑	0.13	☐	
D013	Lindane	☑	0.4	☐		D033	Hexachlorobutadiene	☑	0.5	☐	
D014	Methoxychlor	☑	10	☐		D034	Hexachloroethane	☑	3.0	☐	
D015	Toxaphene	☑	0.5	☐		D035	Mehtyl Ethyl Ketone	☑	200	☐	
D016	2,4 - D	☑	10	☐		D036	Nitrobenzene	☑	2.0	☐	
D017	2,4,5-TP(Silvex)	☑	1	☐		D037	Pentachlorophenol	☑	100	☐	
D018	Benzene	☑	0.5	☐		D038	Pyridine	☑	5.0	☐	
D019	Carbon Tetrachloride	☑	0.5	☐		D039	Tetrachloroethylene	☑	0.7	☐	
D020	Chlordane	☑	0.03	☐		D040	Trichloroethylene	☑	0.5	☐	
D021	Chlorobenzene	☑	100	☐		D041	2,4,5-Trichlorophenol	☑	400	☐	
D022	Chloroform	☑	6.0	☐		D042	2,4,6-Trichlorophenol	☑	2.0	☐	
D023	o-Cresol	☑	200	☐		D043	Vinyl Chloride	☑	0.2	☐	

Based on: Total Analysis ☐ TCLP Analysis ☐ Generator Knowledge ☑

	YES	NO
5 Is this a EPA Toxic Waste (D004-D043)* as defined in 40 CFR 261.24?	☐	☑
If D009: Is the total Mercury concentration above 260 ppm?	☐	☐
* If this is a D001, D002, D003(selected) or D004-D043 does it contain any of the Underlying Hazardous Constituents (UHC) above Universal Treatment Standards(UTS)?	☐	☐
If Yes, include a UTS/UHC form with the profile		
6 Is this waste a Dioxin Or Furan per 40 CFR 261.31?	☐	☑
7 a. Is this a Non-Hazardous Waste?	☑	☐
FOR WASTE DISPOSAL AT PERMA-FIX OF MICHIGAN ONLY:		
b. Is this a hazardous Waste by state regulation only	☐	☐
c. Is this a Michigan Act 451 listed hazardous waste?	☐	☐

If you answered Yes to any question in Section G, enter the appropriate waste codes(s) on the lines below.

Waste Codes: None

Please list any Toxic Release Inventory Constituents, per EPCRA Section 313 not identified above.

TRI Attachment:

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H. BENZENE NESHAP 40 CFR 61, SUBPART FF (Hazardous waste with Benzene Only) YES ☐ NO ☑

If question 1,2 or 3 is No, proceed to section I.

1 Is this waste stream generated at a facility with a SIC code listed under NESHAP, or a TSDF that treats NESHAP waste? SIC Code _____ listed codes: (2800-2899, 2911, 3312, 4953, 9511) ☐ ☑

2 Does the waste contain > 10% water ☐ ☑

3 Is the total Annual Benzene quantity from the facility waste greater than 10Mg/Yr (22,046 lbs/yr). ☐ ☑

If Question 1,2, or 3 is No, proceed to Section I

4 What is the total Benzene concentration in Your Waste? _____ % or _____ ppmw

(Do not use TCLP results. Acceptable laboratory methods include 8020, 8240, 8260, 602, and 624)

5 What is the TAB quantity for the generator facility? _____ Mg/Year

I. PACKAGING/ QUANTITY

1 Non-Bulk	☐	1 gal	☑	5 gal	☐	15 gal	☐	30 gal	☐	55 gal.	☐	85 gal	☐	Other
Cubic Yard	☐	Boxes	☐	Bags	☐	Totes	☐	Pallets	☐	Other				
Quantity	1	Per:	☐	Month	☐	Quarter	☑	Year	☐	Once				
2 Bulk:	☐	Tanker	☐	Vac Truck	☐	Rolloff	☐	Dump Trailer	☐	Closed Top	☐	Open Top		
			☐	Gallons	☐	Pounds	☐	Yards	☐	Tons				
Quantity:		Lbs:		Per:	☐	Month	☐	Quarter	☐	Year	☐	Once		

J. DOT SHIPPING INFORMATION:

Enter proper DOT shipping name from 49 CFR 172.101 table:

Non-Regulated Material

List 2 major components: **(Respirator Cartridges)**

Hazard Class ____ UN/NA code _____ PG ____ RQ: Y N CLIN: ____ US Gov. CLIN # When applicable

K. ATTACHMENTS: (Check all that apply and include with profile)

☐ UTS/UHC Form	☐ Process Flow Diagram	☐ Generator authorization
☐ Analysis	☐ PCB source statement	☐ Labpack inventory sheet
☐ Additional Description	☐ Material Safety Data Sheet	☐ Land Disposal Notification

L. CERTIFICATION:

I hereby certify that all the information submitted in this and all attached documents is complete and accurate. All known and suspected hazards have been disclosed. By signing below, I give Perma-Fix Environmental Services, Inc., and all of its subsidiaries, permission to make minor changes to this profile prior to its acceptance should they find an error or omission.

Printed Name: X LINDA MILLER (AS AGENT FOR MMS) Signature: X _____ Date: X 2-22-12

****Signatures other than the generator are required to submit an approved authorization letter from the generator to certify this profile**

INTERNAL USE ONLY: Review 1 _____ 2 _____ 3 _____

Profile I.D. No. _____ APPROVED ☐ REJECTED ☐ Form Code W _____

Waste Codes _____

DOT _____

Destination/Consolidation Code _____ Price & Initial See quote letter GSB

Product Code: _____

Out Bound Approval: _____ Facility: Valdosta

Notes: _____

Notice of Approval

74205224-1 / HEPACO
JOHN COCHRAN 615-210-1624
HEPACO INC.
P.O. BOX 26308
CHARLOTTE, NC 28221-7689

780281884-1 / GACESQG30047
JOHN CREWS 678-697-6070
JOHN CREWS
685 RIPPLE WATER RUN
LILBURN, GA 30047

Thank you for your submission of the Perma-Fix Waste Profile Form. We have evaluated your waste stream, and it has been approved for management at a fully-permitted TSDF. Listed below, and on the attached pages, please find the pertinent information for the proper disposal of the waste. Pricing is included along with a copy of the analysis (if applicable), standard terms and conditions, and container shipment requirements. By shipping under this approval, you agree to the price set forth in this approval. In addition, you may be subject to additional fees or rejection should the shipped waste stream not conform to the specifications of this Waste Profile.

TSD Facility: PERMA FIX OF SOUTH GEORGIA
Profile # / Approval #: AV75260 /
RCRA/EPA Waste Codes: D009

Authorized: 01/08/2013
Expires: 01/08/2014

DOT Description: Hazardous waste, solid, n.o.s., 9, NA3077, III

Product	Common Description	Price	Unit	Container	Min. Charge
LF-SLD-03	MERCURY DEBRIS FOR MICROENCAPSULATION	$150.00	DM	DM 55	

Optional Charges (if Applicable)

As required per 40 CFR 264.12(.b), this letter serves as notification that Perma-Fix has the appropriate permits in place to accept and manage your waste(s). Due in part to our permit, non-conforming waste may be rejected at a rate of $250.00, plus round trip transportation if the discrepancy cannot be resolved via manifest corrections or price adjustments.

We appreciate your interest in our company and we look forward to assisting you with the disposal of your waste. To place an order, please contact our customer service department. Our telephone number is (229) 244-0474 in Valdosta, GA.

Sincerely,

Lason Kirkland
General Manager
Perma-Fix of South Georgia

Perma-Fix of South Georgia

Compliance-Review

PROFILE: AV75260

Customer Service Review Approved _____ Rejected _____ Date _____

Profile: AV75260 7

Generator: JOHN CREWS EPA ID: GACESQG30047

Bill To: HEPACO INC. Reference: HEPACO

Comments: _____

Changes Authorized By: _____ Copy Requested: Yes No

Compliance Officer Approval Approved LK. Rejected _____ Date 1/8/13

DPT Shipping Name: Hazardous waste, solid, n.o.s.

UN/NA # NA3077 Waste Codes:

Form Code: D009

Hazard Class: 9

Packing Group: III

Combustible Liquid: _____ Non-Regulated: _____

Biennial: Source: G61 Form: W002 MMC: H141 Origin: _____ TRI Attached: Y / N

Two Major Hazardous Components: _____

Comments: _____

Price Approval Approved LK Rejected _____ Date 1/8/13

Container Sizes: 55gm

Planned Disposal: Landfill LF-LD-03 Process Code: P6A

Comments: _____

$150

Facility Approval Approved _____ Rejected _____ Date _____

Class Code: _____

Comments: _____

AW75260

Perma-Fix environmental services

- ☐ Michigan Facility, 18550 Allen Road, Brownstown, MI 48192 - MID096963194 - 800-282-9251 - Fax 734 286-6440
- ☐ Orlando Facility, 10100 Rocket Blvd., Orlando, FL 32824 - FLD980559728 - 800-345-6393 - Fax 407-855-2812
- ☑ Valdosta Facility, 1612 James P. Rodgers Circle, Valdosta, GA 31601 - GAD093380814 - (229) 219-2474 - Fax 229-244-0474
- ☐ Dayton Facility, 300 South West End Ave., Dayton, OH 45427 - OHD084274031 - (800) 543-3670 - Fax 937-268-9059
- ☐ Tulsa Facility, 2700 South 25th West Avenue, Tulsa, OK 74107 - OKD000402396 - (918) 582-9595 - Fax (918) 582-6618

WASTE MATERIAL PROFILE

Please Print

A: GENERATOR: John Crews EPA ID: CESQG-GA

685 Ripple Water Run (SITE ADDRESS) Lilburn, GA (STATE) 30047 (ZIP)

(MAILING ADDRESS) (STATE) (ZIP)

CONTACT: John Crews PHONE: 678-697-6070 FAX

E-Mail Address: johncrews@bellsouth.net

B: BILL TO: HEPACO, LLC

PO Box 26308 (MAILING ADDRESS) Charlotte, NC (STATE) 28221 (ZIP)

CONTACT: John Cochran PHONE: 770-934-1180 FAX 770-621-0238

E-Mail Address: jcochran@hepaco.com

C: COMMON NAME OF THE WASTE (PLEASE PRINT): Mercury Debris for Microencapsulation

GENERATING PROCESS (attach flow diagram if available):

Spill Clean Up From Elemental Mercury Spill In A Home

IS THIS WASTE:	NO	YES		NO	YES	
Spent	☑	☐	Spill	☐	☑	
Virgin	☐	☑	Labpack	☑	☐	(Attach Inventory Sheet)
Off-Spec	☑	☐	Subject to an exemption?	☑	☐	(Check Below)
WWT sludge	☑	☐	☐ Household waste? ☐ Soil from UST removal ☐ Other?			

D: COMPOSITION OF WASTE: List all chemical/compounds. Provide MSDS's or analysis if available.

Chemicals/compounds	%	Chemicals/compounds	%	Chemicals/compounds	%
Carpet,Padding, Vacuum and Parts	99-100				
Mercury	<1				
				Total Must =	100

E: HAZARDOUS CHARACTERISTICS:

Is this waste:	NO	YES		
Radioactive	☑	☐		
Bio-Hazard	☑	☐		
Polymerizable	☑	☐		
Does this waste contain: Asbestos	☑	☐	→	☐ Friable ☐ Non Friable?
PCB's > 50 ppm	☑	☐	→	Conc? ppm
Hexavalent Chrome	☑	☐	→	Conc? ppm
HOC's >1000ppm	☑	☐	→	Conc? ppm
VOC's > 500ppmw	☑	☐	→	Conc? ppmw (both 264 & 265 subparts cc)

F: PHYSICAL DATA:

		Odor	Flash Point	pH	Spec. Grav.	BTU/lb.	Chloride % by wt.	Water % by vol.
Layer	None	Strong ☐	<73 ☐	<2 ☐	<0.70 ☐	<4999 ☑	<2 ☑	<5 ☑
Color	Varies	Mild ☐	73-99 ☐	2.1-5.0 ☑	0.71-0.81 ☐	5k-9999 ☐	2-5 ☐	5-10 ☐
Source Code		None ☑	100-139 ☑	5.1-9.0 ☐	0.82-0.95 ☐	10k-15000 ☐	5-8 ☐	10-15 ☐
Form Code		Describe	140-199 ☐	9.1-12.4 ☐	0.96-1.01 ☐	>15001 ☐	8-11 ☐	15-20 ☐
			>200 ☐	>12.5 ☐	1.02-1.09 ☐		11-14 ☐	20-25 ☐
			N/A ☑	N/A ☐	1.10-1.20 ☐		>14 ☐	>25 ☐
					>1.20 ☑			
If Known Complete:			Exact	Exact	Exact	Exact	Exact	Exact

Physical State:

Solid	% →	Dust ☐	Granular ☐	Chunks ☐	Monolith ☐	in Cnts				
Sludge	% →	Pumpable: ☐	Yes ☐	No	Pourable: ☐	Yes ☐	No ☐	in Cnts		
Liquid	% →	Free liquids: ☐	Yes ☐	No	Viscosity: ☐	Low(Water) ☐	Medium(Oil) ☐	High(Sy		
Gas	% →	Aerosol ☐	Cylinder ☐ →	Dia.:	Qty:	Valve Condition:				
Debris 100	% →	Describe(size & content): See Above								

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Next

G: WASTE CHARACTERIZATION:

		YES	NO
1	Is this a listed EPA RCRA hazardous waste (F,K,P,U) as defined in 40 CFR 261.30	☐	☑
2	a. Is this a liquid waste with a flash point <140F as defined in 40 CFR 261.21 (D001).	☐	☑
	b. Is this an ignitable solid as defined in 40 CFR 261.21 (D001)	☐	☑
	c. Is this an oxidizer as defined in 49 CFR 173.151 (D001)	☐	☑
	d. Is this an ignitable compressed gas as defined in 40 CFR 261.21 (D001)	☐	☑
	e. If yes to a,b, or c. Is this a High TOC waste	☐	☑
3	a. Is this a liquid waste with a pH<2 or >12.5. (D002)	☐	☑
	b. Is this a liquid waste that corrodes steel as defined in 40 CFR 261.22 (D002).	☐	☑
4	Is this a reactive waste as defined in 40 CFR 261.23. (D003)	☐	☐

If yes, check the subcategory: ☐ Water Reactive ☐ Air Reactive ☐ Explosive ☐ Other Reactive
☐ Reactive Cyanide: conc. _____ ppm ☐ Reactive Sulfide: conc. _____ ppm

Waste Code	Constituent	< Than	Reg Level	> Than	Conc	Waste Code	Constituent	< Than	Reg Level	> Than	Conc
D004	Arsenic	☑	5.0	☐		D024	m-Cresol	☑	200	☐	
D005	Barium	☑	100	☐		D025	p-Cresol	☑	200	☐	
D006	Cadmium	☑	1.0	☐		D026	Cresol(o, m, p)	☑	200	☐	
D007	Chromium	☑	5.0	☐		D027	1,4 Dichlorobenzene	☑	7.5	☐	
D008	Lead	☑	5.0	☐		D028	1,2-Dichloroethane	☑	0.5	☐	
D009	Mercury	☐	0.2	☑		D029	1,1-Dichloroethylene	☑	0.7	☐	
D010	Selenium	☑	1.0	☐		D030	2,4-Dinitrotoluene	☑	0.13	☐	
D011	Silver	☑	5.0	☐		D031	Heptachlor	☑	0.008	☐	
D012	Endrin	☑	0.02	☐		D032	Hexachlorobenzene	☑	0.13	☐	
D013	Lindane	☑	0.4	☐		D033	Hexcchlorobutadiene	☑	0.5	☐	
D014	Methoxychlor	☑	10	☐		D034	Hexachloroethane	☑	3.0	☐	
D015	Toxaphene	☑	0.5	☐		D035	Methyl Ethyl Ketone	☑	200	☐	
D016	2,4 - D	☑	10	☐		D036	Nitrobenzene	☑	2.0	☐	
D017	2,4,5-TP(Silvex)	☑	1	☐		D037	Pentachlorophenol	☑	100	☐	
D018	Benzene	☑	0.5	☐		D038	Pyridine	☑	5.0	☐	
D019	Carbon Tetrachloride	☑	0.5	☐		D039	Tetrachloroethylene	☑	0.7	☐	
D020	Chlordane	☑	0.03	☐		D040	Trichloroethylene	☑	0.5	☐	
D021	Chlorobenzene	☑	100	☐		D041	2,4,5-Trichlorophenol	☑	400	☐	
D022	Chloroform	☑	6.0	☐		D042	2,4,6-Trichlorophenol	☑	2.0	☐	
D023	o-Cresol	☑	200	☐		D043	Vinyl Chloride	☑	0.2	☐	

Based on: Total Analysis ☐ TCLP Analysis ☐ Generator Knowledge ☑

		YES	NO
5	Is this a EPA Toxic Waste (D004-D043)* as defined in 40 CFR 261.24?	☑	☐
	If D009: Is the total Mercury concentration above 260 ppm?	☐	☑
	* If this is a D001, D002, D003(selected) or D004-D043 does it contain any of the Underlying Hazardous Constituents (UHC) above Universal Treatment Standards(UTS)?	☐	☑
	If Yes, include a UTS/UHC form with the profile		
6	Is this waste a Dioxin Or Furan per 40 CFR 261.31?	☐	☑
7	a. Is this a Non-Hazardous Waste?	☐	☑
	FOR WASTE DISPOSAL AT PERMA-FIX OF MICHIGAN ONLY:		
	b. Is this a hazardous Waste by state regulation only	☐	☐
	c. Is this a Michigan Act 451 listed hazardous waste?	☐	☐

If you answered Yes to any question in Section G, enter the appropriate waste codes(s) on the lines below.

Waste Codes: D009

Please list any Toxic Release Inventory Constituents per EPCRA Section 313 not identified above.

TRI Attachment:

Top _____

Next _____

H. BENZENE NESHAP 40 CFR 61, SUBPART FF (Hazardous waste with Benzene Only) — YES ☐ NO ☑

If question 1,2 or 3 is No, proceed to section I.

1 Is this waste stream generated at a facility with a SIC code listed under NESHAP, or a TSDF that treats NESHAP waste? SIC Code:_____ listed codes: (2800-2899, 2911, 3312, 4953, 9511) — YES ☐ NO ☑

2 Does the waste contain > 10% water — YES ☐ NO ☑

3 Is the total Annual Benzene quantity from the facility waste greater than 10Mg/Yr (22,046 lbs/yr). — YES ☐ NO ☑

If Question 1,2, or 3 is No, proceed to Section I

4 What is the total Benzene concentration in Your Waste? _____% or _____ppmw.

~~(Do not use TCLP results. Acceptable laboratory methods include 8020, 8240, 8260, 602, and 624)~~

5 What is the TAB quantity for the generator facility? _____ Mg/Year

I. PACKAGING/ QUANTITY

1 Non-Bulk	☐	1 gal	☐	5 gal	☐	15 gal	☐	30 gal	☑	55 gal.	☐
Cubic Yard	☐	Boxes	☐	Bags	☐	Totes	☐	Pallets	☐	Other	☐
Quantity 2	Per:	☐	Month	☐	Quarter	☐	Year	☑	Once	☐	Other
2 Bulk:	☐	Tanker	☐	Vac Truck	☐	Rolloff	☐	Dump Trailer	☐	Closed Top	☐
			☐	Gallons	☐	Pounds	☐	Yards	☐	Tons	
Quantity: Lbs.	Per:	☐	Month	☐	Quarter	☐	Year	☐	Once		

85 gal ☐ Other _____ — Open Top ☐

J. DOT SHIPPING INFORMATION:

Enter proper DOT shipping name from 49 CFR 172.101 table:

Hazardous Waste Solid, N.O.S,

List 2 major components: **Mercury**

Hazard Class 9 UN/NA code NA3077 PG III RQ: Y N CLIN:_____ US Gov. CLIN # When applicable

K. ATTACHMENTS: (Check all that apply and include with profile)

- ☐ UTS/UHC Form
- ☐ Analysis
- ☐ Additional Description
- ☐ Process Flow Diagram
- ☐ PCB source statement
- ☐ Material Safety Data Sheet
- ☑ Generator authorization
- ☐ Labpack inventory sheet
- ☐ Land Disposal Notification

L. CERTIFICATION:

I hereby certify that all the information submitted in this and all attached documents is complete and accurate. All known and suspected hazards have been disclosed. By signing below, I give Perma-Fix Environmental Services, Inc., and all of its subsidiaries, permission to make minor changes to this profile prior to its acceptance should they find an error or omission.

Printed Name: X John E. Crews Signature: X _____ Date: X 1-7-2013

**Signatures other than the generator are required to submit an approved authorization letter from the generator to certify this profile

INTERNAL USE ONLY: Review 1 _____ 2 _____ 3 _____

Profile I.D. No. _____ APPROVED ☐ REJECTED ☐ Form Code W _____

Waste Codes _____

DOT _____

Destination/Consolidation Code _____ Price & Initial _____

Product Code: _____ _____

Out Bound Approval: _____ Facility: _____

Notes: _____

PermaFix® environmental services

Notice of Approval

171160-1 / SUNBEAMA
Chad . 904-880-6660
SUNBEAM AUTOBODY, INC.
5200 SUNBEAM RD
JACKSONVILLE, FL 32256

171160-1 / FLR000113027
Chad . 904-880-6660
SUNBEAM AUTOBODY, INC.
5200 SUNBEAM RD
JACKSONVILLE, FL 32256

Thank you for your submission of the Perma-Fix Waste Profile Form. We have evaluated your waste stream, and it has been approved for management at a fully-permitted TSDF. Listed below, and on the attached pages, please find the pertinent information for the proper disposal of the waste. Pricing is included along with a copy of the analysis (if applicable), standard terms and conditions, and container shipment requirements. By shipping under this approval, you agree to the price set forth in this approval. In addition, you may be subject to additional fees or rejection should the shipped waste stream not conform to the specifications of this Waste Profile.

TSD Facility: PERMA FIX OF SOUTH GEORGIA
Profile # / Approval #: AV54221 /
RCRA/EPA Waste Codes: D035 F003 F005

Authorized: 03/07/2007
Expires: 03/06/2008

DOT Description: Hazardous waste, solid, n.o.s.(Acetone,Xylene), 9, NA3077, III

Product	Common Description	Price	Unit	Container	Min. Charge
LF-SLD-02	PAINT RAGS AND DEBRIS	$280.00	DM	DM 55	

Optional Charges (if Applicable)

As required per 40 CFR 264.12(.b), this letter serves as notification that Perma-Fix has the appropriate permits in place to accept and manage your waste(s). Due in part to our permit, non-conforming waste may be rejected at a rate of $250.00, plus round trip transportation if the discrepancy cannot be resolved via manifest corrections or price adjustments.

We appreciate your interest in our company and we look forward to assisting you with the disposal of your waste. To place an order, please contact our customer service department. Our telephone numbers is (229) 244-0474 in Valdosta, GA.

Sincerely,

Dave Haley
Facility Manager
Perma-Fix of South Georgia

SE03

Perma-Fix of South Georgia

Compliance Review

PROFILE: AV54221

Customer Service Review Approved _____ Rejected _____ Date _____

Profile: AV54221 /

Generator: SUNBEAM AUTOBODY, INC. EPA ID: FLR000113027

Bill To: SUNBEAM AUTOBODY, INC. Reference: SUNBEAMA

Comments: _____

Changes Authorized By: _____ Copy Requested: _____ Yes____ No ____

Compliance Officer Approval Approved PH Rejected _____ Date 3/7/07

DPT Shipping Name: Hazardous waste, solid, n.o.s.(Acetone,Xylene)

UN/NA # NA3077 Waste Codes:

Form Code: W310 D035 F003 F005

Hazard Class: 9

Packing Group: III

Combustible Liquid: _____ Non-Regulated: _____

Biennial: Source: _____ Form: W310 MMC: H141 Origin: _____ TRI Attached: Y / N

Two Major Hazardous Components: _____

Comments: _____

Price Approval Approved _____ Rejected _____ Date _____

Container Sizes: _____

Planned Disposal: Landfill LF.SLD-02 Process Code: F-01

Comments: _____ TAT

$240.00 $

Facility Approval Approved per Patricia Rejected _____ Date _____

Class Code: _____

Comments: _____

Waste Material Profile

PERMA FIX OF SOUTH GEORGIA
1812 JAMES P. ROGERS CIRCLE • VALDOSTA, GA 31601
229-244-0474 Fax: 229-333-0328

Profile: AVS4221 Page 1 of 3

A: GENERATOR INFORMATION

Generator	SUNBEAM AUTOBODY, INC.	Contact Name	Chad .
Address	3289 SUNBEAM RD	Contact Phone	904-880-8660
City, St, Zip	JACKSONVILLE FL 32256	Contact Fax	
Phone	904-880-8660		
Fax	904-880-8660		
EPA ID	FLR000113027		

B: BILL TO INFORMATION

Billing To	SUNBEAM AUTOBODY, INC.	Contact Name	Chad .
Address	3289 SUNBEAM RD	Contact Phone	904-880-8660
City, St, Zip	JACKSONVILLE FL 32256	Contact Fax	
Phone	904-880-8660		
Fax	904-880-8660		
EPA ID	FLR000113027		

C: COMMON NAME OF THE WASTE

Waste Name: PAINT RAGS AND DEBRIS
Generating Process: PAINT APPLICATION AND CLEANUP PROCESS

IS THIS WASTE:

	YES/NO
Spent	Y
Virgin	N
Off-Spec	N
WWT sludge	N
Spill	N
Labpack	N
Subject to an exemption?	N
Household waste?	N
Soil from UST removal?	N
Other?	N

D: HAZARDOUS CHARACTERISTICS

Is this waste:

	YES/NO
Radioactive	N
Biohazard	N
Polymerizable	N

Does this waste contain:

	YES/NO
Asbestos	N
PCB's > 50 ppm	N
Hexavalent Chrome	N
HOC's > 1000 ppm	N
VOC's > 500 ppmw	Y

Friable = N

E: PHYSICAL DATA

Odor: MILD
Flash Point: > 200 F
pH: 8 - 9 PH
Spec. Grav: .98 - 1.01 SP.GR.
BTUs: 8000 - 10000 BTU/LB
Chloride % by wt: -
% Water % by wt: 0 = PCT

100 = PCT

Solid		Dust		Granular	
Sludge		Pumpable	N	Pourable	Y
Liquid		Free Liquids		Viscosity	MEDIUM (Hi, Med, Low)
Debris					

Chunks -
Monolith

F: COMPOSITION OF WASTE

Acetone	1 - 5	PCT
DEBRIS: RAGS, PAPER, PPE, WOOD, PLASTIC, FIL/SAND, ABSORBENTS	0 - 20	PCT
DIRT	0 - 20	PCT
Methanol	1 - 5	PCT
Methyl Ethyl Ketone	1 - 5	PCT
OILS	0 - 10	PCT
PAINT/RESIN SOLIDS	0 - 10	PCT
Toluene	1 - 5	PCT
Xylene	1 - 5	PCT

Waste Material Profile

PermaFix

PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. ROGERS CIRCLE - VALDOSTA, GA 31601
229-244-4474 FAX: 229-333-0328

Profile# AV84221 Page 2 of 2

G. WASTE CHARACTERIZATION

	YES/NO
1. Is this a listed EPA RCRA hazardous waste (F, K, P, U) as defined in 40 CFR 261.30	Y
2. a.) Is this a liquid waste with a flash point < 140F as defined in 40 CFR 261.21 (D001)	N
b.) Is this an ignitable solid as defined in 40 CFR 261.21 (D001)	N
c.) Is this an oxidizer as defined in 49 CFR 173.127 (D001)	N
d.) If yes to a, b, or c. Is this a High TOC waste	N
3. a.) Is this a liquid waste with a pH < 2 or > 12.5 (D002)	N
b.) Is this a liquid waste that corrodes steel as defined in 40 CFR 261.22 (D002)	N
4. Is this a reactive waste as defined in 40 CFR 261.23 (D003)	N

If yes, specify the subcategory: Water Reactive [ ] Air Reactive [ ] Explosive [ ] Other Reactive [ ]

Reactive Cyanide; conc. _____ Reactive Sulfide: conc. _____

Waste Code	Constituent	Reg. Level	Actual Conc.
D004	Arsenic	5.0	< 5 MG/L
D005	Barium	100	< 100 MG/L
D006	Cadmium	1.0	< 1 MG/L
D007	Chromium	5.0	< 5 MG/L
D008	Lead	5.0	< 5 MG/L
D009	Mercury	0.2	< .2 MG/L
D010	Selenium	1.0	< 1 MG/L
D011	Silver	5.0	< 5 MG/L
D012	Endrin	0.02	< .02 MG/L
D013	Lindane	0.4	< .4 MG/L
D014	Methoxychlor	10	< 10 MG/L
D015	Toxaphene	0.5	< .5 MG/L
D016	2, 4 - D	10	< 10 MG/L
D017	2, 4, 5 - T (Silvex)	1	< 1 MG/L
D018	Benzene	0.5	< .5 MG/L
D019	Carbon Tetrachloride	0.5	< .5 MG/L
D020	Chlordane	0.03	< .03 MG/L
D021	Chlorobenzene	100	< 100 MG/L
D022	Chloroform	6.0	< 6 MG/L
D023	o-Cresol	200	< 200 MG/L
D024	m-Cresol	200	< 200 MG/L
D025	p-Cresol	200	< 200 MG/L
D026	Cresol(s, m, p)	200	< 200 MG/L
D027	1, 4 Dichlorobenzene	7.5	< 7.5 MG/L
D028	1, 2-Dichloroethane	0.5	< .5 MG/L
D029	1, 1-Dichloroethylene	0.7	< .7 MG/L
D030	2, 4-Dinitrotoluene	0.13	< .13 MG/L
D031	Heptachlor	0.008	< .008 MG/L
D032	Hexachlorobenzene	0.13	< .13 MG/L
D033	Hexachlorobutadiene	0.5	< .5 MG/L
D034	Hexachloroethane	3	< 3 MG/L
D035	Methyl Ethyl Ketone	200	> 200 MG/L
D036	Nitrobenzene	2	< 2 MG/L
D037	Pentachlorophenol	100	< 100 MG/L
D038	Pyridine	5	< 5 MG/L
D039	Tetrachloroethylene	0.7	< .7 MG/L
D040	Trichloroethylene	0.5	< .5 MG/L
D041	2, 4, 5-Trichlorophenol	400	< 400 MG/L
D042	2, 4, 6-Trichlorophenol	2	< 2 MG/L
D043	Vinyl Chloride	0.2	< .2 MG/L

Based on: Total Analysis [N] TCLP Analysis [N] Generator Knowledge [Y]

	YES/NO
5. Is this a EPA Toxic Waste (D004 - D043) as defined in 40 CFR 261.24?	Y
If D009: Is the total Mercury concentration above 260 ppm?	N
* If this is a D001, D002, D003(selected) or D004 - D043 does it contain any of the Underlying Hazardous Constituents (UHC) above Universal Treatment Standards (UTS)?	N
If Yes, include a UTS/UHC form with the profile	
6. Is this waste a Dioxin or Furan per 40 CFR 261.31?	N
7. a.) Is this a Non-Hazardous Waste?	N
FOR WASTE DISPOSAL AT PERMA-FIX OF MICHIGAN ONLY:	
b.) Is this a hazardous waste by state regulation only?	N
c.) Is this a Michigan Act 451 listed hazardous waste?	N

If you answered Yes to any question in Section G, enter the appropriate waste code(s) on the lines below.

Waste Codes: D035 F003 F005

Please list any Toxic Release Inventory Constituents per EPCRA Section 313 not identified above.

Waste Material Profile

PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. RODGERS CIRCLE - VALDOSTA, GA 31601
229-244-0474 Fax: 229-333-0328

Profile: AV54221 Page 3 of 3

H. BENZENE NESHAP 40 CFR 61, SUBPART FF (Hazardous waste with Benzene Only)

If question 1, 2, or 3 is No, proceed to section I.

YES/NO

1. Is this waste stream generated at a facility with a SIC code listed under NESHAP, or a TSDF that treats NESHAP waste? SIC Code _____ listed codes: (2800-2899, 2911, or 3312) [N]
2. Does the waste contain > 10% water? [N]
3. Is the total Annual Benzene quantity from the facility waste greater that 1 Mg/Yr (2,200 lbs/yr)? [N]

If Question 1, 2, or 3 is No, proceed to section I.

4. What is the total Benzene concentration in Your Waste? _____

(Do not use TCLP results. Acceptable laboratory methods include 8020, 8260, 802, and 824)

5. What is the TAB quantity for the generator facility? _____ Mg/Yr

I. PACKAGING/QUANTITY

Container Type/Size: _____

Rate of Generation: per

J. DOT SHIPPING INFORMATION

Enter the proper DOT shipping name from 49 CFR 172.101 table.

Hazardous waste, solid, n.o.s.(Acetone,Xylene)

List 2 major components: _____

Hazard Class 9 UN/NA Code NA3077 PG III

K. ATTACHMENTS (Check all that apply and include with profile)

- [N] UST/UHC Form
- [N] Analysis
- [N] Additional Description
- [N] Process Flow Diagram
- [N] PCB source statement
- [N] Material Safety Data Sheet
- [N] Generator authorization
- [N] Lappack inventory sheet
- [N] Land Disposal Notification
- [N] Organic Peroxide addendum

L. CERTIFICATION

I hereby certify that all the information submitted in this and all attached documents are complete and accurate. All known and suspected hazards have been disclosed. By signing below, I give Perma-Fix Environmental Services, Inc., and all of its subsidiaries, permission to make minor changes to this profile prior to its acceptance should they find an error or omission.

Printed Name: Dave McBroom Signature: [signature] Date: 3/7/07

** Signatures other than the generator are required to submit an approved authorization letter from the generator to certify this profile.

INTERNAL USE ONLY: Approval Review: 1 _____ 2 _____ 3 _____

Profile ID Number AV54221 Approval Status: S Form Code: W310

Waste Codes D038 F003 F005

DOT Hazardous waste, solid, n.o.s.(Acetone,Xylene)

Destination/Consolidation Code F-01 Price Initial

Outbound Approval _____ Facility

Notes: LF-SLD-03

2

Perma-Fix of Orlando	Perma-Fix of Michigan	Perma-Fix of South Georgia	Perma-Fix Treatment Services	Perma-Fix of Dayton
FLD980559728	MID098983194	GAD093380814	OHD000402388	OHD004274031

Notice of Approval

780267512-2 / HID483
RICK WILCUT 414-933-1701
HIDDEN WATER, INC.
3939 W. MCKINLEY AVE. , STE.B
MILWAUKEE, WI 53208

780267196-1 / GA0570024109
GREG HAUGEN 229-257-4654
23 CES/CEAN (GREG HAUGEN, REM)
3485 GEORGIA ST.
MOODY AFB, GA 31669-1707

Thank you for your submission of the Perma-Fix Waste Profile Form. We have evaluated your waste stream, and it has been approved for management at a fully-permitted TSDF. Listed below, and on the attached pages, please find the pertinent information for the proper disposal of the waste. Pricing is included along with a copy of the analysis (if applicable), standard terms and conditions, and container shipment requirements. By shipping under this approval, you agree to the price set forth in this approval. In addition, you may be subject to additional fees or rejection should the shipped waste stream not conform to the specifications of this Waste Profile.

TSD Facility: PERMA FIX OF SOUTH GEORGIA
Profile # / Approval #: AV75603 /
RCRA/EPA Waste Codes: D008

Authorized: 01/30/2013
Expires: 01/30/2014

DOT Description: Hazardous waste, solid, n.o.s. (WOOD / LEAD), 9, NA3077, III

Product	Common Description	Price	Unit	Container	Min. Charge
LF-SLD-03	PLYWOOD/LEAD	$0.45	LB	CM 4400	

Optional Charges (if Applicable)

GEORGIA HAZARDOUS WASTE TAX/TON	TON	4400	

As required per 40 CFR 264.12(.b), this letter serves as notification that Perma-Fix has the appropriate permits in place to accept and manage your waste(s). Due in part to our permit, non-conforming waste may be rejected at a rate of $250.00, plus round trip transportation if the discrepancy cannot be resolved via manifest corrections or price adjustments.

We appreciate your interest in our company and we look forward to assisting you with the disposal of your waste. To place an order, please contact our customer service department. Our telephone number is (229) 244-0474 in Valdosta, GA.

Sincerely,

Lason Kirkland
General Manager
Perma-Fix of South Georgia

Perma-Fix of South Georgia
Compliance Review

PROFILE: AV75603

Customer Service Review Approved _____ Rejected _____ Date _____

Profile: AV75603 /

Generator: 23 CES/CEAN (GREG HAUGEN, REM) EPA ID: GA0570024109

Bill To: HIDDEN WATER, INC. Reference: HID483

Comments: _____

Changes Authorized By: _____ Copy Requested: _____ Yes____ No ____

Compliance Officer Approval Approved LK Rejected _____ Date 1/30/13

DPT Shipping Name: Hazardous waste, solid, n.o.s. (WOOD / LEAD)

UN/NA # NA3077 Waste Codes:

Form Code: D008

Hazard Class: 9

Packing Group: III

Combustible Liquid: _____ Non-Regulated: _____

Biennial: Source: G19 Form: W002 MMC: H141 Origin: _____ TRI Attached: Y / N

Two Major Hazardous Components: _____

Comments: _____

Price Approval Approved LK Rejected _____ Date 1/30/13

Container Sizes: CM

Planned Disposal: Landfill LF52D-03 Process Code: P61

Comments: _____

.45 / lb + tax

Facility Approval Approved _____ Rejected _____ Date _____

Class Code: _____

Comments: _____

PermaFix environmental services

☐ Michigan Facility, 18550 Allen Road, Brownstown, MI 48192 - MID096963194 - 800-282-9251- Fax 734 286-6440
☐ Orlando Facility, 10100 Rocket Blvd., Orlando, FL 32824 - FLD980559728 - 800-345-6393 - Fax 407-855-2812
☐ Valdosta Facility, 1612 James P. Rodgers Circle, Valdosta, GA 31601- GAD093380814 - (229)244-0474 - Fax (229)333-
☐ Dayton Facility, 300 South West End Ave., Dayton, OH 45427 - OHD004274031 - (800) 543-3670 - Fax 937-268-9059
☐ Tulsa Facility, 2700 South 25th West Avenue, Tulsa, OK 74107 - OKD000402396 - (918) 582-9595 - Fax (918) 582-661

WASTE MATERIAL PROFILE

Please Print

A: GENERATOR: 23 CES/CEV (GREG HAUGEN, REM) EPA ID: GA0570024109

3485 GEORGIA STREET MOODY AFB, GA 31669-1707
SITE ADDRESS STATE ZIP

3485 GEORGIA STREET MOODY AFB, GA 31669-1707
MAILING ADDRESS STATE ZIP

CONTACT: Greg Haugen PHONE (229) 257-4654 FAX

E-Mail Address:

B: BILL TO: Hidden Water, Inc.

3939 West Mckinley Ave Milwaukee WI 53208
MAILING ADDRESS STATE ZIP

CONTACT: Rick Wilcut PHONE 904-716-1314 FAX

E-Mail Address: hazrdus389@aol.com

C: COMMON NAME OF THE WASTE (PLEASE PRINT) Plywood/lead

GENERATING PROCESS (attach flow diagram if available):
plywood from gunrange

IS THIS WASTE:	NO	YES		NO	YES
Spent	☒	☐	Spill	☒	☐
Virgin	☐	☒	Labpack	☒	☐ (Attach Inventory Sheet)
Off-Spec	☒	☐	Subject to an exemption?		☐ (Check Below)
WWT sludge	☒	☐	☐ Household waste? ☐ Soil from UST removal ☐ Other?		

D: COMPOSITION OF WASTE: List all chemical/compounds. Provide MSDS's or analysis if available.

Chemicals/compounds	%	Chemicals/compounds	%	Chemicals/compounds	%
plywood	>99				
plastic	0-1				
lead	0-1				

Total Must = 100

E: HAZARDOUS CHARACTERISTICS

Is this waste:	NO	YES	
Radioactive	☒	☐	
Bio-Hazard	☒	☐	
Polymerizable	☒	☐	
Does this waste contain: Asbestos	☒	☐	→ ☐ Friable ☐ Non Friable?
PCB's > 50 ppm	☒	☐	→ Conc? ____ ppm
Hexavalent Chrome	☒	☐	→ Conc? ____ ppm
HOC's >1000ppm	☒	☐	→ Conc? ____ ppm
VOC's > 500ppmw	☒	☐	→ Conc? ____ ppmW(both 264 & 265 subpart cc)

F: PHYSICAL DATA:

		Odor	Flash Point	pH	Spec. Grav.	BTU/lb.	Chloride % by wt.	Water % by vol.
Layer	two	Strong ☐	<73 ☐	<2 ☐	<0.70 ☐	< 4999 ☐	<2 ☐	<5 ☐
Color	yellowish	Mild ☐	73-99 ☐	2.1-5.0 ☐	0.71-0.81 ☐	5k-9999 ☐	2-5 ☐	5-10 ☐
Source Code	G19	None ☒	100-139 ☐	5.1-9.0 ☐	0.82-0.95 ☐	10k-15000 ☐	5-8 ☐	10-15 ☐
Form Code	W002	Describe	140-199 ☐	9.1-12.4 ☐	0.96-1.01 ☒	>15001 ☐	8-11 ☐	15-20 ☐
			>200 ☐	>12.5 ☐	1.02-1.09 ☐		11-14 ☐	20-25 ☐
			N/A ☒	N/A ☒	1.10-1.20 ☐		>14 ☐	>25 ☐
					>1.20 ☐			

If Known Complete: Exact ____ Exact ____ Exact ____ Exact ____ Exact ____ Exact ____ %

Physical State:
Solid 100 % → Dust ☐ Granular ☐ Chunks ☒ Monolith ☐ in Gals ____
Sludge ____ % → Pumpable: ☐ Yes ☒ No Pourable: ☐ Yes ☒ No ☐ in Gals ____
Liquid ____ % → Free liquids: ☐ Yes ☐ No Viscosity: ☐ Low(Water) ☐ Medium(Oil) ☒ High(Syrup)
Gas ____ % → Aerosol ☐ Cylinder ☐ → Dia.: ____ Qty: ____ Valve Condition: ____
Debris ____ % → Describe(size & content):

D
Next

G: WASTE CHARACTERIZATION:

	YES	NO
1 Is this a listed EPA RCRA hazardous waste (F,K,P,U) as defined in 40 CFR 261.30	☐	☐
2 a. Is this a liquid waste with a flash point <140F as defined in 40 CFR 261.21 (D001).	☐	☐
b. Is this an ignitable solid as defined in 40 CFR 261.21 (D001)	☐	☐
c. Is this an oxidizer as defined in 49 CFR 173.151 (D001)	☐	☐
d. Is this an ignitable compressed gas as defined in 40 CFR 261.21 (D001)	☐	☐
e. If yes to a,b, or c. Is this a High TOC waste	☐	☐
3 a. Is this a liquid waste with a pH<2 or >12.5. (D002)	☐	☐
b. is this a liquid waste that corrodes steel as defined in 40 CFR 261.22 (D002).	☐	☐
4 Is this a reactive waste as defined in 40 CFR 261.23. (D003)	☐	☐

If yes, check the subcategory: ☐ Water Reactive ☐ Air Reactive ☐ Explosive ☐ Other Reactive
☐ Reactive Cyanide: conc. _____ ppm ☐ Reactive Sulfide: conc. _____ ppm

Waste Code	Constituent	< Than	Reg Level	> Than	Conc	Waste Code	Constituent	< Than	Reg Level	> Than	Conc
D004	Arsenic	☐	5.0	☐		D024	m-Cresol	☐	200	☐	
D005	Barium	☐	100	☐		D025	p-Cresol	☐	200	☐	
D006	Cadmium	☐	1.0	☐		D026	Cresol(o,, m, p)	☐	200	☐	
D007	Chromium	☐	5.0	☐		D027	1,4 Dichlorobenzene	☐	7.5	☐	
D008	Lead	☐	5.0	☐	>100	D028	1,2-Dichloroethane	☐	0.5	☐	
D009	Mercury	☐	0.2	☐		D029	1,1-Dichloroethylene	☐	0.7	☐	
D010	Selenium	☐	1.0	☐		D030	2,4-Dinitrotofuene	☐	0.13	☐	
D011	Silver	☐	5.0	☐		D031	Heptachlor	☐	0.008	☐	
D012	Endrin	☐	0.02	☐		D032	Hexachlorobenzene	☐	0.13	☐	
D013	Lindane	☐	0.4	☐		D033	Hexechlorobutadiene	☐	0.5	☐	
D014	Methoxychlor	☐	10	☐		D034	Hexachloroethane	☐	3.0	☐	
D015	Toxaphene	☐	0.5	☐		D035	Mehtyl Ethyl Ketone	☐	200	☐	
D016	2,4 - D	☐	10	☐		D036	Nitrobenzene	☐	2.0	☐	
D017	2,4,5-TP(Silvex)	☐	1	☐		D037	Pentachlorophenol	☐	100	☐	
D018	Benzene	☐	0.5	☐		D038	Pyridine	☐	5.0	☐	
D019	Carbon Tetrachloride	☐	0.5	☐		D039	Tetrachloroethylene	☐	0.7	☐	
D020	Chlordane	☐	0.03	☐		D040	Trichloroethylene	☐	0.5	☐	
D021	Chlorobenzene	☐	100	☐		D041	2,4,5-Trichlorophenol	☐	400	☐	
D022	Chloroform	☐	6.0	☐		D042	2,4,6-Trichlorophenol	☐	2.0	☐	
D023	o-Cresol	☐	200	☐		D043	Vinyl Chloride	☐	0.2	☐	

Based on: Total Analysis ☐ TCLP Analysis ☐ Generator Knowledge ☐

	YES	NO
5 Is this a EPA Toxic Waste (D004-D043)* as defined in 40 CFR 261.24?	☐	☐
If D009: Is the total Mercury concentration above 260 ppm?		
*** If this is a D001, D002, D003(selected) or D004-D043 does it contain any of the Underlying Hazardous Constituents (UHC) above Universal Treatment Standards(UTS)?**	☐	☐
If Yes, include a UTS/UHC form with the profile		
6 Is this waste a Dioxin Or Furan per 40 CFR 261.31?	☐	☐
7 a. Is this a Non-Hazardous Waste?	☐	☐
FOR WASTE DISPOSAL AT PERMA-FIX OF MICHIGAN ONLY:		
b. Is this a hazardous Waste by state regulation only	☐	☐
c. Is this a Michigan Act 451 listed hazardous waste?	☐	☐

If you answered Yes to any question in Section G, enter the appropriate waste codes(s) on the lines below.

Waste Codes: D008

Please list any Toxic Release Inventory Constituents per EPCRA Section 313 not identified above.

~~TRI Attachment:~~

Top _____

Next _____

H. BENZENE NESHAP 40 CFR 61, SUBPART FF (Hazardous waste with Benzene Only) YES ☐ NO ☒

If question 1,2 or 3 is No, proceed to section I.

1 Is this waste stream generated at a facility with a SIC code listed under NESHAP, or a TSDF that treats NESHAP waste? SIC Code _____ listed codes: (2800-2899, 2911, 3312, 4953, 9511)

2 Does the waste contain > 10% water ☐ ☒

3 Is the total Annual Benzene quantity from the facility waste greater than 10Mg/Yr (22,046 lbs/yr). ☐ ☒

If Question 1,2, or 3 is No, proceed to Section I

4 What is the total Benzene concentration in Your Waste? _____ % or _____ ppmw.

(Do not use TCLP results. Acceptable laboratory methods include 8020, 8240, 8260, 602, and 624)

5 What is the TAB quantity for the generator facility? _____ Mg/Year

I. PACKAGING/ QUANTITY

1 Non-Bulk	☐ 1 gal	☐ 5 gal	☐ 15 gal	☐ 30 gal	☐ 55 gal.	☐ 85 gal	☐ Other _____	
Cubic Yard	☒ Boxes	☐ Bags		☐ Totes	☐ Pallets	☐ Other _____		
Quantity	10 Per:	☐ Month		☐ Quarter	☐ Year	☐ Once		
2 Bulk:	☐ Tanker	☐ Vac Truck		☒ Rolloff	☐ Dump Trailer	☐ Closed Top	☐ Open Top	
		☐ Gallons		☐ Pounds	☐ Yards	☐ Tons		
Quantity: 10K Lbs.	Per:	☐ Month		☐ Quarter	☐ Year	☒ Once		

J. DOT SHIPPING INFORMATION:

Enter proper DOT shipping name from 49 CFR 172.101 table:

HAZARDOUS WASTE, SOLID, N.O.S.,

List 2 major components: **WOOD, LEAD**

Hazard Class 9 UN/NA code NA3077 PG III RQ: Y N CLIN 9407

US Gov. CLIN # When applicable

K. ATTACHMENTS: (Check all that apply and include with profile)

- ☒ UTS/UHC Form
- ☒ Analysis
- ☒ Additional Description
- ☒ Process Flow Diagram
- ☒ PCB source statement
- ☒ Material Safety Data Sheet
- ☒ Generator authorization
- ☒ Labpack inventory sheet
- ☒ Land Disposal Notification

L. CERTIFICATION:

I hereby certify that all the information submitted in this and all attached documents is complete and accurate. All known and suspected hazards have been disclosed. By signing below, I give Perma-Fix Environmental Services, Inc., and all of its subsidiaries, permission to make minor changes to this profile prior to its acceptance should they find an error or omission

Printed Name: Rick Wilcut Signature: Rick Wilcut Date: 29/Jan/13

****Signatures other than the generator are required to submit an approved authorization letter from the generator to**

INTERNAL USE ONLY: Review 1 _____ 2 _____ 3 _____

Profile I.D. No. _____ APPROVED ☐ REJECTED ☐ Form Code W _____

Waste Codes _____

DOT _____

Destination/Consolidation Code _____ Price & Initial _____

Product Code: _____ _____

Out Bound Approval: _____ Facility: _____

Notes: _____

Perma-Fix of Orlando, Inc. Perma-Fix of Dayton, Inc. Perma-Fix of Michigan, Inc. Perma-Fix of South Georgia, Inc.

SUBPART CC AND LAND DISPOSAL RESTRICTION NOTIFICATION FORM

Generator Name 23 CES/CEV (GREG HAUGEN, REM) Manifest No: PROFILE Page ____ of ____

a b c d
[ ] This is a wastewater stream.

a b c d
[P] This is a non-wastewater stream.

NOTE: BOXES CORRESPOND TO MANIFEST LINE ITEM [a][b][c][d]

The waste(s) described above, does not meet the applicable treatment standards in 40 CFR 268 Subpart D.

a b c d
[N] SUBPART CC: INDICATE WHETHER WASTES ON THE MANIFEST ARE REGULATED UNDER SUBPART CC FOR C VOC'S IN CONCENTRATION LEVELS EQUAL TO OR GREATER THAN 500 PPMW BY ENTERING A "Y" FOR " OR A "N" FOR "NO" AS APPROPRIATE

A. CHARACTERISTIC WASTE

MLI a b c d	CODE	SUBCATEGORY/CONSTITUENTS
	D001	Ignitable Wastes (TOC> 10%)
	D001*	Ignitable Wastes(TOC<10%)
	D002*	Corrosive Wastes
	D003	Reactive Sulfides based on 261.23(a)(5)
	D003*	Explosives based on 261.23(a) (6),(7),(8)
	D003	Unexploded ordinance/explosive
	D003*	Other Reactive based on 261.23(a) (1)
	D003*	Water Reactive based on 261.23(a) (2),(3),(4)
	D003	Reactive Cyanides based on 261.23 (a) (5)
	D004*	Arsenic
	D005*	Barium
	D006*	Cadmium
	D006*	Cadmium Containing Batteries
	D007*	Chromium
P	D008*	Lead
	D008*	Lead Acid Batteries
	D009*	High Mercury-Organic
	D009*	High Mercury-Inorganic
	D009*	Low Mercury
	D009*	Mercury Wastewater
	D010*	Selenium
	D011*	Silver
	D012*	Endrin
	D013*	Lindane
	D014*	Methoxychlor
	D015*	Toxaphene
	D016*	2,4-D
	D017*	2,4,5-TP (Silvex)
	D018*	Benzene
	D019*	Carbon Tetrachloride
	D020*	Chlordane
	D021*	Chlorobenzene
	D022*	Chloroform
	D023*	o-Cresol
	D024*	m-Cresol
	D025*	p-Cresol
	D026*	Cresol (Total)
	D027*	p-Dichlorobenzene
	D028*	1,2-Dichloroethane
	D029*	1,1-Dichloroethylene
	D030*	2,4-Dinitrotoluene
	D031*	Heptachlor
	D032*	Hexachlorobenzene
	D033*	Hexachlorobutadiene
	D034*	Hexachloroethane
	D035*	Methyl ethyl ketone
	D036*	Nitrobenzene
	D037*	Pentachlorophenol
	D038*	Pyridine
	D039*	Tetrachloroethylene
	D040*	Trichloroethylene
	D041*	2,4,5-Trichlorophenol
	D042*	2,4,6-Trichlorophenol
	D043*	Vinyl chloride

B. LISTED WASTE

MLI a b c d	CODE	SUBCATEGORY/CONSTITUENTS
	F001	Spent Halogenated Solvents
	F002	Spent Halogenated Solvents
	F003	Spent Non-halogenated Solvents
	F004	Spent Non-halogenated Solvents
	F005	Spent Non-halogenated Solvents

CHECK REGULATED CONSTITUENTS FOR LISTED WASTES IDENTIFIED ABOVE (F001-F005):

	Acetone
	Benzene
	n-Butyl alcohol
	Carbon disulfide
	Carbon tetrachloride
	Chlorobenzene
	o-Cresol
	m-Cresol
	p-Cresol
	Cresol
	Cyclohexanone
	o-Dichlorobenzene
	Ethyl acetate
	Ethyl benzene
	Ethyl ether
	Isobutyl alcohol
	Methanol
	Methylene chloride
	Methyl ethyl Ketone
	Methyl Isobutyl ketone
	Nitrobenzene
	Pyridine
	Tetrachloroethylene
	Toluene
	1,1,1-Trichloroethane
	1,1,2-Trichloroethane
	1,1,2-Trichloro-1,2,2-trifluoroethane
	Trichloroethylene
	Trichloromonofluoromethene
	Xylenes
	2-Nitropropane
	2-Ethoxyethanol

a b c d		
	F006	Electroplating WWT sludge
	F035	Wood preserving wastewater
	F037	Petroleum refinery primary oil/water separation sludge
	F038	Petroleum refinery secondary oil/water separation sludge
	F039	Multi-source Leachate
	K048	Dissolved air flotation float
	K049	Slop oil emulsion solids

Does the waste identified by an asterisk (*) contain any Underlying Hazardous Constituents per 268.7 (a)(1)?

[Y] Yes
[ ] No

If YES, *attach a completed UTS/UHC form to this document*

D. OTHER WASTES

Enter waste codes/subcategory, if applicable, in the table below for codes not found above:

MLI a b c d	WASTE CODES/SUBCATEGORY	TREATABILITY GROUP

SIGNATURE: _____ Date: _____

Perma-Fix of Orlando, Inc. Perma-Fix of Dayton, Inc. Perma-Fix of Michigan, Inc. Perma-Fix of South Georgia, Inc.

UNIVERSAL TREATMENT STANDARDS(UTS)/UNDERLYING HAZARDOUS CONSTITUENTS(UHC) FORM

Generator: _____ Manifest No: _____ Page: _____ of _____

M L I a b c d		WW	NWW
	Formparanate	0.056	1.4
	Heptachlor	0.0012	0.066
	Heptachlor epoxide	0.016	0.066
	Hexachlorobenzene	0.055	10
	Hexachlorobutadiene	0.055	5.6
	Hexachlorocyclopentadiene	0.057	2.4
	Hexachloroethane	0.055	30
	Hexachloropropylene	0.035	30
	HxCDDs(All Hexachlorodibenzo-p-dioxins)	0.000063	0.001
	HxCDFs(All Hexachlorodibenzofurans)	0.000063	0.001
	Indeno (1,2,3-c,d) pyrene	0.0055	3.4
	Iodomethane	0.19	65
	Isobutyl alcohol	5.6	170
	Isodrin	0.021	0.066
	Isolan	0.056	1.4
	Isosafrole	0.081	2.6
	Kepone	0.0011	0.13
	Methacrylonitrile	0.24	84
	Methanol	5.6	0.75*
	Methapyrilene	0.081	1.5
	Methiocarb	0.056	1.4
	Methomyl	0.028	0.14
	Methoxychlor	0.25	0.18
	Methyl ethyl ketone	0.28	36
	Methyl isobutyl ketone	0.14	33
	Methyl methacrylate	0.14	160
	Methyl methansulfonate	0.018	N/A
	Methyl parathion	0.014	4.6
	3-Methylcholanthrene	0.0055	15
	4,4-Methylene bis(2-chloroaniline)	0.5	30
	Methylene chloride	0.089	30
	Metolcarb	0.056	1.4
	Mexacarbate	0.056	1.4
	Molinate	0.042	1.4
	Napthalene	0.059	5.6
	2-Naphthylamine	0.52	N/A
	o-Nitroaniline	0.27	14
	p-Nitroaniline	0.028	28
	Nitrobenzene	0.068	14
	5-Nitro-o-toluidine	0.32	28
	o-Nitrophenol	0.028	13
	p-Nitrophenol	0.12	29
	N-Nitrosodiethylamine	0.4	28
	N-Nitrosodimethylamine	0.4	2.3
	N-Nitroso-di-n-butylamine	0.4	17
	N-Nitrosomethylethylamine	0.4	2.3
	N-Nitrosomorpholine	0.4	2.3
	N-Nitrosopiperidine	0.013	35
	N-Nitrosopyrrolidine	0.013	35
	Oxamyl	0.056	0.28
	Parathion	0.014	4.6
	Total PCBs	0.1	10
	Pebulate	0.042	1.4
	Pentachlorobenzene	0.055	10
	PeCDDs (All Pentachlorodibenzo-p-dioxins)	0.000063	0.001
	PeCDFs(All Pentachlorodibenzofurans)	0.000035	0.001
	Pentachloroethane	0.055	6
	Pentachloronitrobenzene	0.055	4.8
	Pentachlorophenol	0.089	7.4
	Phenacetin	0.081	16
	Phenanthrene	0.059	5.6
	Phenol	0.039	6.2
	o-Phenylenediamine	0.056	5.6
	Phorate	0.021	4.6
	Phthalic acid	0.055	28
	Phthalic anhydride	0.055	28
	Physostigmine	0.056	1.4

M L I a b c d		WW	NWW
	Physostigmine salicylate	0.056	1.4
	Promecarb	0.056	1.4
	Pronamide	0.093	1.5
	Propham	0.056	1.4
	Propoxur	0.056	1.4
	Prosulfocarb	0.042	1.4
	Pyrene	0.067	8.2
	Pyridine	0.014	16
	Safrole	0.081	22
	Silvex (2,4,5-TP)	0.72	7.9
	1,2,4,5-Tetrachlorobenzene	0.055	14
	TCDDs (All Tetrachlorodibenzo-p-dioxins)	0.000063	0.001
	TCDFs (All Tetrachlorodibenzofurans)	0.000063	0.001
	1,1,1,2-Tetrachloroethane	0.057	6
	1,1,2,2-Tetrachloroethane	0.057	6
	Tetrachloroethylene	0.056	6
	2,3,4,6-Tetrachlorophenol	0.03	7.4
	Thiodicarb	0.019	1.4
	Thiophanate-methyl	0.056	1.4
	Tirpate	0.056	0.28
	Toluene	0.08	10
	Toxaphene	0.0095	2.6
	Triallate	0.042	1.4
	Tribromomethane (Bromoform)	0.63	15
	1,2,4-Trichlorobenzene	0.055	19
	1,1,1-Trichloroethane	0.054	6
	1,1,2- Trichloroethane	0.054	6
	Trichloroethylene	0.054	6
	Trichloromonofluoromethane	0.02	30
	2,4,5-Trichlorophenol	0.18	7.4
	2,4,6-Trichlorophenol	0.035	7.4
	2,4,5-Trichlorophenoxyacetic acid(2,4,5-T)	0.72	7.9
	1,2,3-Trichloropropane	0.85	30
	1,1,2-Trichloro-1,2,2-trifluoroethane	0.057	30
	Triethylamine	0.081	1.5
	tris-(2,3-Dibromopropyl) phosphate	0.11	0.1
	Vernolate	0.042	1.4
	Vinyl chloride	0.27	6
	Xylene(s)	0.32	30
	Cyanides (Total)	1.2	590
	Cyanides (Amenable)	0.86	30
	Fluoride**	35	N/A
	Sulfide	14	N/A
	Antimony	1.9	1.15*
	Arsenic	1.4	5.0*
	Barium	1.2	21.0*
	Beryllium	0.82	1.22*
	Cadmium	0.69	0.11*
	Chromium (Total)	2.77	0.60*
P	Lead	0.69	0.75*
	Mercury (Nonwastewater from Retort)	N/A	0.20*
	Mercury (All others)	0.15	0.025*
	Nickel	3.98	11.0*
	Selenium	0.82	5.7*
	Silver	0.43	0.14*
	Thallium	1.4	0.20*
	Vanadium**	4.3	1.6*
	Zinc**	2.61	4.3*

* TCLP Values ** Not UHC in characteristic wastes (268.2(i)).

Do the waste stream(s) identified on the manifest listed above or on the attached profile contain any of the constituents listed on this table in concentrations above the regulatory levels?

a b c d [y] YES a b c d [ ] NO

Signature _____ Date _____

Revised:03/04/04 By: C Waechter PESI
Checked: 12/1/2001 By: J. Franklin PFMI

Perma-Fix of Orlando, Inc. | Perma-Fix of Dayton, Inc. | Perma-Fix of Michigan, Inc. | Perma-Fix of South Georgia, Inc.

LAND DISPOSAL RESTRICTION CERTIFICATION FORM

Generator Name 23 CES/CEV (GREG HAUGEN, REI Manifest No PROFILE Page _____ of _____

The waste(s) identified below comply with the applicable treatment standards in 40 CFR 268, Subpart D and the applicable prohibition levels specified in 40 CFR 268.32 or RCRA 3004(d). The required information applicable to each waste is identified below.

☐ This shipment includes F001-F005 spent solvents, as identified on the attached sheet.
(Attach LDR Notification Form and check regulated constituents)

☐ This shipment includes F039 multisource leachate, as identified on the attached UTS\UHC Form.
(Fill out appropriate constituents)

☐ This shipment includes D001 (other than: A. High-TOC ignitables -or- B. Other ignitables that will be combusted or recovered), D002, D003 and/or D012-D043 characteristic wastes. The wastes will not be managed in CWA/CWA-equivalent/Class I SDWA systems and are identified on the attached LDR Form.

☐ This shipment includes RCRA Section 3004(d) California list wastes, as identified on the attached LDR Form.

☐ This shipment includes other restricted waste as identified below.

Manifest Line Item	Hazardous Waste No.		Subcategory	Treatability Group			

M L I	LIST CODES, EACH FOLLOWED BY CONFORMING CONSTITUENTS IN PARENTHESIS-ENTER "ALL" WHEN ALL MEET TREATMENT

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

Signature _____ Date _____

Notice of Approval

780266221-1 / STE837
Raj Singh 954-464-7994
STERICYCLE SPECIALTY WASTE SOL
314-B W. LANDSTREET RD.
ORLANDO, FL 32824

780266456-1 / FLR000150631
OSCAR DUGGER 407-629-1599
ORLANDO VETERANS MED. CTR.
5201 RAYMOND ST.
ORLANDO, FL 32803

Thank you for your submission of the Perma-Fix Waste Profile Form. We have evaluated your waste stream, and it has been approved for management at a fully-permitted TSDF. Listed below, and on the attached pages, please find the pertinent information for the proper disposal of the waste. Pricing is included along with a copy of the analysis (if applicable), standard terms and conditions, and container shipment requirements. By shipping under this approval, you agree to the price set forth in this approval. In addition, you may be subject to additional fees or rejection should the shipped waste stream not conform to the specifications of this Waste Profile.

TSD Facility: PERMA FIX OF SOUTH GEORGIA
Profile # / Approval #: AV71280 / PF1041
RCRA/EPA Waste Codes: D001 F003

Authorized: 03/01/2012
Expires: 03/01/2013

DOT Description: Waste Flammable solids, organic, n.o.s. (PARAFFIN / XYLENE), 4.1, UN1325, II

Product	Common Description	Price	Unit	Container	Min. Charge
FS-SLD-01	PARAFFIN WAX WITH XYLENE	$51.25	DF	5	

Optional Charges (if Applicable)

As required per 40 CFR 264.12(.b), this letter serves as notification that Perma-Fix has the appropriate permits in place to accept and manage your waste(s). Due in part to our permit, non-conforming waste may be rejected at a rate of $250.00, plus round trip transportation if the discrepancy cannot be resolved via manifest corrections or price adjustments.

We appreciate your interest in our company and we look forward to assisting you with the disposal of your waste. To place an order, please contact our customer service department. Our telephone number is (229) 244-0474 in Valdosta, GA.

Sincerely,

Lason Kirkland
General Manager
Perma-Fix of South Georgia

Perma-Fix of South Georgia
Compliance Review

PROFILE: AV71280

Customer Service Review Approved _____ Rejected _____ Date _____

Profile: AV71280 /

Generator: ORLANDO VETERANS MED. CTR. EPA ID: FLR000150631

Bill To: STERICYCLE SPECIALTY WASTE SOL Reference: STE837

Comments: _____

Changes Authorized By: _____ Copy Requested: _____ Yes____ No ____

Compliance Officer Approval Approved Lk. Rejected _____ Date 3/1/12

DPT Shipping Name: Waste Flammable solids, organic, n.o.s. (PARAFFIN / XYLENE)

UN/NA # UN1325 Waste Codes:

Form Code: D001 F003

Hazard Class: 4.1

Packing Group: II

Combustible Liquid: _____ Non-Regulated: _____

Biennial: Source: G11 Form: W409 MMC: H141 Origin: _____ TRI Attached: Y / N

Two Major Hazardous Components: _____

Comments: _____

Price Approval Approved Lk Rejected _____ Date 3/1/12

Container Sizes: 50F

Planned Disposal: Fuel FS-SLD-01 Process Code: F-51

Comments: $51.25

Facility Approval Approved _____ Rejected _____ Date _____

Class Code: _____

Comments: _____

PermaFix environmental services

PF-APPROVAL#

SSWSI REF#PF[illegible]

- ☐ Michigan Facility, 18550 Allen Road, Brownstown, MI 48192 - MID096963194 - 800-282-9251- Fax 734 286-6440
- ☐ Orlando Facility, 10100 Rocket Blvd., Orlando, FL 32824 - FLD980559728 - 800-345-6393 - Fax 407-855-2812
- ☑ Valdosta Facility, 1612 James P. Rodgers Circle, Valdosta, GA 31601- GAD093380814 - (229)244-0474 - Fax (229)333-0328
- ☐ Dayton Facility, 300 South West End Ave., Dayton, OH 45427 - OHD004274031 - (800) 543-3670 - Fax 937-268-9059
- ☐ Tulsa Facility, 2700 South 25th West Avenue, Tulsa, OK 74107 - OKD000402396 - (918) 582-9595 - Fax (918) 582-6618

WASTE MATERIAL PROFILE

Please Print

A: GENERATOR: Orlando Veterans Medical Center **EPA ID:** FLR000150631

5201 Raymond St. Orlando Fl 32803
SITE ADDRESS / STATE / ZIP

MAILING ADDRESS / STATE / ZIP

CONTACT: Osker Dugger PHONE: FAX

E-Mail Address:

B: BILL TO: Stericycle Specialty Waste Solution, Inc.

314-B West Landstreet Road Orlando, Fl. 32824
MAILING ADDRESS / STATE / ZIP

CONTACT: Raj Singh PHONE: 407-855-0141 FAX 407-855-0354

E-Mail Address: rsingh@stericycle.com

C: COMMON NAME OF THE WASTE (PLEASE PRINT) Parrafin wax w/xylene

GENERATING PROCESS (attach flow diagram if available): Spent,discharged wax

IS THIS WASTE:

	NO	YES		NO	YES	
Spent	☐	☑	Spill	☑	☐	
Virgin	☑	☐	Labpack	☑	☐	(Attach Inventory Sheet)
Off-Spec	☑	☐	Subject to an exemption?	☑	☐	(Check Below)
WWT sludge	☑	☐	☐ Household waste?	☐ Soil from UST removal		☐ Other?

D: COMPOSITION OF WASTE: List all chemical/compounds. Provide MSDS's or analysis if available.

Chemicals/compounds	%	Chemicals/compounds	%	Chemicals/compounds	%
parafin wax beads	90				
xylene	10				
				Total Must =	100

E: HAZARDOUS CHARACTERISTICS:

Is this waste:	NO	YES		
Radioactive	☑	☐		
Bio-Hazard	☑	☐		
Polymerizable	☑	☐		
Does this waste contain: Asbestos	☑	☐	→	☐ Friable ☐ Non Friable?
PCB's > 50 ppm	☑	☐	→	Conc? ppm
Hexavalent Chrome	☑	☐	→	Conc? ppm
HOC's >1000ppm	☑	☐	→	Conc? ppm
VOC's > 500ppmw	☑	☐	→	Conc? ppm w(both 264 & 265 subpart cc)

F: PHYSICAL DATA:

	Odor	Flash Point	pH	Spec. Grav.	BTU/lb.	Chloride % by wt.	Water % by vol.
Layer	Strong ☐	<73 ☐	<2 ☐	<0.70 ☐	<4999 ☑	<2 ☑	<5 ☑
Color	Mild ☑	73-99 ☐	2.1-5.0 ☑	0.71-0.81 ☐	5k-9999 ☐	2-5 ☐	5-10 ☐
Source Code	None ☐	100-139 ☐	5.1-9.0 ☐	0.82-0.95 ☑	10k-15000 ☐	5-8 ☐	10-15 ☐
Form Code	Describe	140-199 ☐	9.1-12.4 ☐	0.96-1.01 ☐	>15001 ☐	8-11 ☐	15-20 ☐
		>200 ☑	>12.5 ☐	1.02-1.09 ☐		11-14 ☐	20-25 ☐
		N/A ☐	N/A ☐	1.10-1.20 ☐		>14 ☐	>25 ☐
				>1.20 ☐			
If Known Complete:		Exact	Exact	Exact	Exact	Exact 0	Exact 0 %

Physical State:

Solid	100 % →	Dust ☐	Granular ☐	Chunks ☐	Monolith ☐	in Gals 30				
Sludge	% →	Pumpable: ☐	Yes ☑	No	Pourable: ☐	Yes ☑	No	☐	in Gals	
Liquid	% →	Free liquids: ☐	Yes ☑	No	Viscosity: ☑	Low(Water) ☐	Medium(Oil) ☑	High(Syrup)		
Gas	% →	Aerosol ☐	Cylinder ☐ →	Dia.:	Qty:	Valve Condition:				
Debris	% →	Describe(size & content):								

Top
Next

AV71280

G: WASTE CHARACTERIZATION:

		YES	NO
1	Is this a listed EPA RCRA hazardous waste (F,K,P,U) as defined in 40 CFR 261.30	☑	☐
2	a. Is this a liquid waste with a flash point <140F as defined in 40 CFR 261.21 (D001)	☐	☑
	b. Is this an ignitable solid as defined in 40 CFR 261.21 (D001)	☑	☐
	c. Is this an oxidizer as defined in 49 CFR 173.151 (D001)	☐	☑
	d. Is this an ignitable compressed gas as defined in 40 CFR 261.21 (D001)	☐	☑
	e. If yes to a,b, or c. Is this a High TOC waste	☐	☑
3	a. Is this a liquid waste with a pH<2 or >12.5. (D002)	☐	☑
	b. is this a liquid waste that corrodes steel as defined in 40 CFR 261.22 (D002).	☐	☑
4	Is this a reactive waste as defined in 40 CFR 261.23. (D003)	☐	☑

If yes, check the subcategory: ☐ Water Reactive ☐ Air Reactive ☐ Explosive ☐ Other Reactive
☐ Reactive Cyanide: conc. _____ ppm ☐ Reactive Sulfide: conc. _____ ppm

Waste Code	Constituent	< Than	Reg Level	> Than	Conc	Waste Code	Constituent	< Than	Reg Level	> Than	Conc
D004	Arsenic	☑	5.0	☐		D024	m-Cresol	☑	200	☐	
D005	Barium	☑	100	☐		D025	p-Cresol	☑	200	☐	
D006	Cadmium	☑	1.0	☐		D026	Cresol(o,, m, p)	☑	200	☐	
D007	Chromium	☑	5.0	☐		D027	1,4 Dichlorobenzene	☑	7.5	☐	
D008	Lead	☑	5.0	☐		D028	1,2-Dichloroethane	☑	0.5	☐	
D009	Mercury	☑	0.2	☐		D029	1,1-Dichloroethylene	☑	0.7	☐	
D010	Selenium	☑	1.0	☐		D030	2,4-Dinitrotoluene	☑	0.13	☐	
D011	Silver	☑	5.0	☐		D031	Heptachlor	☑	0.008	☐	
D012	Endrin	☑	0.02	☐		D032	Hexachlorobenzene	☑	0.13	☐	
D013	Lindane	☑	0.4	☐		D033	Hexachlorobutadiene	☑	0.5	☐	
D014	Methoxychlor	☑	10	☐		D034	Hexachloroethane	☑	3.0	☐	
D015	Toxaphene	☑	0.5	☐		D035	Mehtyl Ethyl Ketone	☑	200	☐	
D016	2,4 - D	☑	10	☐		D036	Nitrobenzene	☑	2.0	☐	
D017	2,4,5-TP(Silvex)	☑	1	☐		D037	Pentachlorophenol	☑	100	☐	
D018	Benzene	☑	0.5	☐		D038	Pyridine	☑	5.0	☐	
D019	Carbon Tetrachloride	☑	0.5	☐		D039	Tetrachloroethylene	☑	0.7	☐	
D020	Chlordane	☑	0.03	☐		D040	Trichloroethylene	☑	0.5	☐	
D021	Chlorobenzene	☑	100	☐		D041	2,4,5-Trichlorophenol	☑	400	☐	
D022	Chloroform	☑	6.0	☐		D042	2,4,6-Trichlorophenol	☑	2.0	☐	
D023	o-Cresol	☑	200	☐		D043	Vinyl Chloride	☑	0.2	☐	

Based on: Total Analysis ☑ TCLP Analysis ☐ Generator Knowledge ☐

		YES	NO
5	Is this a EPA Toxic Waste (D004-D043)* as defined in 40 CFR 261.24?	☐	☑
	If D009: Is the total Mercury concentration above 260 ppm?	☐	☑
	* If this is a D001, D002, D003(selected) or D004-D043 does it contain any of the Underlying Hazardous Constituents (UHC) above Universal Treatment Standards(UTS)?	☐	☑
	If Yes, include a UTS/UHC form with the profile		
6	Is this waste a Dioxin Or Furan per 40 CFR 261.31?	☐	☑
7 a.	Is this a Non-Hazardous Waste?	☐	☑
	FOR WASTE DISPOSAL AT PERMA-FIX OF MICHIGAN ONLY:		
b.	Is this a hazardous Waste by state regulation only	☐	☐
c.	Is this a Michigan Act 451 listed hazardous waste?	☐	☐

If you answered Yes to any question in Section G, enter the appropriate waste codes(s) on the lines below.

Waste Codes: **D001** **F003** _____ _____ _____ _____ _____

_____ _____ _____ _____ _____ _____ _____

Please list any Toxic Release Inventory Constituents per EPCRA Section 313 not identified above.

TRI Attachment:

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SSWSI REF#:PF

H. BENZENE NESHAP 40 CFR 61, SUBPART FF (Hazardous waste with Benzene Only) — YES ☐ NO ☑

If question 1,2 or 3 is No, proceed to section I.

1 Is this waste stream generated at a facility with a SIC code listed under NESHAP, or a TSDF that treats NESHAP waste? SIC Code _____ listed codes: (2800-2899, 2911, 3312, 4953, 9511)

2 Does the waste contain > 10% water — YES ☐ NO ☑

3 Is the total Annual Benzene quantity from the facility waste greater than 10Mg/Yr (22,046 lbs/yr). — YES ☐ NO ☑

If Question 1,2, or 3 is No, proceed to Section I

4 What is the total Benzene concentration in Your Waste? _____ % or _____ ppmw.
(Do not use TCLP results. Acceptable laboratory methods include 8020, 8240, 8260, 602, and 624)

5 What is the TAB quantity for the generator facility? _____ Mg/Year

I. PACKAGING/ QUANTITY

1 Non-Bulk	☐ 1 gal	☐ 5 gal	☐ 15 gal	☐ 30 gal	☑ 55 gal.	☐ 85 gal	☐ Other _____		
Cubic Yard	☐ Boxes	☐ Bags		☐ Totes	☐ Pallets		☐ Other _____		
Quantity	1 Per:	☐ Month		☐ Quarter	☐ Year	☐ Once			
2 Bulk:	☐ Tanker	☐ Vac Truck		☐ Rolloff	☐ Dump Trailer		☐ Closed Top	☐ Open Top	
		☐ Gallons		☐ Pounds	☐ Yards		☐ Tons		
Quantity:	Lbs. Per:	☐ Month		☐ Quarter	☐ Year	☐ Once			

J. DOT SHIPPING INFORMATION:

Enter proper DOT shipping name from 49 CFR 172.101 table:

UN1325 ~~PGII 4.1~~ Waste Flammable Solid,orgaic nos(~~parrafin~~/Xylene) 4.1, PGII

List 2 major components: **parrafin ,xylene**

Hazard Class **4.1** UN/NA code **1325** PG **II** RQ: Y N CLIN: _____ US Gov. CLIN # When applicable

K. ATTACHMENTS: (Check all that apply and include with profile)

- ☐ UTS/UHC Form
- ☑ Analysis
- ☐ Additional Description
- ☐ Process Flow Diagram
- ☐ PCB source statement
- ☐ Material Safety Data Sheet
- ☐ Generator authorization
- ☐ Labpack inventory sheet
- ☐ Land Disposal Notification

L. CERTIFICATION:

I hereby certify that all the information submitted in this and all attached documents is complete and accurate.
All known and suspected hazards have been disclosed. By signing below, I give Perma-Fix Environmental Services, Inc., and all of its subsidiaries, permission to make minor changes to this profile prior to its acceptance should they find an error or omission.

Printed Name: X _____ Signature: X _____ Date: X 2-28-12

****Signatures other than the generator are required to submit an approved authorization letter from the generator to certify this profile**

INTERNAL USE ONLY: Review 1 _____ 2 _____ 3 _____

Profile I.D. No. _____ APPROVED ☐ REJECTED ☐ Form Code W _____

Waste Codes _____

DOT _____

~~Destination/Consolidation Code~~ _____ Price & Initial _____

Product Code: _____

Out Bound Approval: _____ Facility: _____

Notes: _____

Notice of Approval

74205224-1 / HEPACO
JOHN COCHRAN 615-210-1624
HEPACO INC.
P.O. BOX 26308
CHARLOTTE, NC 28221-7689

780282044-1 / GACESQG30076
TIM COUCH 770-475-5515
THOMAS EYE GROUP
11690 ALPHARETTA HWY.
ROSWELL, GA 30076

Thank you for your submission of the Perma-Fix Waste Profile Form. We have evaluated your waste stream, and it has been approved for management at a fully-permitted TSDF. Listed below, and on the attached pages, please find the pertinent information for the proper disposal of the waste. Pricing is included along with a copy of the analysis (if applicable), standard terms and conditions, and container shipment requirements. By shipping under this approval, you agree to the price set forth in this approval. In addition, you may be subject to additional fees or rejection should the shipped waste stream not conform to the specifications of this Waste Profile.

TSD Facility: PERMA FIX OF SOUTH GEORGIA
Profile # / Approval #: AV75523 /
RCRA/EPA Waste Codes: D009

Authorized: 01/24/2013
Expires: 01/24/2014

DOT Description: Hazardous waste, solid, n.o.s., 9, NA3077, III

Product	Common Description	Price	Unit	Container	Min. Charge
LF-SLD-03	MERCURY DEBRIS FOR MICROENCAPSULATION	$150.00	DM	DM 55	

Optional Charges (if Applicable)

As required per 40 CFR 264.12(.b), this letter serves as notification that Perma-Fix has the appropriate permits in place to accept and manage your waste(s). Due in part to our permit, non-conforming waste may be rejected at a rate of $250.00, plus round trip transportation if the discrepancy cannot be resolved via manifest corrections or price adjustments.

We appreciate your interest in our company and we look forward to assisting you with the disposal of your waste. To place an order, please contact our customer service department. Our telephone number is (229) 244-0474 in Valdosta, GA.

Sincerely,

Lason Kirkland
General Manager
Perma-Fix of South Georgia

Perma-Fix of South Georgia
Compliance Review

PROFILE: AV75523

Customer Service Review Approved _____ Rejected _____ Date _____

Profile: AV75523 /

Generator: THOMAS EYE GROUP EPA ID: GACESQG30076

Bill To: HEPACO INC. Reference: HEPACO

Comments: _____

_____

Changes Authorized By: _____ Copy Requested: _____ Yes____ No ____

Compliance Officer Approval Approved LK. Rejected _____ Date 1/24/13

DPT Shipping Name: Hazardous waste, solid, n.o.s.

UN/NA # NA3077 Waste Codes:

Form Code: D009

Hazard Class: 9

Packing Group: III

Combustible Liquid: _____ Non-Regulated: _____

Biennial: Source: G32 Form: WOW2 MMC: H141 Origin: _____ TRI Attached: Y / N

Two Major Hazardous Components: _____

Comments: _____

Price Approval Approved LK. Rejected _____ Date 1/24/13

Container Sizes: 55gm

Planned Disposal: Landfill LF-SLB-63 Process Code: P64

Comments: _____

$180

Facility Approval Approved _____ Rejected _____ Date _____

Class Code: _____

Comments: _____

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
	CESQG-GA	1	1-800-888-7689	008841662 JJK

5. Generator's Name and Mailing Address: Thomas Eye Group, 5971-A Peachtree Dunwoody Rd, Suite 500, Sandy Springs, GA 30328. Generator's Phone: 770-475-5515

Generator's Site Address (if different than mailing address): Thomas Eye Group, 11690 Alpharetta Hwy, Roswell, GA 30076

6. Transporter 1 Company Name: HEPACO, LLC — U.S. EPA ID Number: GAR000058727

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Pavmen Fly of South GA, 1672 James P Rogers Dr, Valdosta, GA 31601 — U.S. EPA ID Number: GAD093380814 ~~GAD093380314~~

Facility's Phone: 229-244-0474

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. UN 3077, Hazardous Waste Solids, n.o.s., 9, PG III (Mercury)				P	D009		
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Tim D. Couch — Signature: Tim Couch — Month: 1 — Day: 22 — Year: 13

16. International Shipments: ☐ Import to U.S. ☒ Export from U.S. — Port of entry/exit: — Transporter signature (for exports only): — Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month — Day — Year

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

18. Discrepancy

18a. Discrepancy Indication Space: ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number:

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name — Signature — Month — Day — Year

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

EPA Form 8700-22 (Rev. 9-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

PermaFix environmental services

- ☐ Michigan Facility, 18550 Allen Road, Brownstown, MI 48192 - MID096963194 - 800-282-9251- Fax 734 286-6440
- ☐ Orlando Facility, 10100 Rocket Blvd., Orlando, FL 32824 - FLD980559728 - 800-345-6393 - Fax 407-855-2812
- ☑ Valdosta Facility, 1612 James P. Rodgers Circle, Valdosta, GA 31601- GAD093380814 - (229) 229-2474 - Fax 229-244-0474
- ☐ Dayton Facility, 300 South West End Ave., Dayton, OH 45427 - OHD004274031 - (800) 543-3670 - Fax 937-268-9059
- ☐ Tulsa Facility, 2700 South 25th West Avenue, Tulsa, OK 74107 - OKD000402396 - (918) 582-9595 - Fax (918) 582-6618

AV75523

WASTE MATERIAL PROFILE

Please Print

A: GENERATOR: Thomas Eye Group EPA ID: CESQG-GA

11690 Alpharetta Hwy. (SITE ADDRESS) Roswell, GA (STATE) 30076 (ZIP)

5971-A Peachtree Dunwoody Rd, Suite 500 (MAILING ADDRESS) Sandy Springs, GA (STATE) 30328 (ZIP)

CONTACT: Tim Couch PHONE: 770-475-5515 FAX

E-Mail Address: timc@thomaseye.com

B: BILL TO: HEPACO, LLC

PO Box 26308 (MAILING ADDRESS) Charlotte, NC (STATE) 28221 (ZIP)

CONTACT: John Cochran PHONE: 770-934-1180 FAX

E-Mail Address: jcochran@hepaco.com

C: COMMON NAME OF THE WASTE (PLEASE PRINT): Mercury Debris for Microencapsulation

GENERATING PROCESS (attach flow diagram if available):

Spill Clean Up From Elemental Mercury Spill In A Home

IS THIS WASTE:	NO	YES		NO	YES	
Spent	☑	☐	Spill	☐	☑	
Virgin	☐	☑	Labpack	☑	☐	(Attach Inventory Sheet)
Off-Spec	☑	☐	Subject to an exemption?	☑	☐	(Check Below)
WWT sludge	☑	☐	☐ Household waste?	☐ Soil from UST removal		☐ Other?

D: COMPOSITION OF WASTE: List all chemical/compounds. Provide MSDS's or analysis if available.

Chemicals/compounds	%	Chemicals/compounds	%	Chemicals/compounds	%
Carpet,Padding, Vaccuum and Parts	99-100				
Mercury	<1				

Total Must = 100

E: HAZARDOUS CHARACTERISTICS:

Is this waste:		NO	YES		
	Radioactive	☑	☐		
	Bio-Hazard	☑	☐		
	Polymerizable	☑	☐		
Does this waste contain:	Asbestos	☑	☐	→	☐ Friable ☐ Non Friable?
	PCB's > 50 ppm	☑	☐	→	Conc? ____ ppm
	Hexavalent Chrome	☑	☐	→	Conc? ____ ppm
	HOC's >1000ppm	☑	☐	→	Conc? ____ ppm
	VOC's > 500ppmw	☑	☐	→	Conc? ____ ppmW(both 264 & 265 subpart cc)

F: PHYSICAL DATA:

		Odor	Flash Point	pH	Spec. Grav.	BTU/lb.	Chloride % by wt.	Water % by vol.
Layer	None	Strong ☐	<73 ☐	<2 ☐	<0.70 ☐	< 4999 ☑	<2 ☑	<5 ☑
Color	Varies	Mild ☐	73-99 ☐	2.1-5.0 ☑	0.71-0.81 ☐	5k-9999 ☐	2-5 ☐	5-10 ☐
Source Code		None ☑	100-139 ☑	5.1-9.0 ☐	0.82-0.95 ☐	10k-15000 ☐	5-8 ☐	10-15 ☐
Form Code		Describe	140-199 ☐	9.1-12.4 ☐	0.96-1.01 ☐	>15001 ☐	8-11 ☐	15-20 ☐
			>200 ☐	>12.5 ☐	1.02-1.09 ☐		11-14 ☐	20-25 ☐
			N/A ☑	N/A ☐	1.10-1.20 ☐		>14 ☐	>25 ☐
					>1.20 ☑			
If Known Complete:			Exact ____	Exact ____	Exact ____	Exact ____	Exact ____	Exact ____

Physical State:

- Solid ____ % → Dust ☐ Granular ☐ Chunks ☐ Monolith ☐ In Gals ____
- Sludge ____ % → Pumpable: ☐ Yes ☐ No Pourable: ☐ Yes ☐ No ☐ In Gals ____
- Liquid ____ % → Free liquids: ☐ Yes ☐ No Viscosity: ☐ Low(Water) ☐ Medium(Oil) ☐ High(Sy
- Gas ____ % → Aerosol ☐ Cylinder ☐ → Dia.: ____ Qty: ____ Valve Condition: ____
- Debris 100 % → Describe(size & content): See Above

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Next

G: WASTE CHARACTERIZATION:

		YES	NO
1	Is this a listed EPA RCRA hazardous waste (F,K,P,U) as defined in 40 CFR 261.30	☐	☑
2	a. Is this a liquid waste with a flash point <140F as defined in 40 CFR 261.21 (D001).	☐	☑
	b. Is this an ignitable solid as defined in 40 CFR 261.21 (D001)	☐	☑
	c. Is this an oxidizer as defined in 49 CFR 173.151 (D001)	☐	☑
	d. Is this an ignitable compressed gas as defined in 40 CFR 261.21 (D001)	☐	☑
	e. If yes to a,b, or c. Is this a High TOC waste	☐	☑
3	a. Is this a liquid waste with a pH<2 or >12.5. (D002)	☐	☑
	b. Is this a liquid waste that corrodes steel as defined in 40 CFR 261.22 (D002).	☐	☑
4	Is this a reactive waste as defined in 40 CFR 261.23. (D003)	☐	☐

If yes, check the subcategory: ☐ Water Reactive ☐ Air Reactive ☐ Explosive ☐ Other Reactive
☐ Reactive Cyanide: conc. _____ ppm ☐ Reactive Sulfide: conc. _____ ppm

Waste Code	Constituent	< Than	Reg Level	> Than	Conc	Waste Code	Constituent	< Than	Reg Level	> Than	Conc
D004	Arsenic	☑	5.0	☐		D024	m-Cresol	☑	200	☐	
D005	Barium	☑	100	☐		D025	p-Cresol	☑	200	☐	
D006	Cadmium	☑	1.0	☐		D026	Cresol(o,, m, p)	☑	200	☐	
D007	Chromium	☑	5.0	☐		D027	1,4 Dichlorobenzene	☑	7.5	☐	
D008	Lead	☑	5.0	☐		D028	1,2-Dichloroethane	☑	0.5	☐	
D009	Mercury	☐	0.2	☑		D029	1,1-Dichloroethylene	☑	0.7	☐	
D010	Selenium	☑	1.0	☐		D030	2,4-Dinitrotoluene	☑	0.13	☐	
D011	Silver	☑	5.0	☐		D031	Heptachlor	☑	0.008	☐	
D012	Endrin	☑	0.02	☐		D032	Hexachlorobenzene	☑	0.13	☐	
D013	Lindane	☑	0.4	☐		D033	Hexachlorobutadiene	☑	0.5	☐	
D014	Methoxychlor	☑	10	☐		D034	Hexachloroethane	☑	3.0	☐	
D015	Toxaphene	☑	0.5	☐		D035	Methyl Ethyl Ketone	☑	200	☐	
D016	2,4 - D	☑	10	☐		D036	Nitrobenzene	☑	2.0	☐	
D017	2,4,5-TP(Silvex)	☑	1	☐		D037	Pentachlorophenol	☑	100	☐	
D018	Benzene	☑	0.5	☐		D038	Pyridine	☑	5.0	☐	
D019	Carbon Tetrachloride	☑	0.5	☐		D039	Tetrachloroethylene	☑	0.7	☐	
D020	Chlordane	☑	0.03	☐		D040	Trichloroethylene	☑	0.5	☐	
D021	Chlorobenzene	☑	100	☐		D041	2,4,5-Trichlorophenol	☑	400	☐	
D022	Chloroform	☑	6.0	☐		D042	2,4,6-Trichlorophenol	☑	2.0	☐	
D023	o-Cresol	☑	200	☐		D043	Vinyl Chloride	☑	0.2	☐	

Based on: Total Analysis ☐ TCLP Analysis ☐ Generator Knowledge ☑

		YES	NO
5	Is this a EPA Toxic Waste (D004-D043)* as defined in 40 CFR 261.24?	☑	☐
	If D009: Is the total Mercury concentration above 260 ppm?	☐	☑
	* If this is a D001, D002, D003(selected) or D004-D043 does it contain any of the Underlying Hazardous Constituents (UHC) above Universal Treatment Standards(UTS)?	☐	☑
	If Yes, include a UTS/UHC form with the profile		
6	Is this waste a Dioxin Or Furan per 40 CFR 261.31?	☐	☑
7	a. Is this a Non-Hazardous Waste?	☐	☑
	FOR WASTE DISPOSAL AT PERMA-FIX OF MICHIGAN ONLY:		
	b. Is this a hazardous Waste by state regulation only	☐	☐
	c. Is this a Michigan Act 451 listed hazardous waste?	☐	☐

If you answered Yes to any question in Section G, enter the appropriate waste codes(s) on the lines below.

Waste Codes: D009

Please list any Toxic Release Inventory Constituents per EPCRA Section 313 not identified above.

TRI Attachment:

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Next

H. BENZENE NESHAP 40 CFR 61, SUBPART FF (Hazardous waste with Benzene Only) YES ☐ NO ☑
If question 1,2 or 3 is No, proceed to section I.
1 Is this waste stream generated at a facility with a SIC code listed under NESHAP, or a TSDF that treats NESHAP waste? ____ SIC Code ____ listed codes: (2800-2899, 2911, 3312, 4953, 9511)
2 Does the waste contain > 10% water ☐ ☑
3 Is the total Annual Benzene quantity from the facility waste greater than 10Mg/Yr (22,046 lbs/yr). ☐ ☑
If Question 1,2, or 3 is No, proceed to Section 1
4 What is the total Benzene concentration in Your Waste? ____ % or ____ ppmw.
~~(Do not use TCLP results; Acceptable laboratory methods include 8020, 8240, 8260, 602, and 624)~~
5 What is the TAB quantity for the generator facility? ____ Mg/Year

I. PACKAGING/ QUANTITY

1 Non-Bulk	☐ 1 gal.	☐ 5 gal	☐ 15 gal	☐ 30 gal ☑	☐ 55 gal.	☐ 85 gal	☐ Other ____		
Cubic Yard	☐ Boxes	☐ Bags	☐ Totes	☐ Pallets	☐ Other ____				
Quantity	2 Per:	☐ Month	☐ Quarter	☐ Year ☑ Once					
2 Bulk:	☐ Tanker	☐ Vac Truck	☐ Rolloff	☐ Dump Trailer	☐ Closed Top	☐ Open Top			
		☐ Gallons	☐ Pounds	☐ Yards	☐ Tons				
Quantity:	Lbs.	Per:	☐ Month	☐ Quarter	☐ Year	☐ Once			

J. DOT SHIPPING INFORMATION:
Enter proper DOT shipping name from 49 CFR 172.101 table:

Hazardous Waste Solid, N.O.S,

List 2 major components: **Mercury**

Hazard Class 9 UN/NA code NA3077 PG III RQ: Y N CLIN: ____
US Gov. CLIN # When applicable

K. ATTACHMENTS: (Check all that apply and include with profile)

☐ UTS/UHC Form	☐ Process Flow Diagram	☑ Generator authorization
☐ Analysis	☐ PCB source statement	☐ Labpack inventory sheet
☐ Additional Description	☐ Material Safety Data Sheet	☐ Land Disposal Notification

L. CERTIFICATION:
I hereby certify that all the information submitted in this and all attached documents is complete and accurate. All known and suspected hazards have been disclosed. By signing below, I give Perma-Fix Environmental Services, Inc., and all of its subsidiaries, permission to make minor changes to this profile prior to its acceptance should they find an error or omission.

Printed Name: x Tim Couch Signature: x Tim Couch Date: x 1-22-13

**Signatures other than the generator are required to submit an approved authorization letter from the generator to certify this profile

INTERNAL USE ONLY: Review 1 ____ 2 ____ 3 ____

Profile I.D. No. ____ APPROVED ☐ REJECTED ☐ Form Code W ____

Waste Codes ____

DOT ____

~~Destination/Consolidation Code~~ ____ ~~Price & Initial~~ ____

Product Code: ____ ____

Out Bound Approval: ____ Facility: ____

Notes: ____

Notice of Approval

186960-1 / UTI906
Jerry Whidden 478-987-0906
UTILITY SERVICES
141 HICKS DRIVE
PERRY, GA 31069

186960-1 / GAR000002337
GREG BENNETT 478-987-0906
UTILITY SERVICES
141 HICKS DRIVE
PERRY, GA 31069

Thank you for your submission of the Perma-Fix Waste Profile Form. We have evaluated your waste stream, and it has been approved for management at a fully-permitted TSDF. Listed below, and on the attached pages, please find the pertinent information for the proper disposal of the waste. Pricing is included along with a copy of the analysis (if applicable), standard terms and conditions, and container shipment requirements. By shipping under this approval, you agree to the price set forth in this approval. In addition, you may be subject to additional fees or rejection should the shipped waste stream not conform to the specifications of this Waste Profile.

TSD Facility: PERMA FIX OF SOUTH GEORGIA
Profile # / Approval #: UTIG5821 / UTIG5821
RCRA/EPA Waste Codes: D001 D005

Authorized: 01/01/2003
Expires: 09/18/2013

DOT Description: Waste Paint related material(Barium), 3, UN1263, III

Product	Common Description	Price	Unit	Container	Min. Charge
FS-DBR-01	PAINT WASTE	$250.00	DM	55	

Optional Charges (if Applicable)

FS-LIQ-02	PAINT WASTE	$115.00	DM	55	

As required per 40 CFR 264.12(.b), this letter serves as notification that Perma-Fix has the appropriate permits in place to accept and manage your waste(s). Due in part to our permit, non-conforming waste may be rejected at a rate of $250.00, plus round trip transportation if the discrepancy cannot be resolved via manifest corrections or price adjustments.

We appreciate your interest in our company and we look forward to assisting you with the disposal of your waste. To place an order, please contact our customer service department. Our telephone number is (229) 244-0474 in Valdosta, GA.

Sincerely,

Lason Kirkland
General Manager
Perma-Fix of South Georgia

PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. RODGERS CIRCLE, VALDOSTA, GA 31601
, 229-244-0474 Fax: 229-333-0328
GAD093380814

WASTE PROFILE RENEWAL

Customer:
UTILITY SERVICES
141 HICKS DRIVE
PERRY, GA 31069
JERRY WHIDDEN 478-987-0906

FAX: 478-987-6709

Generator:
UTILITY SERVICES
141 HICKS DRIVE
PERRY, GA 31069
GREG BENNETT 478-987-0906

FAX: 478-987-6709

Dear Generator / Customer:

This notification is required by 40 CFR part 264.13 / 265.13 and the Waste Analysis Plan of the above named TSDF and must be repeated annually for each waste stream managed by the named TSDF.

Wastestream Identification:

PROFILE NUMBER:	UTIG5821
DESCRIPTION:	Waste Paint related material(Barium)
COMMON NAME:	PAINT WASTE
GEN. PROCESS:	PAINT WASTE
WASTE CODES:	D001, D005
EXPIRATION:	1/13/2011

Composition

BISPHENOL = 36
HEXONE = 16
MAGNESIUM SILICATE = 34
XYLENE = 10

Sign and date this original to:

Certification: I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Certified By	Title	Date
	Asst. Manager	9/14/12

Please check the appropriate box below.

☒ **RENEW WITHOUT CHANGE.** Sign and return.

☐ **RENEW WITH CHANGE.** Complete new profile and indicate changes in waste generating process and/or wastestream that are different from information last submitted. Sign and return.

☐ **CANCEL** this wastestream approval. Sign and return.

If you should have any questions, please call your broker or Sales Representative.

TSDF Management: (TSDF LAB USE ONLY) Salesrep: UNASSIGNED UNASSIGNED
Notes:
AUTHORIZED BY: Date: 9/18/12 2nd Auth: Date:
Form Code: W209 Product ode: FS-LIQ-02 Source: G61 Process Code: F-F1 Cons. Code:
Outbound Approval # Unit Charge: 3rd Auth. Unit Cost:

Notice of Approval

780266366-1 /
RICHARD LOBINSKE 850-606-1816
LEON COUNTY HAZARDOUS WASTE CTR.
7550 APALACHEE PKWY.
TALLAHASSEE, FL 32311

780266366-1 / FLD984219758
RICHARD LOBINSKE 850-606-1816
LEON COUNTY HAZARDOUS WASTE CTR.
7550 APALACHEE PKWY.
TALLAHASSEE, FL 32311

Thank you for your submission of the Perma-Fix Waste Profile Form. We have evaluated your waste stream, and it has been approved for management at a fully-permitted TSDF. Listed below, and on the attached pages, please find the pertinent information for the proper disposal of the waste. Pricing is included along with a copy of the analysis (if applicable), standard terms and conditions, and container shipment requirements. By shipping under this approval, you agree to the price set forth in this approval. In addition, you may be subject to additional fees or rejection should the shipped waste stream not conform to the specifications of this Waste Profile.

TSD Facility: PERMA FIX OF SOUTH GEORGIA
Profile # / Approval #: AV69192 /
RCRA/EPA Waste Codes: D001 D035

Authorized: 10/12/2011
Expires: 10/11/2012

DOT Description: Waste Paint related material, 3, UN1263, II

Product	Common Description	Price	Unit	Container	Min. Charge
FS-CAN-02	LACQUER BASED AUTOMOTIVE PINTS & SOLVENTS (L	$175.00	DM	DM 55	

Optional Charges (if Applicable)

As required per 40 CFR 264.12(.b), this letter serves as notification that Perma-Fix has the appropriate permits in place to accept and manage your waste(s). Due in part to our permit, non-conforming waste may be rejected at a rate of $250.00, plus round trip transportation if the discrepancy cannot be resolved via manifest corrections or price adjustments.

We appreciate your interest in our company and we look forward to assisting you with the disposal of your waste. To place an order, please contact our customer service department. Our telephone number is (229) 244-0474 in Valdosta, GA.

Sincerely,

Lason Kirkland
General Manager

Perma-Fix of South Georgia
Compliance Review

PROFILE: AV69192

Customer Service Review Approved _____ Rejected _____ Date _____

Profile: AV69192 /

Generator: LEON COUNTY HAZARDOUS WASTE CTR. EPA ID: FLD984219758

Bill To: LEON COUNTY HAZARDOUS WASTE CTR. Reference:

Comments: _____

Changes Authorized By: _____ Copy Requested: _____ Yes ___ No ___

Compliance Officer Approval Approved LK Rejected _____ Date 10/12/11

DPT Shipping Name: Waste Paint related material

UN/NA # UN1263 Waste Codes:

Form Code: D001 D035

Hazard Class: 3

Packing Group: II

Combustible Liquid: _____ Non-Regulated: _____

Biennial: Source: G06 Form: WM09 MMC: H061 Origin: _____ TRI Attached: Y / N

Two Major Hazardous Components: _____

Comments: _____

Price Approval Approved LK Rejected _____ Date 10/12/11

Container Sizes: 55DM

Planned Disposal: Fuel FS-CAN-02 Process Code: F-I-1

Comments: _____

$175

Facility Approval Approved _____ Rejected _____ Date _____

Class Code: _____

Comments: _____

Perma-Fix

- ☐ Michigan Facility, 18550 Allen Road, Brownstown, MI 48192 - MID096963194 - 800-282-9251- Fax 734 286-6440
- ☐ Orlando Facility, 10100 Rocket Blvd., Orlando, FL 32824 - FLD980559728 - 800-345-6393 - Fax 407-855-2812
- ☑ Valdosta Facility, 1612 James P. Rodgers Circle, Valdosta, GA 31601- GAD093380814 - (229) 229-2474 - Fax 229-244-0474
- ☐ Dayton Facility, 300 South West End Ave., Dayton, OH 45427 - OHD004274031 - (800) 543-3670 - Fax 937-268-9059
- ☐ Tulsa Facility, 2700 South 25th West Avenue, Tulsa, OK 74107 - OKD000402396 - (918) 582-9395 - Fax (918) 582-6618

AU69192

WASTE MATERIAL PROFILE

Please Print

A: GENERATOR: Leon County Solid Waste EPA ID: FLD984219758

7550 Apalachee Parkway Tallahassee FL 32311
SITE ADDRESS STATE ZIP

7550 Apalachee Parkway Tallahassee FL 32311
MAILING ADDRESS STATE ZIP

CONTACT: Richard Lobinske PHONE: (850) 606-1816 FAX (850) 606-1801

E-Mail Address: LobinskeR@leoncountyfl.gov

B: BILL TO: Leon County Solid Waste

7550 Apalachee Parkway Tallahassee FL 32311
MAILING ADDRESS STATE ZIP

CONTACT: Richard Lobinske PHONE: (850) 606-1816 FAX (850) 606-1801

E-Mail Address: LobinskeR@leoncountyfl.gov

C: COMMON NAME OF THE WASTE (PLEASE PRINT): Lacquer Based Automotive Paints & Solvents Loosepack

GENERATING PROCESS (attach flow diagram if available): Household Hazardous Waste Collection Activites. No Isocyanates!

IS THIS WASTE:	NO	YES		NO	YES	
Spent	☑	☐	Spill	☑	☐	
Virgin	☐	☑	Labpack	☑	☐	(Attach Inventory Sheet)
Off-Spec	☑	☐	Subject to an exemption?	☑	☐	(Check Below)
WWT sludge	☑	☐	☐ Household waste? ☐ Soil from UST removal ☐ Other?			

D: COMPOSITION OF WASTE: List all chemical/compounds. Provide MSDS's or analysis if available.

Chemicals/compounds	%	Chemicals/compounds	%	Chemicals/compounds	%
Lacquer & Automotive Paints	100	Xylenes		Ethyl Acetate Butyl Acetate	
& Solvents in Cans (Loosepack)		Acetone		Ketones (MAK,MEK, MIBK)	
Containing:		Butyl Acetate		Alcohols (IPA, MeOH,	
Toluene		Alkyd Resins		Isobutanol)	
				Total Must =	100

E: HAZARDOUS CHARACTERISTICS:

Is this waste:	NO	YES		
Radioactive	☑	☐		
Bio-Hazard	☑	☐		
Polymerizable	☑	☐		
Does this waste contain: Asbestos	☑	☐	→	☐ Friable ☐ Non Friable?
PCB's > 50 ppm	☑	☐	→	Conc? ppm
Hexavalent Chrome	☑	☐	→	Conc? ppm
HOC's >1000ppm	☑	☐	→	Conc? ppm
VOC's > 500ppmw	☐	☑	→	Conc? ppmw (both 264 & 265 subpart cc)

F: PHYSICAL DATA:

		Odor	Flash Point	pH	Spec. Grav.	BTU/lb.	Chloride % by wt.	Water % by vol.
Layer	Multi	Strong ☑	<73 ☑	<2 ☐	<0.70 ☐	< 4999 ☐	<2 ☑	<5 ☑
Color	Varies	Mild ☐	73-99 ☐	2.1-5.0 ☐	0.71-0.81 ☐	5k-9999 ☐	2-5 ☐	5-10 ☐
Source Code	G06	None ☐	100-139 ☐	5.1-9.0 ☐	0.82-0.95 ☐	10k-15000 ☑	5-8 ☐	10-15 ☐
Form Code	W209	Describe	140-199 ☐	9.1-12.4 ☐	0.96-1.01 ☐	>15001 ☐	8-11 ☐	15-20 ☐
		Paint/Solvents	>200 ☐	>12.5 ☐	1.02-1.09 ☑		11-14 ☐	20-25 ☐
			N/A ☐	N/A ☑	1.10-1.20 ☐		>14 ☐	>25 ☐
					>1.20 ☐			
If Known Complete:			Exact	Exact	Exact	Exact	Exact	Exact %

Physical State:

Solid	10-20 % →	Dust ☐	Granular ☐	Chunks ☑	Monolith ☐	in Gals				
Sludge	20-30 % →	Pumpable: ☑	Yes ☐	No	Pourable: ☑	Yes ☐	No ☐	in Gals		
Liquid	50-70 % →	Free liquids: ☑	Yes ☐	No	Viscosity: ☑	Low(Water) ☑	Medium(Oil) ☐	High(Syrup)		
Gas	% →	Aerosol ☐	Cylinder ☐ →	Dia.:	Qty:	Valve Condition:				
Debris	% →	Describe(size & content):								

Top
Next

G: WASTE CHARACTERIZATION:

		YES	NO
1	Is this a listed EPA RCRA hazardous waste (F,K,P,U) as defined in 40 CFR 261.30	☐	☑
2	a. Is this a liquid waste with a flash point <140F as defined in 40 CFR 261.21 (D001).	☑	☐
	b. Is this an ignitable solid as defined in 40 CFR 261.21 (D001)	☐	☑
	c. Is this an oxidizer as defined in 49 CFR 173.151 (D001)	☐	☑
	d. Is this an ignitable compressed gas as defined in 40 CFR 261.21 (D001)	☐	☑
	e. If yes to a,b, or c. Is this a High TOC waste	☑	☐
3	a. Is this a liquid waste with a pH<2 or >12.5, (D002)	☐	☑
	b. Is this a liquid waste that corrodes steel as defined in 40 CFR 261.22 (D002).	☐	☑
4	Is this a reactive waste as defined in 40 CFR 261.23. (D003)	☐	☑

If yes, check the subcategory: ☐ Water Reactive ☐ Air Reactive ☐ Explosive ☐ Other Reactive
☐ Reactive Cyanide: conc. _____ ppm ☐ Reactive Sulfide: conc. _____ ppm

Waste Code	Constituent	< Than	Reg Level	> Than	Conc	Waste Code	Constituent	< Than	Reg Level	> Than	Conc
D004	Arsenic	☑	5.0	☐		D024	m-Cresol	☑	200	☐	
D005	Barium	☑	100	☐		D025	p-Cresol	☑	200	☐	
D006	Cadmium	☑	1.0	☐		D026	Cresol(o,, m, p)	☑	200	☐	
D007	Chromium	☑	5.0	☐		D027	1,4 Dichlorobenzene	☐	7.5	☐	
D008	Lead	☑	5.0	☐		D028	1,2-Dichloroethane	☑	0.5	☐	
D009	Mercury	☑	0.2	☐		D029	1,1-Dichloroethylene	☑	0.7	☐	
D010	Selenium	☑	1.0	☐		D030	2,4-Dinitrotoluene	☑	0.13	☐	
D011	Silver	☑	5.0	☐		D031	Heptachlor	☑	0.008	☐	
D012	Endrin	☑	0.02	☐		D032	Hexachlorobenzene	☑	0.13	☐	
D013	Lindane	☑	0.4	☐		D033	Hexachlorobutadiene	☑	0.5	☐	
D014	Methoxychlor	☑	10	☐		D034	Hexachloroethane	☑	3.0	☐	
D015	Toxaphene	☑	0.5	☐		D035	Methyl Ethyl Ketone	☐	200	☑	
D016	2,4 - D	☑	10	☐		D036	Nitrobenzene	☑	2.0	☐	
D017	2,4,5-TP(Silvex)	☐	1	☐		D037	Pentachlorophenol	☑	100	☐	
D018	Benzene	☑	0.5	☐		D038	Pyridine	☑	5.0	☐	
D019	Carbon Tetrachloride	☑	0.5	☐		D039	Tetrachloroethylene	☑	0.7	☐	
D020	Chlordane	☑	0.03	☐		D040	Trichloroethylene	☑	0.5	☐	
D021	Chlorobenzene	☑	100	☐		D041	2,4,5-Trichlorophenol	☑	400	☐	
D022	Chloroform	☑	6.0	☐		D042	2,4,6-Trichlorophenol	☑	2.0	☐	
D023	o-Cresol	☑	200	☐		D043	Vinyl Chloride	☑	0.2	☐	

Based on: Total Analysis ☐ TCLP Analysis ☐ Generator Knowledge ☑

		YES	NO
5	Is this a EPA Toxic Waste (D004-D043)* as defined in 40 CFR 261.24?	☑	☐
	If D009: Is the total Mercury concentration above 260 ppm?	☐	☐
	*** If this is a D001, D002, D003(selected) or D004-D043 does it contain any of the Underlying Hazardous Constituents (UHC) above Universal Treatment Standards(UTS)?**	☑	☐
	If Yes, include a UTS/UHC form with the profile		
6	Is this waste a Dioxin Or Furan per 40 CFR 261.31?	☐	☒
7	a. Is this a Non-Hazardous Waste?	☐	☑
	FOR WASTE DISPOSAL AT PERMA-FIX OF MICHIGAN ONLY:		
	b. Is this a hazardous Waste by state regulation only	☐	☐
	c. Is this a Michigan Act 451 listed hazardous waste?	☐	☐

If you answered Yes to any question in Section G, enter the appropriate waste codes(s) on the lines below.

Waste Codes: **D001** **D035** _____ _____ _____ _____ _____

_____ _____ _____ _____ _____ _____ _____

~~Please list any Toxic Release Inventory Constituents per EPCRA Section 313 not identified above.~~

TRI Attachment:

Top _____

Next _____

H. BENZENE NESHAP 40 CFR 61, SUBPART FF (Hazardous waste with Benzene Only) YES ☐ NO ☑

If question 1,2 or 3 is No, proceed to section I.

1 Is this waste stream generated at a facility with a SIC code listed under NESHAP, or a TSDF that treats NESHAP waste? SIC Code _____ listed codes: (2800-2899, 2911, 3312, 4953, 9511)

2 Does the waste contain > 10% water ☐ ☑

3 Is the total Annual Benzene quantity from the facility waste greater than 10Mg/Yr (22,046 lbs/yr). ☐ ☑

If Question 1,2, or 3 is No, proceed to Section I

4 What is the total Benzene concentration in Your Waste? _____ % or _____ ppmw.

(Do not use TCLP results. Acceptable laboratory methods include 8020, 8240, 8260, 602, and 624)

5 What is the TAB quantity for the generator facility? _____ Mg/Year

I. PACKAGING/ QUANTITY

1 Non-Bulk	☐	1 gal	☐	5 gal	☐	15 gal	☐	30 gal	☑	55 gal.	☐	85 gal	☐	Other _____
Cubic Yard	☐	Boxes	☐	Bags	☐	Totes	☐	Pallets	☐	Other _____				
Quantity 15	Per:	☐	Month	☐	Quarter	☑	Year	☐	Once					
2 Bulk:	☐	Tanker	☐	Vac Truck	☐	Rolloff	☐	Dump Trailer	☐	Closed Top	☐	Open Top		
			☐	Gallons	☐	Pounds	☐	Yards	☐	Tons				
Quantity: _____	Lbs.	Per:	☐	Month	☐	Quarter	☐	Year	☐	Once				

J. DOT SHIPPING INFORMATION:

Enter proper DOT shipping name from 49 CFR 172.101 table:

UN1263, Waste Paint Related Material, 3, PG II

List 2 major components: _____

Hazard Class 3 UN/NA code UN1263 PG II RQ: Y CLIN: _____ US Gov. CLIN # When applicable

K. ATTACHMENTS: (Check all that apply and include with profile)

☑ UTS/UHC Form	☐ Process Flow Diagram	☐ Generator authorization
☐ Analysis	☐ PCB source statement	☐ Labpack inventory sheet
☐ Additional Description	☐ Material Safety Data Sheet	☑ Land Disposal Notification

L. CERTIFICATION:

I hereby certify that all the information submitted in this and all attached documents is complete and accurate. All known and suspected hazards have been disclosed. By signing below, I give Perma-Fix Environmental Services, Inc., and all of its subsidiaries, permission to make minor changes to this profile prior to its acceptance should they find an error or omission.

Printed Name: X Richard Labinske Signature: X _____ Date: X 9/27/11

****Signatures other than the generator are required to submit an approved authorization letter from the generator to certify this profile**

INTERNAL USE ONLY: Review 1 _____ 2 _____ 3 _____

Profile I.D. No. _____ APPROVED ☐ REJECTED ☐ Form Code W _____

Waste Codes _____

DOT _____

Destination/Consolidation Code _____ Price & Initial $175/55 GSB

Product Code: _____ _____

Out Bound Approval: _____ Facility: Valdosta

Notes: _____

Notice of Approval

780279746-1-/ THE686
KAREN PRESSLEY 843-792-0284
THE CITADEL
171 MOULTRIE ST.
CHARLESTON, SC 29409

780279746-1 / SCD007991289
BOB WILLIAMSON 843-792-0284
THE CITADEL
171 MOULTRIE ST.
CHARLESTON, SC 29409

Thank you for your submission of the Perma-Fix Waste Profile Form. We have evaluated your waste stream, and it has been approved for management at a fully-permitted TSDF. Listed below, and on the attached pages, please find the pertinent information for the proper disposal of the waste. Pricing is included along with a copy of the analysis (if applicable), standard terms and conditions, and container shipment requirements. By shipping under this approval, you agree to the price set forth in this approval. In addition, you may be subject to additional fees or rejection should the shipped waste stream not conform to the specifications of this Waste Profile.

TSD Facility: PERMA FIX OF SOUTH GEORGIA
Profile # / Approval #: AV74759 /
RCRA/EPA Waste Codes: D039 F002

Authorized: 11/28/2012
Expires: 11/27/2013

DOT Description: Hazardous waste, solid, n.o.s. (PERCHLOROETHYLENE / FILTERS), 9, NA3077, III

Product	Common Description	Price	Unit	Container	Min. Charge
LF-SLD-03	PERCHLOROETHYLENE FILTERS	$295.75	DM	55	

Optional Charges (if Applicable)

As required per 40 CFR 264.12(.b), this letter serves as notification that Perma-Fix has the appropriate permits in place to accept and manage your waste(s). Due in part to our permit, non-conforming waste may be rejected at a rate of $250.00, plus round trip transportation if the discrepancy cannot be resolved via manifest corrections or price adjustments.

We appreciate your interest in our company and we look forward to assisting you with the disposal of your waste. To place an order, please contact our customer service department. Our telephone number is (229) 244-0474 in Valdosta, GA.

Sincerely,

Lason Kirkland
General Manager
Perma-Fix of South Georgia

Perma-Fix of South Georgia
Compliance Review

PROFILE: AV74759

Customer Service Review Approved _____ Rejected _____ Date _____

Profile: AV74759 /

Generator: THE CITADEL EPA ID: SCD007991289

Bill To: THE CITADEL Reference: THE686

Comments: _____

Changes Authorized By: _____ Copy Requested: _____ Yes____ No ____

Compliance Officer Approval Approved LK Rejected _____ Date 11/28/12

DPT Shipping Name: Hazardous waste, solid, n.o.s. (PERCHLOROETHYLENE / FILTERS)

UN/NA # NA3077 Waste Codes:

Form Code: D039 F002

Hazard Class: 9

Packing Group: III

Combustible Liquid: _____ Non-Regulated: _____

Biennial: Source: G15 Form: W409 MMC: H141 Origin: _____ TRI Attached: Y / N

Two Major Hazardous Components: _____

Comments: _____

Price Approval Approved LK Rejected _____ Date 11/28/12

Container Sizes: 55DM

Planned Disposal: [illegible] LF-SLD-03 Process Code: P6A

Comments: _____

Facility Approval Approved _____ Rejected _____ Date _____

Class Code: _____

Comments: _____

PermaFix environmental services

- ☐ Michigan Facility, 18550 Allen Road, Brownstown, MI 48192 - MID096963194 - 800-282-9251- Fax 734 286-6440
- ☐ Orlando Facility, 10100 Rocket Blvd., Orlando, FL 32824 - FLD980559728 - 800-345-6393 - Fax 407-855-2812
- ☑ Valdosta Facility, 1612 James P. Rodgers Circle, Valdosta, GA 31601- GAD093380814 - (229) 229-2474 - Fax 229-244-0474
- ☐ Dayton Facility, 300 South West End Ave., Dayton, OH 45427 - OHD004274031 - (800) 543-3670 - Fax 937-268-9059
- ☐ Tulsa Facility, 2700 South 25th West Avenue, Tulsa, OK 74107 - OKD000402396 - (918) 582-9595 - Fax (918) 582-6618

WASTE MATERIAL PROFILE

Please Print

A: GENERATOR: The Citadel EPA ID: SCD007991289

171 Moultrie Street Charleston (SITE ADDRESS) SC (STATE) 29409 (ZIP)

171 Moultrie Street Charleston (MAILING ADDRESS) SC (STATE) 29409 (ZIP)

CONTACT: Bob Williamson PHONE: (843) 792-0284 FAX

E-Mail Address: williamsonr@citadel.edu

B: BILL TO: The Citadel

171 Moultrie Street Charleston (MAILING ADDRESS) SC (STATE) 29409 (ZIP)

CONTACT: Karen Pressley PHONE: (843) 792-0284 FAX

E-Mail Address: pressleyk1@citadel.edu

C: COMMON NAME OF THE WASTE (PLEASE PRINT): Perchloroethylene Filters

GENERATING PROCESS (attach flow diagram if available): Spent drycleaning solvent from laundering operations.

IS THIS WASTE:	NO	YES		NO	YES	
Spent	☐	☑	Spill	☑	☐	
Virgin	☑	☐	Labpack	☑	☐	(Attach Inventory Sheet)
Off-Spec	☑	☐	Subject to an exemption?	☑	☐	(Check Below)
WWT sludge	☑	☐	☐ Household waste? ☐ Soil from UST removal ☐ Other?			

D: COMPOSITION OF WASTE: List all chemical/compounds. Provide MSDS's or analysis if available.

Chemicals/compounds	%	Chemicals/compounds	%	Chemicals/compounds	%
Dry Cleaning Filters	70-90				
Perchloroethylene	10-15				
Dirt/Grease/Solids	5-10				

Total Must = 100

E: HAZARDOUS CHARACTERISTICS:

Is this waste:	NO	YES		
Radioactive	☑	☐		
Bio-Hazard	☑	☐		
Polymerizable	☑	☐		
Does this waste contain: Asbestos	☑	☐	→	☐ Friable ☐ Non Friable?
PCB's > 50 ppm	☑	☐	→	Conc? ____ ppm
Hexavalent Chrome	☑	☐	→	Conc? ____ ppm
HOC's >1000ppm	☐	☑	→	Conc? ____ ppm
VOC's > 500ppmw	☐	☑	→	Conc? ____ ppmw(both 264 & 265 subpart cc)

F: PHYSICAL DATA:

		Odor	Flash Point	pH	Spec. Grav.	BTU/lb.	Chloride % by wt.	Water % by vol.
Layer	Single	Strong ☐	<73 ☐	<2 ☐	<0.70 ☐	<4999 ☑	<2 ☐	<5 ☑
Color	Grey/Brown	Mild ☑	73-99 ☐	2.1-5.0 ☐	0.71-0.81 ☐	5k-9999 ☐	2-5 ☐	5-10 ☐
Source Code	G15	None ☐	100-139 ☐	5.1-9.0 ☐	0.82-0.95 ☐	10k-15000 ☐	5-8 ☑	10-15 ☐
Form Code	W409	Describe	140-199 ☐	9.1-12.4 ☐	0.96-1.01 ☐	>15001 ☐	8-11 ☐	15-20 ☐
		Perc Solvent	>200 ☑	>12.5 ☐	1.02-1.09 ☐		11-14 ☐	20-25 ☐
			N/A ☐	N/A ☑	1.10-1.20 ☐		>14 ☐	>25 ☐
					>1.20 ☑			
If Known Complete:			Exact ____	Exact ____	Exact ____	Exact ____	Exact ____	Exact ____ %

Physical State: Solid 100 % → Dust ☐ Granular ☐ Chunks ☑ Monolith ☐ in Gals

Sludge ____ % → Pumpable: ☐ Yes ☑ No Pourable: ☐ Yes ☑ No ☐ in Gals

Liquid ____ % → Free liquids: ☐ Yes ☐ No Viscosity: ☐ Low(Water) ☐ Medium(Oil) ☑ High(Syrup)

Gas ____ % → Aerosol ☐ Cylinder ☐ → Dia.: ____ Qty: ____ Valve Condition: ____

Debris ____ % → Describe(size & content):

Top

Next

AV74759

G: WASTE CHARACTERIZATION:

	YES	NO
1 Is this a listed EPA RCRA hazardous waste (F,K,P,U) as defined in 40 CFR 261.30	☑	☐
2 a. Is this a liquid waste with a flash point <140F as defined in 40 CFR 261.21 (D001).	☐	☑
b. Is this an ignitable solid as defined in 40 CFR 261.21 (D001)	☐	☑
c. Is this an oxidizer as defined in 49 CFR 173.151 (D001)	☐	☑
d. Is this an ignitable compressed gas as defined in 40 CFR 261.21 (D001)	☐	☑
e. If yes to a,b, or c. Is this a High TOC waste	☐	☑
3 a. Is this a liquid waste with a pH<2 or >12.5. (D002)	☐	☐
b. is this a liquid waste that corrodes steel as defined in 40 CFR 261.22 (D002).	☐	☑
4 Is this a reactive waste as defined in 40 CFR 261.23. (D003)	☐	☑

If yes, check the subcategory: ☐ Water Reactive ☐ Air Reactive ☐ Explosive ☐ Other Reactive
☐ Reactive Cyanide: conc. _____ ppm ☐ Reactive Sulfide: conc. _____ ppm

Waste Code	Constituent	< Than	Reg Level	> Than	Conc	Waste Code	Constituent	< Than	Reg Level	> Than	Conc
D004	Arsenic	☑	5.0	☐		D024	m-Cresol	☑	200	☐	
D005	Barium	☑	100	☐		D025	p-Cresol	☑	200	☐	
D006	Cadmium	☑	1.0	☐		D026	Cresol(o,, m, p)	☑	200	☐	
D007	Chromium	☑	5.0	☐		D027	1,4 Dichlorobenzene	☑	7.5	☐	
D008	Lead	☑	5.0	☐		D028	1,2-Dichloroethane	☑	0.5	☐	
D009	Mercury	☑	0.2	☐		D029	1,1-Dichloroethylene	☑	0.7	☐	
D010	Selenium	☑	1.0	☐		D030	2,4-Dinitrotoluene	☑	0.13	☐	
D011	Silver	☑	5.0	☐		D031	Heptachlor	☑	0.008	☐	
D012	Endrin	☑	0.02	☐		D032	Hexachlorobenzene	☑	0.13	☐	
D013	Lindane	☑	0.4	☐		D033	Hexechlorobutadiene	☑	0.5	☐	
D014	Methoxychlor	☑	10	☐		D034	Hexachloroethane	☑	3.0	☐	
D015	Toxaphene	☑	0.5	☐		D035	Mehtyl Ethyl Ketone	☑	200	☐	
D016	2,4 - D	☑	10	☐		D036	Nitrobenzene	☑	2.0	☐	
D017	2,4,5-TP(Silvex)	☑	1	☐		D037	Pentachlorophenol	☑	100	☐	
D018	Benzene	☑	0.5	☐		D038	Pyridine	☑	5.0	☐	
D019	Carbon Tetrachloride	☑	0.5	☐		D039	Tetrachloroethylene	☐	0.7	☑	
D020	Chlordane	☑	0.03	☐		D040	Trichloroethylene	☑	0.5	☐	
D021	Chlorobenzene	☑	100	☐		D041	2,4,5-Trichlorophenol	☑	400	☐	
D022	Chloroform	☑	6.0	☐		D042	2,4,6-Trichlorophenol	☑	2.0	☐	
D023	o-Cresol	☑	200	☐		D043	Vinyl Chloride	☑	0.2	☐	

Based on: Total Analysis ☐ TCLP Analysis ☐ Generator Knowledge ☑

	YES	NO
5 Is this a EPA Toxic Waste (D004-D043)* as defined in 40 CFR 261.24?	☑	☐
If D009: Is the total Mercury concentration above 260 ppm?	☐	☐
*** If this is a D001, D002, D003(selected) or D004-D043 does it contain any of the Underlying Hazardous Constituents (UHC) above Universal Treatment Standards(UTS)?**	☐	☑
If Yes, include a UTS/UHC form with the profile		
6 Is this waste a Dioxin Or Furan per 40 CFR 261.31?	☐	☑
7 a. Is this a Non-Hazardous Waste?	☐	☑
FOR WASTE DISPOSAL AT PERMA-FIX OF MICHIGAN ONLY:		
b. Is this a hazardous Waste by state regulation only	☐	☐
c. Is this a Michigan Act 451 listed hazardous waste?	☐	☐

If you answered Yes to any question in Section G, enter the appropriate waste codes(s) on the lines below.

Waste Codes: D039 F002

Please list any Toxic Release Inventory Constituents per EPCRA Section 313 not identified above.

TRI Attachment:

Top _____

Next _____

H. BENZENE NESHAP 40 CFR 61, SUBPART FF (Hazardous waste with Benzene Only) YES ☐ NO ☑
If question 1,2 or 3 is No, proceed to section I.

1 Is this waste stream generated at a facility with a SIC code listed under NESHAP, or a TSDF that treats NESHAP waste? SIC Code _____ listed codes: (2800-2899, 2911, 3312, 4953, 9511) ☐ ☑

2 Does the waste contain > 10% water ☐ ☑

3 Is the total Annual Benzene quantity from the facility waste greater than 10Mg/Yr (22,046 lbs/yr) ☐ ☑
If Question 1,2, or 3 is No, proceed to Section I

4 What is the total Benzene concentration in Your Waste? _____ % or _____ ppmw.
(Do not use TCLP results. Acceptable laboratory methods include 8020, 8240, 8260, 602, and 624)

5 What is the TAB quantity for the generator facility? _____ Mg/Year

I. PACKAGING/ QUANTITY

1 Non-Bulk	☐	1 gal	☐	5 gal	☐	15 gal	☐	30 gal	☑	55 gal	☐	85 gal	☐	Other _____
Cubic Yard	☐	Boxes	☐	Bags	☐	Totes	☐	Pallets	☐	Other _____				
Quantity	1	Per:	☐	Month	☐	Quarter	☑	Year	☐	Once				
2 Bulk:	☐	Tanker	☐	Vac Truck	☐	Rolloff	☐	Dump Trailer	☐	Closed Top	☐	Open Top		
			☐	Gallons	☐	Pounds	☐	Yards	☐	Tons				
Quantity:		Lbs.	Per:	☐	Month	☐	Quarter	☐	Year	☐	Once			

J. DOT SHIPPING INFORMATION:
Enter proper DOT shipping name from 49 CFR 172.101 table:

NA3077, Hazardous Waste Solid, n.o.s., 9, PG III

List 2 major components: **(Perchloroethylene, Filters)**

Hazard Class 9 UN/NA code NA3077 PG III RQ: Y N CLIN: _____
US Gov. CLIN # When applicable

K. ATTACHMENTS: (Check all that apply and include with profile)

☐ UTS/UHC Form	☐ Process Flow Diagram	☐ Generator authorization
☐ Analysis	☐ PCB source statement	☐ Labpack inventory sheet
☐ Additional Description	☐ Material Safety Data Sheet	☑ Land Disposal Notification

L. CERTIFICATION:
I hereby certify that all the information submitted in this and all attached documents is complete and accurate.
All known and suspected hazards have been disclosed. By signing below, I give Perma-Fix Environmental Services, Inc., and all of its subsidiaries, permission to make minor changes to this profile prior to its acceptance should they find an error or omission.

Printed Name: X JAMES P. DELUCA Signature: X _____ Date: X 11/27/12

****Signatures other than the generator are required to submit an approved authorization letter from the generator to certify this profile**

INTERNAL USE ONLY: Review 1 _____ 2 _____ 3 _____

Profile I.D. No. _____ APPROVED ☐ REJECTED ☐ Form Code W _____

Waste Codes _____

DOT _____

~~Destination/Consolidation Code~~ _____ Price & Initial $295.75/55

Product Code: _____ GSB

Out Bound Approval: _____ Facility: Valdosta

Notes: _____

Perma-Fix of Orlando, Inc. | Perma-Fix of Dayton, Inc. | Perma-Fix of Michigan, Inc. | Perma-Fix of South Georgia, Inc.

LAND DISPOSAL RESTRICTION CERTIFICATION FORM

Generator Name The Citadel Manifest No _____ Page 1 of

The waste(s) identified below comply with the applicable treatment standards in 40 CFR 268, Subpart D and the applicable prohibition levels specified in 40 CFR 268.32 or RCRA 3004(d). The required information applicable to each waste is identified below.

☑ This shipment includes F001-F005 spent solvents, as identified on the attached sheet.
(Attach LDR Notification Form and check regulated constituents)

☐ This shipment includes F039 multisource leachate, as identified on the attached UTS\UHC Form.
(Fill out appropriate constituents)

☑ This shipment includes D001 (other than: A. High-TOC ignitables -or- B. Other ignitables that will be combusted or recovered), D002, D003 and/or D012-D043 characteristic wastes. The wastes will not be managed in CWA/CWA-equivalent/Class I SDWA systems and are identified on the attached LDR Form.

☐ This shipment includes RCRA Section 3004(d) California list wastes, as identified on the attached LDR Form.

☐ This shipment includes other restricted waste as identified below:

Manifest Line Item	Hazardous Waste No.		Subcategory	Treatability Group		
1a	D039		Tetrachloroethylene			
1a	F002		Spent Solvents			

MLI	LIST CODES, EACH FOLLOWED BY CONFORMING CONSTITUENTS IN PARENTHESIS-ENTER "ALL" WHEN ALL MEET TREATMENT STANDARDS

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

Signature 11/26/2012
Date

Perma-Fix of Orlando, Inc. Perma-Fix of Dayton, Inc. Perma-Fix of Michigan, Inc. Perma-Fix of South Georgia, Inc.

SUBPART CC AND LAND DISPOSAL RESTRICTION NOTIFICATION FORM

Generator Name: The Citadel Manifest No: _____ Page 1 of 1

a b c d

[ ] [ ] [ ] [ ] This is a wastewater stream.

a b c d

[X] [ ] [ ] [ ] This is a non-wastewater stream.

NOTE: BOXES CORRESPOND TO MANIFEST LINE ITEM [a] [b] [c] [d]

The waste(s) described above, does not meet the applicable treatment standards in 40 CFR 268 Subpart D.

a b c d

[Y] [ ] [ ] [ ] SUBPART CC: INDICATE WHETHER WASTES ON THE MANIFEST ARE REGULATED UNDER SUBPART CC FOR CONTAINING VOC'S IN CONCENTRATION LEVELS EQUAL TO OR GREATER THAN 500 PPMW BY ENTERING A "Y" FOR "YES" OR A "N" FOR "NO" AS APPROPRIATE

A. CHARACTERISTIC WASTE

MLI a b c d	CODE	SUBCATEGORY/CONSTITUENTS
[ ] [ ] [ ] [ ]	D001	Ignitable Wastes (TOC>10%)
[ ] [ ] [ ] [ ]	D001*	Ignitable Wastes(TOC<10%)
[ ] [ ] [ ] [ ]	D002*	Corrosive Wastes
[ ] [ ] [ ] [ ]	D003	Reactive Sulfides based on 261.23(a)(5)
[ ] [ ] [ ] [ ]	D003*	Explosives based on 261.23(a) (6),(7),(8)
[ ] [ ] [ ] [ ]	D003	Unexploded ordnance/explosive
[ ] [ ] [ ] [ ]	D003*	Other Reactive based on 261.23(a) (1)
[ ] [ ] [ ] [ ]	D003*	Water Reactive based on 261.23(a) (2),(3),(4)
[ ] [ ] [ ] [ ]	D003	Reactive Cyanides based on 261.23 (a) (5)
[ ] [ ] [ ] [ ]	D004*	Arsenic
[ ] [ ] [ ] [ ]	D005*	Barium
[ ] [ ] [ ] [ ]	D006*	Cadmium
[ ] [ ] [ ] [ ]	D006*	Cadmium Containing Batteries
[ ] [ ] [ ] [ ]	D007*	Chromium
[ ] [ ] [ ] [ ]	D008*	Lead
[ ] [ ] [ ] [ ]	D008*	Lead Acid Batteries
[ ] [ ] [ ] [ ]	D009*	High Mercury-Organic
[ ] [ ] [ ] [ ]	D009*	High Mercury-Inorganic
[ ] [ ] [ ] [ ]	D009*	Low Mercury
[ ] [ ] [ ] [ ]	D009*	Mercury Wastewater
[ ] [ ] [ ] [ ]	D010*	Selenium
[ ] [ ] [ ] [ ]	D011*	Silver
[ ] [ ] [ ] [ ]	D012*	Endrin
[ ] [ ] [ ] [ ]	D013*	Lindane
[ ] [ ] [ ] [ ]	D014*	Methoxychlor
[ ] [ ] [ ] [ ]	D015*	Toxaphene
[ ] [ ] [ ] [ ]	D016*	2,4-D
[ ] [ ] [ ] [ ]	D017*	2,4,5-TP (Silvex)
[ ] [ ] [ ] [ ]	D018*	Benzene
[ ] [ ] [ ] [ ]	D019*	Carbon Tetrachloride
[ ] [ ] [ ] [ ]	D020*	Chlordane
[ ] [ ] [ ] [ ]	D021*	Chlorobenzene
[ ] [ ] [ ] [ ]	D022*	Chloroform
[ ] [ ] [ ] [ ]	D023*	o-Cresol
[ ] [ ] [ ] [ ]	D024*	m-Cresol
[ ] [ ] [ ] [ ]	D025*	p-Cresol
[ ] [ ] [ ] [ ]	D026*	Cresol (Total)
[ ] [ ] [ ] [ ]	D027*	p-Dichlorobenzene
[ ] [ ] [ ] [ ]	D028*	1,2-Dichloroethane
[ ] [ ] [ ] [ ]	D029*	1,1-Dichloroethylene
[ ] [ ] [ ] [ ]	D030*	2,4-Dinitrotoluene
[ ] [ ] [ ] [ ]	D031*	Heptachlor
[ ] [ ] [ ] [ ]	D032*	Hexachlorobenzene
[ ] [ ] [ ] [ ]	D033*	Hexachlorobutadiene
[ ] [ ] [ ] [ ]	D034*	Hexachloroethane
[ ] [ ] [ ] [ ]	D035*	Methyl ethyl ketone
[ ] [ ] [ ] [ ]	D036*	Nitrobenzene
[ ] [ ] [ ] [ ]	D037*	Pentachlorophenol
[ ] [ ] [ ] [ ]	D038*	Pyridine
[X] [ ] [ ] [ ]	D039*	Tetrachloroethylene
[ ] [ ] [ ] [ ]	D040*	Trichloroethylene
[ ] [ ] [ ] [ ]	D041*	2,4,5-Trichlorophenol
[ ] [ ] [ ] [ ]	D042*	2,4,6-Trichlorophenol
[ ] [ ] [ ] [ ]	D043*	Vinyl chloride

B. LISTED WASTE

MLI a b c d	CODE	SUBCATEGORY/CONSTITUENTS
[ ] [ ] [ ] [ ]	F001	Spent Halogenated Solvents
[X] [ ] [ ] [ ]	F002	Spent Halogenated Solvents
[ ] [ ] [ ] [ ]	F003	Spent Non-halogenated Solvents
[ ] [ ] [ ] [ ]	F004	Spent Non-halogenated Solvents
[ ] [ ] [ ] [ ]	F005	Spent Non-halogenated Solvents

CHECK REGULATED CONSTITUENTS FOR LISTED WASTES IDENTIFIED ABOVE (F001-F005):

[ ] [ ] [ ] [ ]	Acetone
[ ] [ ] [ ] [ ]	Benzene
[ ] [ ] [ ] [ ]	n-Butyl alcohol
[ ] [ ] [ ] [ ]	Carbon disulfide
[ ] [ ] [ ] [ ]	Carbon tetrachloride
[ ] [ ] [ ] [ ]	Chlorobenzene
[ ] [ ] [ ] [ ]	o-Cresol
[ ] [ ] [ ] [ ]	m-Cresol
[ ] [ ] [ ] [ ]	p-Cresol
[ ] [ ] [ ] [ ]	Cresol
[ ] [ ] [ ] [ ]	Cyclohexanone
[ ] [ ] [ ] [ ]	o-Dichlorobenzene
[ ] [ ] [ ] [ ]	Ethyl acetate
[ ] [ ] [ ] [ ]	Ethyl benzene
[ ] [ ] [ ] [ ]	Ethyl ether
[ ] [ ] [ ] [ ]	Isobutyl alcohol
[ ] [ ] [ ] [ ]	Methanol
[ ] [ ] [ ] [ ]	Methylene chloride
[ ] [ ] [ ] [ ]	Methyl ethyl Ketone
[ ] [ ] [ ] [ ]	Methyl isobutyl ketone
[ ] [ ] [ ] [ ]	Nitrobenzene
[ ] [ ] [ ] [ ]	Pyridine
[X] [ ] [ ] [ ]	Tetrachloroethylene
[ ] [ ] [ ] [ ]	Toluene
[ ] [ ] [ ] [ ]	1,1,1-Trichloroethane
[ ] [ ] [ ] [ ]	1,1,2-Trichloroethane
[ ] [ ] [ ] [ ]	1,1,2-Trichloro-1,2,2-trifluoroethane
[ ] [ ] [ ] [ ]	Trichloroethylene
[ ] [ ] [ ] [ ]	Trichloromonofluoromethene
[ ] [ ] [ ] [ ]	Xylenes
[ ] [ ] [ ] [ ]	2-Nitropropene
[ ] [ ] [ ] [ ]	2-Ethoxyethanol

a b c d		
[ ] [ ] [ ] [ ]	F006	Electroplating WWT sludge
[ ] [ ] [ ] [ ]	F035	Wood preserving wastewater
[ ] [ ] [ ] [ ]	F037	Petroleum refinery primary oil/water separation sludge
[ ] [ ] [ ] [ ]	F038	Petroleum refinery secondary oil/water separation sludge
[ ] [ ] [ ] [ ]	F039	Multi-source Leachate
[ ] [ ] [ ] [ ]	K048	Dissolved air flotation float
[ ] [ ] [ ] [ ]	K049	Slop oil emulsion solids

Does the waste identified by an asterisk (*) contain any Underlying Hazardous Constituents per 268.7 (a)(1)?

[X] [ ] [ ] [ ] Yes

[ ] [ ] [ ] [ ] No

If YES, *attach a completed UTS/UHC form to this document*

D. OTHER WASTES

Enter waste codes/subcategory, if applicable, in the table below for codes not found above.

MLI a b c d	WASTE CODES/SUBCATEGORY	TREATABILITY GROUP
[ ] [ ] [ ] [ ]		

SIGNATURE _____ Date: 11/26/2012

Attachment 3

Outbound Manifest Showing Disposition of Materials Involved in Fire

PO# PFSG 05722

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
GAD093380814	1	Infotrac 800-535-5053	010629237 JJK

GENERATOR

5. Generator's Name and Mailing Address
PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GA 31601
Generator's Phone: 229-244-0474

Generator's Site Address (If different than mailing address)
PERMA FIX OF SOUTH GEORGIA
1612 JAMES P. RODGERS CIRCLE
VALDOSTA, GA 31601 ☐

6. Transporter 1 Company Name: ACTION RESOURCES, INC. 800-228-4475 U.S. EPA ID Number: ALR000007237

7. Transporter 2 Company Name U.S. EPA ID Number

8. Designated Facility Name and Site Address
US ECOLOGY TEXAS (5-1801)
3277 COUNTY ROAD 69 P O BOX 307
ROBSTOWN, TX 78380
361-387-3518
Facility's Phone: U.S. EPA ID Number: TXD069452340

9a. HM	9b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ NA3077, Hazardous waste, solid, n.o.s. (Xylenes, Toluene), 9, PGIII	1	DT	35	Y	D001 D004 D005 D006 D007 D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
9a.1: 090053639-0/CD009 D010 D011 D012 D013 D014 D015 D016 D017 D018 **
9a.2:
9a.3
9a.4

1. ERG 171
2. ERG
3. ERG
4. ERG

SO #: Ref #: #104036
Doc #: SV53165
Notes(If Any):

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year

INTL

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month | Day | Year

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) Month | Day | Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name | Signature | Month | Day | Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Attachment 4

Fire Department Report

NFIRS -1 Basic

A FDID * 09204 | State * GA | Incident Date * MM 02 DD 14 YYYY 2013 | Station 9-1 | Incident Number * 13-0000399 | Exposure * 000 | ☐ Delete ☐ Change ☐ No Activity

B Location*

☐ Check this box to Indicate that the address for this incident is provided on the Wildland Fire Module In Section B "Alternative Location Specification". Use only for Wildland fires.

Census Tract 2959 -

☒ Street address
☐ Intersection
☐ In front of
☐ Rear of
☐ Adjacent to
☐ Directions

Number/Milepost: 1612 | Prefix: | Street or Highway: James P. Rodgers | Street Type: CIR | Suffix:

Apt./Suite/Room: | City: Valdosta | State: GA | Zip Code: 31601 -

Cross street or directions, as applicable:

C Incident Type *

132 | Road freight or transport

Incident Type

D Aid Given or Received*

1 ☐ Mutual aid received
2 ☐ Automatic aid recv.
3 ☐ Mutual aid given
4 ☐ Automatic aid given
5 ☐ Other aid given
N ☒ None

Their FDID | Their State | Their Incident Number

E1 Date & Times

Midnight is 0000

Check boxes if dates are the same as Alarm Date.

	Month	Day	Year	Hr Min Sec
Alarm * (ALARM always required)	02	14	2013	10:51:00
☒ Arrival * (ARRIVAL required, unless canceled or did not arrive)	02	14	2013	10:57:00
☐ Controlled (CONTROLLED Optional, Except for wildland fires)				
Last Unit Cleared ☒ (LAST UNIT CLEARED, required except for wildland fires)	02	14	2013	16:37:00

E2 Shift & Alarms

Local Option

C | 01 | 3

Shift or Platoon | Alarms | District

E3 Special Studies

Local Option

Special Study ID# | Special Study Value

F Actions Taken *

11 | Extinguishment by fire — Primary Action Taken (1)

12 | Salvage & overhaul — Additional Action Taken (2)

82 | Notify other agencies. — Additional Action Taken (3)

G1 Resources *

☒ Check this box and skip this section if an Apparatus or Personnel form is used.

	Apparatus	Personnel
Suppression	0012	0021
EMS		
Other		

☐ Check box if resource counts include aid received resources.

G2 Estimated Dollar Losses & Values

LOSSES: Required for all fires if known. Optional for non fires.

		None
Property	$, 060 , 000	☐
Contents	$, 000 , 000	☒

PRE-INCIDENT VALUE: Optional

Property	$, 060 , 000	☐
Contents	$, 000 , 000	☒

Completed Modules

☒ Fire-2
☐ Structure-3
☐ Civil Fire Cas.-4
☐ Fire Serv. Cas.-5
☐ EMS-6
☒ HazMat-7
☐ Wildland Fire-8
☒ Apparatus-9
☒ Personnel-10
☒ Arson-11

H1 Casualties* ☒ None

	Deaths	Injuries
Fire Service		
Civilian		

H2 Detector

Required for Confined Fires.

1 ☐ Detector alerted occupants
2 ☒ Detector did not alert them
U ☐ Unknown

H3 Hazardous Materials Release

N ☐ None
1 ☐ Natural Gas: slow leak, no evacuation or HazMat actions
2 ☐ Propane gas: <21 lb. tank (as in home BBQ grill)
3 ☐ Gasoline: vehicle fuel tank or portable container
4 ☐ Kerosene: fuel burning equipment or portable storage
5 ☐ Diesel fuel/fuel oil: vehicle fuel tank or portable
6 ☐ Household solvents: home/office spill, cleanup only
7 ☐ Motor oil: from engine or portable container
8 ☐ Paint: from paint cans totaling < 55 gallons
0 ☒ Other: Special HazMat actions required or spill > 55gal., Please complete the HazMat form

I Mixed Use Property

NN	☒ Not Mixed
10	☐ Assembly use
20	☐ Education use
33	☐ Medical use
40	☐ Residential use
51	☐ Row of stores
53	☐ Enclosed mall
58	☐ Bus. & Residential
59	☐ Office use
60	☐ Industrial use
63	☐ Military use
65	☐ Farm use
00	☐ Other mixed use

J Property Use* Structures

131 ☐ Church, place of worship	341 ☐ Clinic,clinic type infirmary	539 ☐ Household goods,sales,repairs
161 ☐ Restaurant or cafeteria	342 ☐ Doctor/dentist office	579 ☐ Motor vehicle/boat sales/repair
162 ☐ Bar/Tavern or nightclub	361 ☐ Prison or jail, not juvenile	571 ☐ Gas or service station
213 ☐ Elementary school or kindergarten	419 ☐ 1-or 2-family dwelling	599 ☐ Business office
215 ☐ High school or junior high	429 ☐ Multi-family dwelling	615 ☐ Electric generating plant
241 ☐ College, adult education	439 ☐ Rooming/boarding house	629 ☐ Laboratory/science lab
311 ☐ Care facility for the aged	449 ☐ Commercial hotel or motel	700 ☐ Manufacturing plant
331 ☐ Hospital	459 ☐ Residential, board and care	819 ☐ Livestock/poultry storage (barn)
	464 ☐ Dormitory/barracks	882 ☐ Non-residential parking garage
	519 ☐ Food and beverage sales	891 ☐ Warehouse

Outside

124 ☐ Playground or park	936 ☐ Vacant lot	981 ☐ Construction site
655 ☐ Crops or orchard	938 ☐ Graded/care for plot of land	984 ☐ Industrial plant yard
669 ☐ Forest (timberland)	946 ☐ Lake, river, stream	
807 ☐ Outdoor storage area	951 ☐ Railroad right of way	
919 ☐ Dump or sanitary landfill	960 ☐ Other street	
931 ☐ Open land or field	961 ☐ Highway/divided highway	
	962 ☐ Residential street/driveway	

Lookup and enter a Property Use code only if you have NOT checked a Property Use box:

Property Use 800

Storage, Other

NFIRS-1 Revision 03/11/99

A | 09204 (FDID ★) | GA (State ★) | MM 02 / DD 14 / YYYY 2013 (Incident Date ★) | 9-1 (Station) | 13-0000399 (Incident Number ★) | 000 (Exposure ★) | ☐ Delete ☐ Change ☐ No Activity | NFIRS -2 Fire

B Property Details

B1 [ ] ☒ Not Residential
Estimated Number of residential living units in building of origin whether or not all units became involved

B2 [ ] ☒ Buildings not involved
Number of buildings involved

B3 [ ] ☒ None
Acres burned (outside fires) ☐ Less than one acre

C On-Site Materials or Products ☒ None

Complete if there were any significant amounts of commercial,industrial, energy or agricultural products or materials on the Property, whether or not they became involved

Enter up to three codes. Check one or more boxes for each code entered.

NNN	None	On-site material (1)
		On-site material (2)
		On-site material (3)

1 ☐ Bulk storage or warehousing
2 ☐ Processing or manufacturing
3 ☐ Packaged goods for sale
4 ☐ Repair or service

D Ignition

D1 82 | Cargo/trunk area - all — Area of fire origin ★

D2 UU | Undetermined — Heat source ★

D3 UU | Undetermined — Item first ignited ★ | 1 ☒ Check Box if fire spread was confined to object of origin

D4 99 | Multiple types of — Type of material first ignited | Required only if item first ignited code is 00 or <70

E_1 Cause of Ignition

☐ Check box if this is an exposure report. Skip to section G

1 ☐ Intentional
2 ☐ Unintentional
3 ☐ Failure of equipment or heat source
4 ☐ Act of nature
5 ☒ Cause under investigation
U ☐ Cause undetermined after investigation

E_2 Factors Contributing To Ignition ☒ None

NN | None — Factor Contributing To Ignition (1)

[ ] | [ ] — Factor Contributing To Ignition (2)

E_3 Human Factors Contributing To Ignition

Check all applicable boxes

1 ☐ Asleep ☒ None
2 ☐ Possibly impaired by alcohol or drugs
3 ☐ Unattended person
4 ☐ Possibly mental disabled
5 ☐ Physically Disabled
6 ☐ Multiple persons involved
7 ☐ Age was a factor

Estimated age of person envolved [ ]

1 ☐ Male 2 ☐ Female

F_1 Equipment Involved In Ignition

☒ None If Equipment was not involved,Skip to Section G

NNN | None — Equipment Involved

Brand [ ]
Model [ ]
Serial # [ ]
Year [ ]

F_2 Equipment Power

[ ] [ ] — Equipment Power Source

F_3 Equipment Portability

1 ☐ Portable
2 ☐ Stationary

Portable equipment normally can be moved by one person, is designed to be use in multiple locations, and requires no tools to install.

G Fire Suppression Factors

Enter up to three codes. ☒ None

NNN	None	Fire suppression factor (1)
		Fire suppression factor (2)
		Fire suppression factor (3)

H_1 Mobile Property Involved

☐ None

1 ☐ Not involved in ignition, but burned
2 ☐ Involved in ignition, but did not burn
3 ☒ Involved in ignition and burned

H_2 Mobile Property Type & Make

23 | Trailer - semi, — Mobile property type

00 | Other Make — Mobile property make

Travis- Open Top — Moblie property model | Year [ ]

A044559 — License Plate Number | AL — State | VIN Number [ ]

Local Use

☐ Pre-Fire Plan Available

Some of the information presented in this report may be based upon reports from other Agencies

☐ Arson report attached
☐ Police report attached
☐ Coroner report attached
☐ Other reports attached

NFIRS-2 Revision 01/19/99

A FDID * 09204 | State * GA | Incident Date (MM DD YYYY) * 2 14 2013 | Station 9-1 | Incident Number * 13-0000399 | Exposure * 000 | Haz No * 1 | ☐ Delete ☐ Change

NFIRS - 7 HazMat

B HazMat ID

UN Number: 3077 | DOT Hazard Classification: | CAS Registration Number:

Chemical * Name: hazardous waste, solid

C1 Container Type

Container Type:

More hazardous Materials? Use additional sheets.

C2 Estimated Container Capacity

Capacity: by volume or weight:

C3 Units: Capacity (Check one box)

VOLUME		WEIGHT	
11	☐ Ounces	21	☐ Ounces
12	☐ Gallons	22	☐ Pounds
13	☐ Barrels: 42 gal.	23	☐ Grams
14	☐ Liters	24	☐ Kilograms
15	☐ Cubic feet		
16	☐ Cubic meters		

D1 Estimated Amount Released

Amount released: by volume or weight: 7 , 500

D2 Units: Released (Check one box)

VOLUME		WEIGHT	
11	☐ Ounces	21	☐ Ounces
12	☒ Gallons	22	☐ Pounds
13	☐ Barrels: 42 gal.	23	☐ Grams
14	☐ Liters	24	☐ Kilograms
15	☐ Cubic feet		
16	☐ Cubic meters		

E1 Physical State When Released

1 ☐ Solid
2 ☒ Liquid
3 ☐ Gas
U ☐ Undetermined

E2 Released Into

Released into: 4

Complete the remainder of this form only for the first hazardous material involved in this incident.

F1 Released From:

Check all applicable boxes

☐ Below grade
1 ☐ Inside/on structure — Story of Release:
2 ☒ Outside of structure

F2 Population Density

1 ☒ Urban
2 ☐ Suburban
3 ☐ Rural

G1 Area Affected

1 ☒ Square Feet
2 ☐ Blocks
3 ☐ Square miles

Enter Measurement: 3

G2 Area Evacuated ☒ None

1 ☒ Square Feet
2 ☐ Blocks
3 ☐ Square miles

Enter Measurement:

G3 Estimated Number of People Evacuated

G4 Estimated Number of Buildings Evacuated ☒ None

H HazMat Actions Taken

Enter up to three actions taken

Primary Action Taken (1): 32 Notify other agencies

Additional Action Taken (2):

Additional Action Taken (3):

I If fire or explosion is involved with a release, which occurred first?

1 ☒ Ignition U ☐ Undetermined
2 ☐ Release

J Cause Of Release *

1 ☐ Intentional
2 ☒ Unintentional release
3 ☐ Container/ containment failure
4 ☐ Act of nature
5 ☐ Cause under investigation
U ☐ Cause undetermined after investigation

K Factors Contributing to Release

Enter up to three contributing factors

Factor Contributing To Release (1): UU Undetermined

Factor Contributing To Release (2):

Factor Contributing To Release (3):

L Factors Affecting Mitigation

Enter up to three factors or impediments that affected the mitigation of the incident

Factor or impediment (1): NN None

Factor or impediment (2):

Factor or impediment (3):

M Equipment Involved In Release ☐ None

Equipment involved in release:

Brand:

Model:

Serial Number:

Year:

N Mobile Property Involved In Release ☐ None

Mobile property type: 23 Trailer - semi, designed for

Mobile property make: 00 Other Make

Mobile property model: Travus Year:

License Plate Number: A044559 State: AL

DOT Number/ ICC Number:

O HazMat Disposition *

1 ☐ Completed by fire service only
2 ☐ Completed w/ fire service present
3 ☐ Released to local agency
4 ☐ Released to county agency
5 ☐ Released to state agency
6 ☐ Released to federal agency
7 ☐ Released to a private agency
8 ☒ Released to property owner or manager

O HazMat Civilian Casualties

Deaths: Injuries:

A

FDID *	State *	Incident Date * (MM / DD / YYYY)	Station	Incident Number *	Exposure *	Delete / Change	NFIRS - 10 Personnel
09204	GA	2 / 14 / 2013	9-1	13-0000399	000	☐ / ☐	

B

Apparatus or * Resource (Use codes listed below)	Date and Times (Check if same as alarm date)	Month	Day	Year	Hours/mins	Sent [X]	Number of * People	Use (Check ONE box for each apparatus to indicate its main use at the incident.)	Actions Taken (List up to 4 actions for each apparatus and each personnel.)
1 ID 10 Type 11	Dispatch [X]	2	14	2013	10:51	X	3	[X] Suppression	
	Arrival [X]	2	14	2013	10:57			☐ EMS	
	Clear [X]	2	14	2013	16:37			☐ Other	

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
110122	McBride, Joshua	FF	X				
3223	Huffmaster, Nathan	SGT	X				
3266	Wright, Caron	SGT	X				

2 ID 100 Type 92	Dispatch [X]	2	14	2013	10:51	X	1	[X] Suppression	
	Arrival [X]	2	14	2013	10:57			☐ EMS	
	Clear [X]	2	14	2013	16:37			☐ Other	

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3156	Rice, James	FC	X				

3 ID 20 Type 11	Dispatch [X]	2	14	2013	10:51	X	3	[X] Suppression	
	Arrival [X]	2	14	2013	10:57			☐ EMS	
	Clear [X]	2	14	2013	16:37			☐ Other	

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3166	Clark, Robert	LT	X				
3434	Detweiler, Travis	FF	X				
5632	Phillips, Charles	FF	X				

A

FDID *	State *	Incident Date * (MM / DD / YYYY)	Station	Incident Number *	Exposure *	Delete / Change	NFIRS - 10 Personnel
09204	GA	2 / 14 / 2013	9-1	13-0000399	000	☐ / ☐	

B Apparatus or Resource * (Use codes listed below) | Date and Times (Check if same as alarm date) | Sent [X] | Number of People * | Use (Check ONE box for each apparatus to indicate its main use at the incident.) | Actions Taken (List up to 4 actions for each apparatus and each personnel.)

1 ID 200 / Type 92

	Month	Day	Year	Hours/mins
Dispatch	[X] 2	14	2013	10:51
Arrival	[X] 2	14	2013	10:57
Clear	[X] 2	14	2013	16:37

Sent [X] | Number of People: 1 | Use: [X] Suppression, ☐ EMS, ☐ Other | Actions Taken: ☐ ☐ / ☐ ☐

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3209	Catlett, Ralph	BC	X				

2 ID 30 / Type 11

	Month	Day	Year	Hours/mins
Dispatch	[X] 2	14	2013	10:51
Arrival	[X] 2	14	2013	10:57
Clear	[X] 2	14	2013	16:37

Sent [X] | Number of People: 3 | Use: [X] Suppression, ☐ EMS, ☐ Other | Actions Taken: ☐ ☐ / ☐ ☐

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3147	Roe, Ronald	LT	X				
3272	Stubbs, Jim	SGT	X				
3442	Matheny, Brandon	FF	X				

3 ID 300 / Type 00

	Month	Day	Year	Hours/mins
Dispatch	[X] 2	14	2013	10:51
Arrival	[X] 2	14	2013	10:57
Clear	[X] 2	14	2013	16:37

Sent [X] | Number of People: 1 | Use: [X] Suppression, ☐ EMS, ☐ Other | Actions Taken: ☐ ☐ / ☐ ☐

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3154	Gallagher, Kenneth	CP	X				

A

FDID *	State *	Incident Date * (MM / DD / YYYY)	Station	Incident Number *	Exposure *	Delete / Change	NFIRS - 10 Personnel
09204	GA	2 / 14 / 2013	9-1	13-0000399	000		

B Apparatus or Resource * — Use codes listed below

Apparatus or Resource	Date and Times (Check if same as alarm date)	Sent	Number of People *	Use (Check ONE box for each apparatus to indicate its main use at the incident.)	Actions Taken (List up to 4 actions for each apparatus and each personnel.)
1 ID 400, Type 00	Dispatch [X] 2 14 2013 10:51 Arrival [X] 2 14 2013 10:57 Clear [X] 2 14 2013 16:37	Sent [X]	1	[X] Suppression [ ] EMS [ ] Other	

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3036	Wisenbaker, John	FM	X				

Apparatus or Resource	Date and Times	Sent	Number of People	Use	Actions Taken
2 ID 402, Type 00	Dispatch [X] 2 14 2013 10:51 Arrival [X] 2 14 2013 10:57 Clear [X] 2 14 2013 16:37	Sent [X]	1	[X] Suppression [ ] EMS [ ] Other	

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3176	Willis, John	FF	X				

Apparatus or Resource	Date and Times	Sent	Number of People	Use	Actions Taken
3 ID 60, Type 11	Dispatch [X] 2 14 2013 10:51 Arrival [X] 2 14 2013 10:57 Clear [X] 2 14 2013 16:37	Sent [X]	3	[X] Suppression [ ] EMS [ ] Other	

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
110191	Cummings, Lloyd	FF	X				
3229	Shoemake, Ronald	SGT	X				
3439	Miller, Shelly	FF	X				

A

FDID *	State *	Incident Date * (MM DD YYYY)	Station	Incident Number *	Exposure *	Delete / Change	NFIRS - 10 Personnel
09204	GA	2 14 2013	9-1	13-0000399	000	☐ Delete ☐ Change	

B Apparatus or Resource * (Use codes listed below)	Date and Times (Check if same as alarm date)	Month Day Year Hours/mins	Sent [X]	Number of People *	Use (Check ONE box for each apparatus to indicate its main use at the incident.)	Actions Taken (List up to 4 actions for each apparatus and each personnel.)
1 ID: AIR 1 Type: 62	Dispatch [X]	2 14 2013 10:51	Sent [X]	1	[X] Suppression ☐ EMS ☐ Other	
	Arrival [X]	2 14 2013 10:57				
	Clear [X]	2 14 2013 16:37				

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3137	Moore, Shelly	FF	X				

2 ID: T-1 Type: 12	Dispatch [X]	2 14 2013 10:51	Sent [X]	2	[X] Suppression ☐ EMS ☐ Other	
	Arrival [X]	2 14 2013 10:57				
	Clear [X]	2 14 2013 16:37				

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3194	Carter, Allen	SGT	X				
3430	Reed, Tyshon	FF	X				

3 ID: T-2 Type: 12	Dispatch [X]	2 14 2013 10:51	Sent [X]	1	[X] Suppression ☐ EMS ☐ Other	
	Arrival [X]	2 14 2013 10:57				
	Clear [X]	2 14 2013 16:37				

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3093	Rowan, Jason	CP	X				

FDID *	State *	MM Incident Date *	DD Incident Date *	YYYY Incident Date *	Station	Incident Number *	Exposure *	
09204	GA	2	14	2013	9-1	13-0000399	000	Complete Narrative

Narrative:

Engine 1 responded to a reported structure fire at 1612 James P. Rogers Circle. Lt. D. Willis was the first arriving fire unit on scene and reported a highly visible fire coming from a semi trailer under an awning at Perma-fix of South GA. When engine 1 arrived, we found a large amount of fire coming from an open top semi trailer under the awning of the structure. Engine 1 began fire attack with a pre connected cross lay. Fire personnel, using ladders, began an aggressive fire attack through the top of the trailer. Engine 6 arrived and connected engine 1 to a hydrant and then its crew came up to assist engine 1 with fire attack. We were flowing 2 hand lines onto the trailer with little progress. We then switched to a foam operation through those 2 hand lines. We were able then to knock the fire down to a safer level to have the trailer pulled from under the awning. One of the Perma-fix employees pulled the trailer out with a yard truck.

We were not able to fully extinguish the fire due to the materials burning. Every time water was applied, more fire flared up from under the material. It was then decided to perform an aerial operation to flood the material with copious amounts of water to try to get water under the material. We set up AP1 and flowed approximately 700 GPM for about 10 minutes. When the fire was knocked down as much as possible with the aerial, we swapped back to hand lines. We could then get firefighting personnel in the trailer to start overhaul. We had to remove a large amount of plywood to get to the smoldering fires below. During this time, we were swapping out personnel from Engines 1,2,3, 6 and Ap1 to do the overhaul. This was a time consuming process.

Some of the materials on board the trailer were: plywood sheets from the Moody AFB firing range, empty paint cans, and household solvents. There is no accurate record of exact quantities and types of product.

After overhaul was complete, the property was turned back over to Perma-flex personnel for them to remove the debris from the trailer for disposal. Mr. Lason Kirland, the General Manager, was in charge of the operation after fire personnel were done.

During the operation, there was run-off that gathered in the south western side of the property at a retaining pit. GA Petroleum (neighboring business) provided a vacuum truck to Perma-fix to help remove the waste. They vacuumed approximately 5000 gallons of waste, starting at around 1500 hrs. They then took the waste over to the Perma-fix waste tank for dumping. Perma-fix also pumped waste into one of their tankers. They vacuumed approximately 2500 gallons from the retaining pit. Total waste collected was approximately 7500 gallons.

Some waste managed to enter the creek behind the property of unknown amount. Ph test was conducted of the waste water with a test strip and it registered 5. EPD, Mr. Michael Elster was contacted by Capt. Wisenbaker and advised of the situation.

Capt. Wisenbaker will be performing follow up interviews with Perma-fix personnel at a later time of original report.

Perma-fix leased the trailer unit from Action Resources in Hanceville Alabama. They were contacted and they advised that the unit is valued at $60,000. Perma-fix has insured the unit with Wells Fargo. Trailer is not road worthy after the fire, possible total loss.

As of 2/14/2013 report time, it is unknown how the fire started. It is under investigation.

K1 Person/Entity Involved

Local Option

Business name (if applicable): Perma-fix of South GA

Area Code: 229 Phone Number: 244-0474

[X] Check This Box if same address as incident location. Then skip the three duplicate address lines.

Mr.,Ms., Mrs.: | First Name: Lason | MI: | Last Name: Kirkland | Suffix:

Number: 1612 | Prefix: | Street or Highway: James P. Rodgers | Street Type: CIR | Suffix:

Post Office Box: | Apt./Suite/Room: | City: Valdosta

State: GA | Zip Code: 31601-

[ ] More people involved? Check this box and attach Supplemental Forms (NFIRS-1S) as necessary

K2 Owner

[ ] Same as person involved? Then check this box and skip The rest of this section.

Local Option

Business name (if Applicable): Action Resources

Area Code: | Phone Number: --

[ ] Check this box if same address as incident location. Then skip the three duplicate address lines.

Mr.,Ms., Mrs.: | First Name: | MI: | Last Name: | Suffix:

Number: 40 | Prefix: | Street or Highway: County | Street Type: RD | Suffix:

Post Office Box: | Apt./Suite/Room: | City: Hanceville

State: AL | Zip Code: 35077-

L Remarks

Local Option

Engine 1 responded to a reported structure fire at 1612 James P. Rogers Circle. Lt. D. Willis was the first arriving fire unit on scene and reported a highly visible fire coming from a semi trailer under an awning at Perma-fix of South GA. When engine 1 arrived, we found a large amount of fire coming from an open top semi trailer under the awning of the structure. Engine 1 began fire attack with a pre connected cross lay. Fire personnel, using ladders, began an aggressive fire attack through the top of the trailer. Engine 6 arrived and connected engine 1 to a hydrant and then its crew came up to assist engine 1 with fire attack. We were flowing 2 hand lines onto the trailer with little progress. We then switched to a foam operation through those 2 hand lines. We were able then to knock the fire down to a safer level to have the trailer pulled from under the awning. One of the Perma-fix employees pulled the trailer out with a yard truck.

We were not able to fully extinguish the fire due to the materials burning. Every time water was applied, more fire flared up from under the material. It was then decided to perform an aerial operation to flood the material with copious amounts of water to try to get water under the material. We set up AP1 and flowed approximately 700 GPM for about 10 minutes. When the fire was knocked down as much as possible with the aerial, we swapped back to hand lines. We could then get firefighting personnel in the trailer to start overhaul. We had to remove a large amount of plywood to get to the smoldering fires below. During this time, we were swapping out personnel from Engines 1,2,3, 6 and Ap1 to do the overhaul. This was a time consuming process.

Some of the materials on board the trailer were: plywood sheets from the Moody AFB firing range, empty paint cans, and household solvents. There is no accurate record of exact quantities and types of product.

L Authorization

Officer in charge ID	Signature	Position or rank	Assignment	Month	Day	Year
3209	Catlett, Ralph	BC	200	02	14	2013

Check Box if same as Officer in charge. [ ]

Member making report ID	Signature	Position or rank	Assignment	Month	Day	Year
3223	Huffmaster, Nathan	LT	10	02	14	2013

Attachment 5

Photographs of Containers to be used in Future Consolidation Activities

NCR
HAZARDOUS
WASTE
USED OIL

HAZ
WASTE

August 14, 2013 Incident Report

PermaFix®
environmental services

1612 James P. Rodgers Cir. Valdosta, Georgia 31601

Report to GAEPD Relating to Implementation of the Contingency Plan on August 14, 2013

Hazardous Waste Facility Permit HW-020 (S&T)
GAD 093 380 814

Perma-Fix of South Georgia Facility
1612 James P. Rodgers Cir.
Valdosta, Georgia 31601

Prepared by

Kurt Fogleman
Environmental Health and Safety Manager
Perma-Fix Southeast Region
1940 NW 67th Place
Gainesville, FL 32653
(352) 395-1356

In accordance with conditions I.C.4 and I.C.5 of Hazardous Waste Facility Permit HW-020 (S&T), Perma-Fix of South Georgia is providing the following information related to the implementation of the facility contingency plan on August 14, 2013.

Owner Name

The facility is owned by Perma-Fix of South Georgia, Inc., a subsidiary of Perma-Fix Environmental Services, Inc. Perma-Fix of South Georgia is a hazardous waste facility registered with the EPA ID number GAD 093 380 814.

Facility Address

The facility is located at:
1612 James P. Rodgers Circle
Valdosta, GA 31601
The facility phone number is (229) 244-0474.

Date and Time of Incident

The fire began at approximately 2:20 pm on Wednesday, August 14th, 2013. The Valdosta Fire Department responded to the 911 call, followed by units from Lowndes County and Moody Air Force Base. While the main fire was controlled within two hours, hotspots smoldered through the evening.

Type of Incident

The incident was an explosion and fire that led to the pressurization and explosion of a large number of drums, and subsequent combustion of the drum contents. The fire damaged equipment, containers, and the roof over the Sampling and Inspection Area and Drum Storage & Process Area 1. The fire began in blend pot F4, a 700-gallon blending tank with loading hopper ("dump box").

Name & Quantity of Materials Involved

Personnel interviewed up to this point report that they processed paint waste and auto body shop waste in the blend pot leading up to the incident. Materials loaded into the blend pot immediately before the incident have not yet been identified. Personnel performing the final loading have not been interviewed due to the serious nature of their injuries.

Perma-Fix has developed a detailed inventory of the drums that were consumed in the fire based on bar code scans prior to the event and an accounting of remaining unaffected inventory. A list of waste involved in the fire with description and associated waste codes is attached.

Extent of Injuries

Three employees suffered burns as a result of the fire. One was treated for burns to his arms locally at South Georgia Medical Center and released the same night. Two were taken by helicopter to UF Health Shands Hospital in Gainesville, Florida. They are listed in stable condition, and are still undergoing treatment. Both suffered burns to the arms and face.

Assessment of Hazards to Human Health and the Environment

The actual hazards inside the facility at the time of the incident were fire, container explosions and smoke from the fire. Personnel were immediately evacuated in response to the extreme hazards. Responders moved the rally point and later evacuated the surrounding area due to the actual hazards and the potential airborne hazards of smoke, chemical release and combustion products.

Actual hazards outside the facility included the release of firefighting water through the Georgia Petroleum facility. There was visible impact to the creek bed behind the facility. An underflow dam was constructed and maintained through the emergency response. Analytical results from outside of the facility are pending. There is the potential for contamination due to the water release. This will be identified and addressed as part of ongoing response overseen by the Department.

Estimated Quantity and Disposition of Recovered Material Resulting from the Incident

At this time, cleanup efforts are ongoing, and may result in additional waste. Perma-Fix is working with Hepaco to coordinate cleanup and disposal efforts, and the companies are operating under a Department-approved Emergency Response Waste Sampling, Characterization and Disposal Plan. Pending sample results may change the planned disposition of materials listed below. A final report of material disposition will be provided to the Department as an addendum to this report.

The current inventory of materials resulting from the incident is as follows:

Waste Type	Description	Quantity	Planned Disposition
Tertiary Water	Fire fighting water collected from stormwater drain area at the SW corner of the facility	60,000 gallons	Disposal as hazardous waste pending analytical results
Secondary Water	Water from firefighting, precipitation and drum contents extracted from secondary containment	40,000 gallons	Disposal as hazardous waste
Crushed Drums	Drums impacted by the fire, crushed and emptied during emergency response activities	20 roll-off boxes	Disposal as hazardous waste via macroencapsulation
Scrap Metal	Metal from the demolition of damaged roof and structural elements	10 roll-off boxes	Scrap metal recycling after triple rinsing
Moderately Impacted Drums	Damaged drums with identifiable contents or labels	16-20 drums	6 sand blast media drums to be disposed of according to profile. Others mixed with sludge after compatibility testing
Impacted Soil and Sediment	Soil and sediment from areas surrounding secondary containment areas	3 roll-off boxes	Disposal based on pending analysis
Sludge from Secondary Containment	Drum contents from hazardous waste storage area mixed with liquids	2 roll-off boxes	Sludge will be solidified and then disposed of as

Steps Taken or Planned to Reduce, Eliminate, and Prevent Recurrence

The facility has ceased incoming shipments until emergency response actions are complete. Personnel are working to remove waste in an end-dump trailer and a tanker that were present at the time of the fire. The end dump was damaged, and the tanker was possibly impacted. Waste will be transferred to roadworthy vehicles and removed from the site. Tanks 209 and 210 will also be emptied and evaluated.

The incident has rendered Drum Storage & Processing Area 1 and the Sampling and Inspection Area unusable. The blend pots F3 and F4 were destroyed in the fire. Tanks 209 and 210 are potentially non-viable. Perma-Fix does not currently have the ability to engage in permitted fuel blending activities. Due to these circumstances, there is no risk of recurrence. Perma-Fix is currently performing a detailed root cause analysis of the incident to determine how a future process can be implemented that eliminates the conditions that led to this incident.

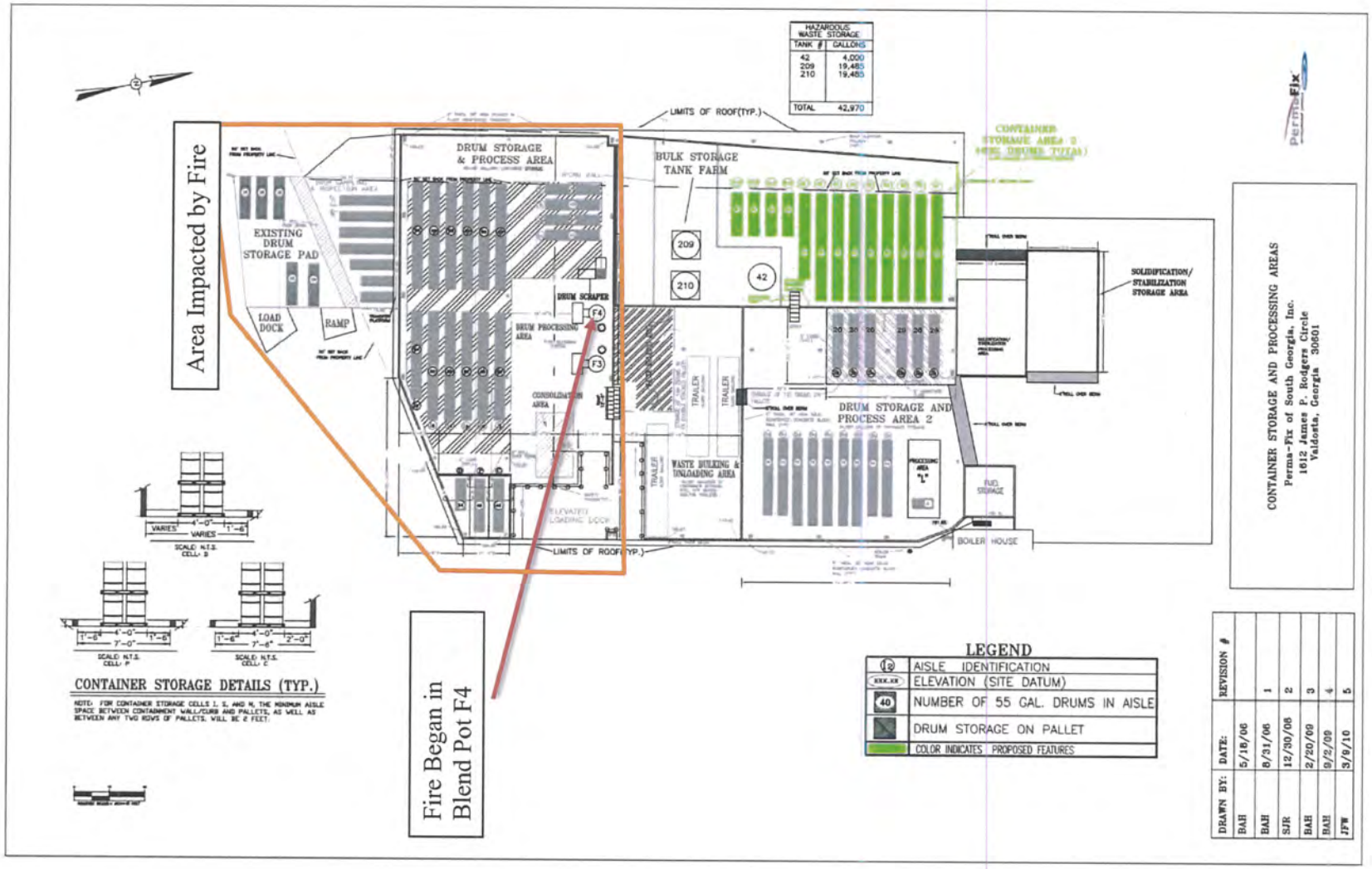
As Perma-Fix goes through partial closure of the affected areas and equipment, and as Perma-Fix works with the Department to permit replacement areas and equipment, a detailed plan to reduce, eliminate and prevent recurrence will be included in the application.

Attachments

Attachment 1: Site Diagram Showing Location of Incident
Attachment 2: Inventory Materials Involved in Fire

Attachment 1

Site Diagram Showing Location of Incident


Area Impacted by Fire
Fire Began in Blend Pot F4
HAZARDOUS WASTE STORAGE
TANK # | GALLONS
42 | 4,000
209 | 19,485
210 | 19,485
TOTAL | 42,970
LIMITS OF ROOF(TYP.)
DRUM STORAGE & PROCESS AREA
BULK STORAGE TANK FARM
EXISTING DRUM STORAGE PAD
LOAD DOCK
RAMP
DRUM SHREDDER
DRUM PROCESSING AREA
CONSOLIDATION AREA
TRAILER
WASTE BULKING & UNLOADING AREA
ELEVATED LOADING DOCK
DRUM STORAGE AND PROCESS AREA 2
SOLIDIFICATION/ STABILIZATION STORAGE AREA
FUEL STORAGE
BOILER HOUSE
209
210
42
F4
F3
CONTAINER STORAGE AND PROCESSING AREAS
Perma-Fix of South Georgia, Inc.
1612 James P. Rodgers Circle
Valdosta, Georgia 30601
CONTAINER STORAGE DETAILS (TYP.)
NOTE: FOR CONTAINER STORAGE CELLS I, L, AND N, THE MINIMUM AISLE SPACE BETWEEN CONTAINMENT WALL/CURB AND PALLETS, AS WELL AS BETWEEN ANY TWO ROWS OF PALLETS, WILL BE 2 FEET.
LEGEND
AISLE IDENTIFICATION
ELEVATION (SITE DATUM)
NUMBER OF 55 GAL. DRUMS IN AISLE
DRUM STORAGE ON PALLET
COLOR INDICATES PROPOSED FEATURES
DRAWN BY: | DATE: | REVISION #
BAH | 5/18/06
BAH | 8/31/06 | 1
SJR | 12/30/08 | 2
BAH | 2/20/09 | 3
BAH | 9/2/09 | 4
JFW | 3/9/10 | 5

Attachment 2

Inventory of Materials Involved in Fire

ITEM	PRODUCT	PROFILE	UM B	CS	LOC	DESCRIPTION	Waste Codes
DV152355-3	LP-HOC-02	AV72646-3	DF	5	C	RQ Waste Flammable liquids, toxic, n.o.s. (AMYL ALCOHOL / CHLOROFORM), 3, UN1992, PGII	D001 D022 U044
DV153843-1	FS-LIQ-05	AV69183	DM	55	C	Waste Dichloromethane, 6.1, UN1593, PGIII	F002 F003
DV154888-1	IN-ACD-03	AV74685	DF	55	C	Waste Corrosive liquid, acidic, organic, n.o.s. (HYDROXYETHANE DIPHOSPHONIC ACID / ACETIC ACID), 8, UN3265, PGIII	D002
DV154888-2	IN-ACD-03	AV74685	DF	55	C	Waste Corrosive liquid, acidic, organic, n.o.s. (HYDROXYETHANE DIPHOSPHONIC ACID / ACETIC ACID), 8, UN3265, PGIII	D002
DV154888-7	IN-LIQ-01	AV74690	DM	55	C	Environmentally hazardous substances, liquid, n.o.s. (2,5-DIMERCAPTO-1,3,4 THIADIAZOLE / ALKYLPOLYCARBOXYLATES),	
DV155703-1	LF-NRL-01	AV67754	DM	5	C	Waste Toxic liquid, inorganic, n.o.s. (ARSENIC / LEAD), 6.1, UN3287, PGII	D004 D008
DV156071-2	LF-ACD-02	AV72956	DF	5	C	RQ Waste Sulfuric acid, spent, 8, UN1832, PGII	D002
DV156208-19	LF-ACD-02	AV75900	DF	55	C	Waste Sulfuric acid [with not more than 51% acid], 8, UN2796, PGII	D002
DV156253-3	LF-ACD-02	AV57473	DM	55	C	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (CHROMIC ACID, ALUMINUM OXIDE), 8, UN3264, PGII	D002 D007
DV156487-5	LF-ACD-02	AV75285	LB	55	C	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / SULFURIC ACID), 8, UN3264, PGII	D002 D007
DV156487-6	LF-ACD-02	AV75285	LB	55	C	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / SULFURIC ACID), 8, UN3264, PGII	D002 D007
DV156488-2	LF-ACD-02	AV75304	LB	55	C	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / SULFURIC ACID), 8, UN3264, PGII	D002 D007
DV156489-2	LF-ACD-02	AV75312	LB	55	C	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / SULFURIC ACID), 8, UN3264, PGII	D002 D007
DV156637-1	LF-BAS-01	AV76321	DF	55	C	Waste Corrosive liquid, basic, inorganic, n.o.s. (SODIUM HYDROXIDE / POTASSIUM HYDROXIDE), 8, UN3266, PGII	D002
DV156637-2	LF-BAS-01	AV76321	DF	30	C	Waste Corrosive liquid, basic, inorganic, n.o.s. (SODIUM HYDROXIDE / POTASSIUM HYDROXIDE), 8, UN3266, PGII	D002
DV156715-1	LF-ACD-02	AV76281	DF	55	C	Waste Corrosive liquid, acidic, inorganic, n.o.s. (SULFURIC ACID / SODIUM BIFLUORIDE), 8, UN3264, PGII	D002
DV156715-2	LF-ACD-02	AV76281	DF	55	C	Waste Corrosive liquid, acidic, inorganic, n.o.s. (SULFURIC ACID / SODIUM BIFLUORIDE), 8, UN3264, PGII	D002
DV156715-3	LF-ACD-02	AV76281	DF	55	C	Waste Corrosive liquid, acidic, inorganic, n.o.s. (SULFURIC ACID / SODIUM BIFLUORIDE), 8, UN3264, PGII	D002
DV156715-4	LF-ACD-02	AV76281	DF	55	C	Waste Corrosive liquid, acidic, inorganic, n.o.s. (SULFURIC ACID / SODIUM BIFLUORIDE), 8, UN3264, PGII	D002
DV156715-5	LF-ACD-02	AV76281	DF	55	C	Waste Corrosive liquid, acidic, inorganic, n.o.s. (SULFURIC ACID / SODIUM BIFLUORIDE), 8, UN3264, PGII	D002
DV156715-6	LF-ACD-02	AV76281	DF	55	C	Waste Corrosive liquid, acidic, inorganic, n.o.s. (SULFURIC ACID / SODIUM BIFLUORIDE), 8, UN3264, PGII	D002
DV156715-7	LF-ACD-02	AV76281	DF	55	C	Waste Corrosive liquid, acidic, inorganic, n.o.s. (SULFURIC ACID / SODIUM BIFLUORIDE), 8, UN3264, PGII	D002
DV156753-7	LF-ACD-02	AV76341	DM	5	C	Waste Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric Acid), 8, UN3264, PGII	D002
DV156753-8	LF-ACD-02	AV76341	DM	5	C	Waste Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric Acid), 8, UN3264, PGII	D002
DV156754-2	LF-ACD-02	AV76340	DF	5	C	Waste Nitric acid solution, 8, UN2031, PGII	D002
DV156758-6	LP-ACD-01	AV76423-6	DF	15	C	Waste Corrosive liquid, acidic, inorganic, n.o.s.(Hydrochloric Acid,Manganese Sulfate), 8, UN3264, PGII	D002
DV156758-7	LP-ACD-01	AV76423-7	DM	15	C	Waste Corrosive solid, acidic, inorganic, n.o.s.(Sodium Bisulfate,Oxalic Acid), 8, UN3260, PGII	
DV156786-2	LF-SLD-03	AV76485	DM	5	C	Hazardous waste, solid, n.o.s. (FORMALDEHYDE), 9, NA3077, PGIII	U122
DV157892-3	FS-BAS-02	AV69484	DM	55	C	RQ Waste Corrosive liquids, flammable, n.o.s. (POTASSIUM HYDROXIDE / METHANOL), 8, UN2920, PGII	D001 D002 F003
DV157903-1	FS-ACD-02	AV77455	DM	15	C	Waste Flammable liquids, corrosive, n.o.s., 3, UN2924, PGII	D001 D002 F003
DV152928-3	IN-BAS-01	AV73342-3	DF	5	D	Waste Flammable liquids, corrosive, n.o.s.(Aliphatic Amine), 3, UN2924, PGII	D001
DV153888-3	LP-INC-01	AV73900-7	DF	5	D	Waste Flammable solid, inorganic, n.o.s.(Sulfur,Iron Fillings), 4.1, UN3178, PGII	
DV154909-5	LP-INC-01	AV74756-3	DM	5	D	Non-Regulated Material (FIXER/ DEVELOPER), .,	
DV155479-1	FS-LIQ-02	AV74782	DM	5	D	RQ Environmentally hazardous substances, liquid, n.o.s. (PENTAFLUOROETHANE / OIL), 9, UN3082, PGIII	
DV155545-9	RC-OIL-02	AV75481-1	DF	5	D	Other regulated substances, liquid, n.o.s. (HYDRAULIC OIL), 9, NA3082, PGIII	
DV156007-1	FS-ACD-02	AV75669	DM	55	D	Waste Flammable liquid, toxic, corrosive, n.o.s.(ACETONITRILE / PHOSPHORIC ACID), 3 (6.1), UN3286, PGIII	D001 D002 D022 F003
DV156208-20	LP-BAS-03	AV75904-1	DF	55	D	Waste Amines, liquid, corrosive, flammable, n.o.s. (TRIETHANOLAMINE / ISOPROPANOL), 8, UN2734, PGII	D001 D002
DV158013-28	RC-OIL-02	AV77132	DM	30	D	Non-Regulated (Oil for Recycle)	
DV153168-1	IN-SLD-01	AV72962	DM	55	I1	Hazardous waste, solid, n.o.s. (CREOSOTE), 9, NA3077, PGIII	F032 F034
DV154551-1	IN-LIQ-01	AV74399	DM	55	I1	Environmentally hazardous substances, liquid, n.o.s. (METHYLENEBIS-DIBUTYLDITHIOCARBAMATE), 9, UN3082, PGIII	
DV155035-1	IN-LIQ-03	AV73000	DF	55	I1	Waste Tetrachloroethylene, 6.1, UN1897, PGIII	D039 F002
DV155035-3	IN-LIQ-03	AV73000	DF	30	I1	Waste Tetrachloroethylene, 6.1, UN1897, PGIII	D039 F002
DV155788-35	FS-PES-01	AV69195	DF	55	I1	Waste Pesticides, liquid, toxic, n.o.s.(Pyrethrins,Chlorpyrifos), 6.1, UN2902, PGIII	
DV155968-1	LP-FUE-02	AV68243	DM	55	I1	RQ Waste Flammable liquids, n.o.s. (METHANOL / ETHANOL), 3, UN1993, PGII	D001 F003
DV156086-2	FS-LIQ-02	AV62224	DM	55	I1	RQ Waste Paint related material, 3, UN1263, PGII	D001 D035 F003 F005
DV156208-32	FS-LIQ-04	AV75906	DM	55	I1	Non-Regulated Material (WAX / BUTYL CELLUSOLVE), .,	
DV156208-33	FS-LIQ-04	AV75906	DM	55	I1	Non-Regulated Material (WAX / BUTYL CELLUSOLVE), ..	
DV156210-1	FS-LIQ-02	AV62993	DF	30	I1	WASTE FLAMMABLE LIQUIDS,n.o.s. (XYLENE,ALCOHOL), 3, UN1993, PGII	D001 F003
DV156268-1	FS-SLG-01	AV62309	DM	55	I1	HAZARDOUS WASTE ,solid,n.o.s.(Phenol,Benzo(a)pyrene, 9, NA3077, PGIII	K050
DV156268-2	FS-SLG-01	AV62309	DM	55	I1	HAZARDOUS WASTE ,solid,n.o.s.(Phenol,Benzo(a)pyrene, 9, NA3077, PGIII	K050

DV156268-3	FS-SLG-01	AV62309	DM	55	I1	HAZARDOUS WASTE ,solid,n.o.s.(Phenol,Benzo(a)pyrene, 9, NA3077, PGIII	K050
DV156268-4	FS-SLG-01	AV62309	DM	55	I1	HAZARDOUS WASTE ,solid,n.o.s.(Phenol,Benzo(a)pyrene, 9, NA3077, PGIII	K050
DV156388-32	IN-PES-02	AV76205	DM	55	I1	RQ Waste Pesticides, solid, toxic, n.o.s. (MANGANESE & ZINC ETHYLENE BIS-DITHIOCARBAMATE SALTS), 6.1, UN2588,	U114
DV156388-33	IN-PES-02	AV76205	DM	55	I1	RQ Waste Pesticides, solid, toxic, n.o.s. (MANGANESE & ZINC ETHYLENE BIS-DITHIOCARBAMATE SALTS), 6.1, UN2588,	U114
DV156388-34	IN-PES-02	AV76205	DM	55	I1	RQ Waste Pesticides, solid, toxic, n.o.s. (MANGANESE & ZINC ETHYLENE BIS-DITHIOCARBAMATE SALTS), 6.1, UN2588,	U114
DV156468-13	LF-SLD-02	AV54176	DM	55	I1	RQ Hazardous waste, solid, n.o.s. (Cadmium), 9, NA3077, PGIII	D006
DV156578-2	LF-NRL-01	AV61671	DM	30	I1	DOT/ NON REGULATED MATERIAL (WATER BASED ACRYLIC PAINT),	
DV156622-1	LP-FUE-02	AV76160	DM	55	I1	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 D035
DV156758-5	LP-BAS-01	AV76423-5	DF	15	I1	Waste Corrosive solid, basic, inorganic, n.o.s.(Sodium Hydroxide,Solution Carbonate), 8, UN3262, PGII	
DV156786-3	LF-SLD-03	AV76485	DM	5	I1	Hazardous waste, solid, n.o.s. (FORMALDEHYDE), 9, NA3077, PGIII	U122
DV156828-1	FS-SLD-01	AV64517	DF	15	I1	Waste Hexanes, 3, UN1208, PGII	D001
DV156905-9	LP-FUE-03	AV69812	DM	55	I1	RQ Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV156905-11	LP-FUE-03	AV69812	DM	55	I1	RQ Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV156927-1	LP-FUE-02	AV69863	DM	55	I1	Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV156969-9	LP-AER-01	AV76220	LB	55	I1	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV156969-21	LP-FUE-02	AV76228	LB	55	I1	RQ Waste Flammable liquids, n.o.s. (TOLUENE / XYLENES), 3, UN1993, PGII	D001 D018 D035 F003 F005
DV156969-51	LP-FUE-02	AV76247	DM	55	I1	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 D035
DV156970-13	LP-FUE-03	AV76244	LB	55	I1	Non-Regulated Material (EPOXY RESINS / WAXES), .	
DV156978-1	LP-FUE-02	AV76626	DM	85	I1	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV157135-6	LP-PES-01	AV65282	DM	55	I1	RQ Waste Pesticides, liquid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2902, PGII	D004 D016 U066 U114 U240 U279
DV157137-12	IN-ASL-01	AV65251	DM	55	I1	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV157137-14	IN-ASL-01	AV65251	DM	55	I1	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV157137-24	LP-PES-01	AV65283	DM	55	I1	RQ Waste Pesticides, liquid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2902, PGII	D004 D016 U066 U114 U240 U279
DV157217-3	FS-ACD-02	AV68980	DM	55	I1	Environmentally hazardous substances, liquid, n.o.s. (CHLOROACETIC ACID, DIETHYLENETRIAMINE-PENTAACETIC	
DV157246-1	IN-LIQ-02	AV75380	DM	55	I1	RQ Environmentally hazardous substances, liquid, n.o.s. (PENTAFLUOROETHANE / OIL), 9, UN3082, PGIII	
DV157326-12	IN-LIQ-02	AVAG1855	DM	55	I1	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157329-5	FS-LIQ-02	UNIG2193	DM	55	I1	RQ Waste Paint related material, 3, UN1263, PGII	D001 D035 F003 F005
DV157329-6	FS-LIQ-02	UNIG2193	DM	55	I1	RQ Waste Paint related material, 3, UN1263, PGII	D001 D035 F003 F005
DV157329-14	FS-LIQ-02	UNIG2193	DM	55	I1	RQ Waste Paint related material, 3, UN1263, PGII	D001 D035 F003 F005
DV157329-37	LF-SLD-03	UNIG2017	DM	55	I1	RQ, Hazardous waste solid, n.o.s. (METHYL ETHYL KETONE), 9, NA3077, PGIII	D035 F003
DV157388-3	LP-PES-01	AV76933-1	DM	55	I1	Waste Pesticides, liquid, toxic, n.o.s.(Oryzalin,Bacillus Thurigiensis), 6.1, UN2902, PGIII	
DV157390-5	LP-AER-02	AV76583	DM	55	I1	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV157392-30	LP-PES-02	AV68330	DM	55	I1	Waste Pesticides, solid, toxic, n.o.s. (CARBARYL / PYRETHRINS), 6.1, UN2588, PGII	D004 D008 D013 D014 D015 D016 D020 U036 U066 U114
DV157392-43	LP-PES-01	AV68328	DM	55	I1	RQ Waste Pesticides, liquid, flammable, toxic, [flash point less than 23 degrees C], 3, UN3021, PGII	D001 D013 D014 D015 D016 D020 D031 U036 U129 U185
DV157393-5	FS-LIQ-02	AV68322	DM	55	I1	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 D035
DV157393-21	FS-SLG-02	AV68318	DM	55	I1	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157393-23	FS-SLG-02	AV68318	DM	55	I1	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157393-24	FS-SLG-02	AV68318	DM	55	I1	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157393-34	IN-ASL-01	AV68314	DM	55	I1	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV157393-37	IN-ASL-01	AV68314	DM	55	I1	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV157537-1	LF-ACD-02	AV57473	DM	55	I1	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (CHROMIC ACID, ALUMINUM OXIDE), 8, UN3264, PGII	D002 D007
DV157607-1	IN-ASL-01	AV67856	DM	55	I1	Waste Aerosols, [flammable, (2.1 + B65536), 2.1, UN1950,	D001
DV157607-2	IN-ASL-01	AV67856	DM	55	I1	Waste Aerosols, [flammable, (2.1 + B65536), 2.1, UN1950,	D001
DV157643-1	FS-LIQ-04	AV77041	DM	55	I1	NON-REGULATED MATERIAL (EPOXY RESIN,WATER),	
DV157667-2	FS-LIQ-05	AV69183	DM	55	I1	Waste Dichloromethane, 6.1, UN1593, PGIII	F002 F003
DV157667-6	LP-BAS-01	AV77147-2	DF	30	I1	Waste Corrosive liquids, toxic, n.o.s.(Sodium Hydroxide,Phenol), 8,(6.1), UN2922, PGII	D002
DV157667-7	LP-ACD-02	AV77147-3	DF	30	I1	Waste Flammable liquids, corrosive, n.o.s.(Phosphoric Acid,Methanol), 3,(8), UN2924, PGII	D001 D002 F003
DV157667-9	LP-INC-01	AV77147-5	DM	15	I1	Waste Toxic, liquids, organic, n.o.s.(Phenol,Chloroform), 6.1, UN2810, PGII	D004 D008 D022 U044
DV157689-3	LP-ACD-01	AV77081-1	DF	55	I1	Waste Corrosive liquid, acidic, inorganic, n.o.s.(Sulfuric Acid,Sodium Bisulfate), 8, UN3264, PGII	D002
DV157692-1	IN-ASL-01	AV77158	DF	30	I1	Waste Aerosols, flammable, 2.1, UN1950,	D001
DV157727-2	LF-BAS-03	AV77204	DM	20	I1	Waste Sodium hydroxide, solid, 8, UN1823, PGII	D002

DV157731-66	FS-ACD-02	AO53555	DM	55	I1	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (Hydrochloric Acid), 8, UN3264, PGII	D002
DV157761-50	IN-LIQ-02	AVAG1855	DM	55	I1	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-53	IN-LIQ-02	AVAG1855	DM	55	I1	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-54	IN-LIQ-02	AVAG1855	DM	55	I1	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157789-4	LF-ACD-02	AV75312	LB	55	I1	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / SULFURIC ACID), 8, UN3264, PGII	D002 D007
DV157905-69	FS-ACD-02	AO53508	DF	55	I1	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV157905-70	FS-ACD-02	AO53508	DF	55	I1	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV157905-71	FS-ACD-02	AO53508	DF	55	I1	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV157905-72	FS-ACD-02	AO53508	DF	55	I1	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV157905-77	FS-ACD-02	AO53508	DF	55	I1	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV157905-78	FS-ACD-02	AO53508	DF	55	I1	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV157905-79	FS-ACD-02	AO53508	DF	55	I1	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV158027-6	IN-PES-01	AV69803	DM	55	I1	Waste Pesticides, liquid, toxic, flammable, n.o.s. [flash point not less than 23 degrees C] (CHLORDANE / XYLENES), 6.1,	D001 D013 D014 D015 D020 D031 U036 U061 U129 U185
DV158027-7	IN-PES-01	AV69803	DM	55	I1	Waste Pesticides, liquid, toxic, flammable, n.o.s. [flash point not less than 23 degrees C] (CHLORDANE / XYLENES), 6.1,	D001 D013 D014 D015 D020 D031 U036 U061 U129 U185
DV158027-8	IN-PES-01	AV69803	DM	55	I1	Waste Pesticides, liquid, toxic, flammable, n.o.s. [flash point not less than 23 degrees C] (CHLORDANE / XYLENES), 6.1,	D001 D013 D014 D015 D020 D031 U036 U061 U129 U185
DV158027-10	IN-PES-02	AV69815	DM	55	I1	RQ Waste Pesticides, solid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2588, PGII	D004 D008 D013 D014 D015 D016 D020 U036 U061 U066
DV158027-11	IN-PES-02	AV69815	DM	55	I1	RQ Waste Pesticides, solid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2588, PGII	D004 D008 D013 D014 D015 D016 D020 U036 U061 U066
DV158027-19	LP-AER-02	AV69783	DM	55	I1	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV158035-7	LF-ACD-02	AV68850	DF	5	I1	Waste Chromic acid solution, 8, UN1755, PGII	D002 D007
DV158036-2	LP-INC-02	AV77347-2	DM	15	I1	Waste Toxic solid, inorganic, n.o.s.(Barium Carbonate,Nickel Carbonate), 6.1, UN3288, PGII	D005
DV158036-4	LP-BAS-01	AV77347-3	DM	30	I1	Waste Corrosive liquid, basic, inorganic, n.o.s.(Potassium Hydroxide,Potassium Carbonate), 8, UN3266, PGII	D002
DV158065-1	LF-BAS-01	AV77541	DM	55	I1	Waste Corrosive solid, basic, inorganic, n.o.s.(Sodium Metasilicate,Sodium Dichlorisocyanurate Dihydrate), 8, UN3262, PGII	
DV158065-2	LF-BAS-01	AV77541	DM	55	I1	Waste Corrosive solid, basic, inorganic, n.o.s.(Sodium Metasilicate,Sodium Dichlorisocyanurate Dihydrate), 8, UN3262, PGII	
DV158134-2	LP-FUE-02	AV77560-2	DF	20	I1	Waste Flammable liquids, n.o.s.(Methanol,Toluene), 3, UN1993, PGII	D001 D035 F003
DV158135-7	LF-ACD-02	AV75285	LB	55	I1	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / SULFURIC ACID), 8, UN3264, PGII	D002 D007
DV158230-7	IN-ASL-01	AV61703	DM	55	I1	Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV158232-19	LF-SLD-02	AV54176	DM	55	I1	RQ Hazardous waste, solid, n.o.s. (Cadmium), 9, NA3077, PGIII	D006
DV158232-20	LF-SLD-02	AV54176	DM	55	I1	RQ Hazardous waste, solid, n.o.s. (Cadmium), 9, NA3077, PGIII	D006
DV158235-5	LF-BAS-02	AV77641	DF	55	I1	Waste Corrosive liquid, basic, inorganic, n.o.s.(Sodium Metasilicate,Monoethanolamine), 8, UN3266, PGIII	D002
DV158283-1	LP-FUE-02	AV68243	DM	55	I1	RQ Waste Flammable liquids, n.o.s. (METHANOL / ETHANOL), 3, UN1993, PGII	D001 F003
DV158289-32	FS-LIQ-01	CLAG4928	DM	55	I1	RQ, Waste Flammable liquids, corrosive, n.o.s. (Xylene, Hydrochloric Acid), 3, UN2924, PGII	D001 D002 F003
DV158289-33	FS-LIQ-01	CLAG4928	DM	55	I1	RQ, Waste Flammable liquids, corrosive, n.o.s. (Xylene, Hydrochloric Acid), 3, UN2924, PGII	D001 D002 F003
DV158289-34	FS-LIQ-01	CLAG4928	DM	55	I1	RQ, Waste Flammable liquids, corrosive, n.o.s. (Xylene, Hydrochloric Acid), 3, UN2924, PGII	D001 D002 F003
DV158289-35	FS-LIQ-01	CLAG4928	DM	55	I1	RQ, Waste Flammable liquids, corrosive, n.o.s. (Xylene, Hydrochloric Acid), 3, UN2924, PGII	D001 D002 F003
DV158476-1	LP-PES-01	AV77800-1	DM	55	I1	Waste Pesticides, liquid, flammable, toxic,n.o.s.(Diazinon,Xylenes), 3,6.1, UN3021, PGII	D001 D016
DV158476-3	LP-PES-01	AV77800-3	DM	55	I1	Waste Pesticides, liquid, flammable, toxic,n.o.s.(Lindane,Xylene), 3,6.1, UN3021, PGII	D001 D013 D014 D016 U129 U279
DV158476-27	FS-PES-01	AV69195	DM	55	I1	Waste Pesticides, liquid, toxic, n.o.s.(Pyrethrins,Chlorpyrifos), 6.1, UN2902, PGIII	
DV158477-8	FS-CAN-02	AV69192	CY	220	I1	Waste Paint related material, 3, UN1263, PGII	D001 D035
DV158477-13	FS-CAN-02	AV69197	CY	220	I1	Waste Tars, liquid, 3, UN1999, PGIII	D001
DV158477-15	LP-AER-02	AV75574	CY	220	I1	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV158477-24	LF-ACD-02	AV71924	DF	55	I1	RQ Waste Hydrochloric acid, 8, UN1789, PGII	D002
DV158490-56	FS-BAS-02	AV55710	DM	55	I1	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (Sodium Hydroxide), 8, UN3266, PGII	D002
DV158556-1	IN-LIQ-01	AV77624	DF	5	I1	NON-REGULATED MATERIAL,	
DV158615-1	LF-ACD-02	AV77708	TP	330	I1	Waste Sulfuric acid, 8, UN1830, PGII	D002 D007
DV158627-1	LP-HOC-01	AV78001-1	DM	30	I1	Waste Flammable liquids, toxic, n.o.s.(Petroleum Distillates,Methylene Chloride), 3,(6.1), UN1992, PGIII	D001 F002 F004
DV158629-1	LP-FUE-02	AV77884-1	DF	30	I1	Waste Flammable liquids, n.o.s.(Xylene,Acetonitrile), 3, UN1993, PGII	D001 F003
DV158787-3	LP-FUE-02	AV77920-1	DM	55	I1	Waste Flammable liquids, n.o.s.(Acetone,Ethanol), 3, UN1993, PGII	D001 D007 F003
DV158788-1	LP-FUE-02	AV77963	DM	220	I1	Waste Paint related material, 3, UN1263, PGII	D001
DV158788-2	LP-FUE-02	AV77963	DM	220	I1	Waste Paint related material, 3, UN1263, PGII	D001
DV154050-1	IN-LIQ-01	AV74028	DF	30	I10	Hazardous waste, liquid, n.o.s. (SILVER / AMMONIUM THIOSULFATE), 9, NA3082, PGIII	D011
DV154547-3	LF-BAS-01	AV74470	DM	55	I10	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (SODIUM METASILICATE / SURFACTANTS), 8, UN3266, PGIII	

DV154547-4	LF-BAS-01	AV74470	DM	55	I10	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (SODIUM METASILICATE / SURFACTANTS), 8, UN3266, PGIII	
DV154548-10	LF-BAS-01	AV65304	DF	55	I10	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (SODIUM HYDROXIDE / SODIUM METASILICATE), 8, UN3266, PGII	D002
DV154551-2	IN-BAS-01	AV74444	DF	55	I10	Amines, liquid, corrosive, n.o.s. (ARYLAMINE / DIPHENYLAMINE), 8, UN2735, PGIII	
DV154551-3	IN-LIQ-02	AV74442	DM	55	I10	Environmentally hazardous substances, liquid, n.o.s. (CHLORINATED PARAFFINS), 9, UN3082, PGIII	
DV154694-72	FS-BAS-02	AV55710	DM	55	I10	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (Sodium Hydroxide), 8, UN3266, PGII	D002
DV154694-73	FS-BAS-02	AV55710	DM	55	I10	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (Sodium Hydroxide), 8, UN3266, PGII	D002
DV154694-74	FS-BAS-02	AV55710	DM	55	I10	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (Sodium Hydroxide), 8, UN3266, PGII	D002
DV154694-75	FS-BAS-02	AV55710	DM	55	I10	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (Sodium Hydroxide), 8, UN3266, PGII	D002
DV154694-76	FS-BAS-02	AV55710	DM	55	I10	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (Sodium Hydroxide), 8, UN3266, PGII	D002
DV154738-1	LF-BAS-02	AV74664	DM	30	I10	RQ Waste Sodium hydroxide solution, 8, UN1824, PGII	D002
DV155084-2	LF-SLD-03	AV62508	DM	55	I10	WASTE TOXIC SOLIDS,ORGANIC,n.o.s. (methylene chloride,sodium sulfate), 6.1, UN2811, PGIII	F002
DV155788-11	FS-CAN-02	AV69197	CY	220	I10	Waste Tars, liquid, 3, UN1999, PGIII	D001
DV155788-12	FS-CAN-02	AV69197	CY	220	I10	Waste Tars, liquid, 3, UN1999, PGIII	D001
DV155788-39	LF-NRL-01	AV70650	DM	55	I10	Non-Regulated Material (POLYOL), .	
DV156610-2	LF-SLD-03	AV62508	DM	55	I10	WASTE TOXIC SOLIDS,ORGANIC,n.o.s. (methylene chloride,sodium sulfate), 6.1, UN2811, PGIII	F002
DV156610-3	LF-SLD-03	AV62508	DM	55	I10	WASTE TOXIC SOLIDS,ORGANIC,n.o.s. (methylene chloride,sodium sulfate), 6.1, UN2811, PGIII	F002
DV156709-4	LP-HOC-02	AV76256	DM	55	I10	Waste Flammable liquids, toxic, n.o.s.(Acetone,Methylene Chloride), 3, UN1992, PGII	D001 D007 D008 D018 D021 D022 D028 D035 D038 F002
DV156709-6	LP-LDF-01	AV76249-1	DM	55	I10	Waste Corrosive liquids, toxic, n.o.s.(Hdrochloric Acid,Barium Chloride), 8, UN2922, PGII	D002 D005 D011
DV156709-7	LP-LDF-01	AV76249-1	DM	55	I10	Waste Corrosive liquids, toxic, n.o.s.(Hdrochloric Acid,Barium Chloride), 8, UN2922, PGII	D002 D005 D011
DV156709-8	LP-ACD-02	AV76233	DF	55	I10	Waste Flammable liquids, corrosive, n.o.s.(Acetone,Sulfuric Acid), 3,8, UN2924, PGII	D001 D002 D022 F002 F003 F005 U123
DV157119-2	RC-GLY-01	AV76749	DM	55	I10	NON REGULATED MATERIAL (ANTIFREEZE),	
DV157119-4	RC-GLY-01	AV76749	DF	30	I10	NON REGULATED MATERIAL (ANTIFREEZE)	
DV157147-23	LF-NRS-01	AV76683	DM	55	I10	RQ Non-Regulated Material (SOIL / DRILL CUTTINGS), .,	
DV157392-14	FS-SLG-02	AV68308	DM	55	I10	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157392-15	FS-SLG-02	AV68308	DM	55	I10	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157392-21	FS-SLG-02	AV68308	DM	55	I10	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157392-25	LP-PES-01	AV68354	DM	55	I10	RQ Waste Pesticides, liquid, flammable, toxic, [flash point less than 23 degrees C], 3, UN3021, PGII	D001 U061 U279
DV157392-26	LP-PES-02	AV68330	DM	55	I10	Waste Pesticides, solid, toxic, n.o.s. (CARBARYL / PYRETHRINS), 6.1, UN2588, PGII	D004 D008 D013 D014 D015 D016 D020 U036 U066 U114
DV157392-31	LP-PES-02	AV68357	DM	55	I10	Waste Pesticides, solid, toxic, n.o.s. (CARBARYL / DDT), 6.1, UN2588, PGII	U061 U279
DV157392-33	FS-LIQ-02	AV68306	DM	55	I10	RQ Waste Flammable liquids, n.o.s. (TOLUENE / XYLENES), 3, UN1993, PGII	D001 D018 D035 F003 F005
DV157393-1	FS-SLG-02	AV73085	DM	55	I10	Waste Resin solution, [flammable], 3, UN1866, PGIII	D001
DV157393-2	FS-SLG-02	AV73085	DM	55	I10	Waste Resin solution, [flammable], 3, UN1866, PGIII	D001
DV157393-3	FS-SLG-02	AV73085	DM	55	I10	Waste Resin solution, [flammable], 3, UN1866, PGIII	D001
DV157393-4	FS-SLG-02	AV73085	DM	55	I10	Waste Resin solution, [flammable], 3, UN1866, PGIII	D001
DV157590-1	FS-LIQ-01	AV68036	DM	55	I10	RQ OTHER REGULATED SUBSTANCES, LIQUID, N.O.S. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV157758-1	FS-LIQ-04	AV64579	DM	55	I10	Hazardous waste, liquid, n.o.s. (SILVER, SODIUM SULFITE), 9, NA3082, PGIII	D011
DV157758-5	LP-FUE-02	AV77182-2	DM	55	I10	Waste Flammable liquids, n.o.s.(Acetone,Methanol), 3, UN1993, PGII	D001 F003 F005
DV157758-11	LF-NRL-01	AV64565	DM	55	I10	Non-Regulated Material, .	
DV157817-1	FS-LIQ-02	AV61031	DM	55	I10	WASTE PAINT RELATED MATERIAL, 3, UN1263, PGII	D001 D035 F003 F005
DV157822-7	FS-CAN-04	AV62514	DM	55	I10	WASTE FLAMMABLE LIQUIDS,TOXIC,n.o.s. (methylene chloride,hexane), 3, UN1992, PGII	D001 F002 F003 F005
DV157851-1	IN-LIQ-03	AV73000	DF	55	I10	Waste Tetrachloroethylene, 6.1, UN1897, PGIII	D039 F002
DV157852-2	RC-GLY-01	AV77220	DM	55	I10	NON-REGULATED MATERIAL,	
DV157852-3	RC-GLY-01	AV77220	DM	55	I10	NON-REGULATED MATERIAL,	
DV158208-2	LF-NRL-01	AV67754	DM	5	I10	Waste Toxic liquid, inorganic, n.o.s. (ARSENIC / LEAD), 6.1, UN3287, PGII	D004 D008
DV154667-2	IN-LIQ-01	AV64992	DF	30	I2	Hazardous waste, liquid, n.o.s., 9, NA3082, PGIII	D012 D013 D014 D015 D016 D017 D018 D019 D020 D021
DV154767-18	LP-FUE-02	AV74609	DF	5	I2	RQ Waste Methanol, 3, UN1230, PGII	D001 F003
DV154820-3	FS-LIQ-02	AV74782	DM	5	I2	RQ Environmentally hazardous substances, liquid, n.o.s. (PENTAFLUOROETHANE / OIL), 9, UN3082, PGIII	
DV154909-3	LP-INC-01	AV74756-5	DF	5	I2	Non-Regulated Material (DELELOPER RINSE), .,	
DV155568-8	IN-ASL-01	AV65251	DM	55	I2	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV155568-10	IN-ASL-01	AV65251	DM	55	I2	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV155568-13	IN-ASL-01	AV65251	DM	55	I2	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001

DV155568-25	LP-PES-01	AV65283	DM	55	I2	RQ Waste Pesticides, liquid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2902, PGII	D004 D016 U066 U114 U240 U279
DV155788-4	LP-AER-02	AV75574	DM	55	I2	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV155875-2	LF-NRL-01	AV75665	DM	55	I2	Non-Regulated Material (DIMETHYLPOLYSILOXANE / WATER), .,	
DV156208-29	FS-LIQ-02	AV72581	DM	55	I2	RQ Non-Regulated Material (POLYETHER POLYOL / 1,4 BUTANEDIOL), .,	
DV156509-1	FS-LIQ-02	AV62739	DM	15	I2	Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV157098-3	LF-SLD-03	AV60014	DM	30	I2	RQ Waste Flammable solids, organic, n.o.s. (ACETONE / METHANOL) VIALS, 4.1, UN1325, PGII	D001 F003 F005
DV157116-1	LP-FUE-02	AV68243	DM	55	I2	RQ Waste Flammable liquids, n.o.s. (METHANOL / ETHANOL), 3, UN1993, PGII	D001 F003
DV157322-3	LP-FUE-02	AV76814	DM	55	I2	Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV157329-9	FS-LIQ-02	UNIG2193	DM	55	I2	RQ Waste Paint related material, 3, UN1263, PGII	D001 D035 F003 F005
DV157392-9	FS-SLG-02	AV68308	DM	55	I2	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157392-16	FS-SLG-02	AV68308	DM	55	I2	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157392-17	FS-SLG-02	AV68308	DM	55	I2	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157392-27	LP-PES-02	AV68330	DM	55	I2	Waste Pesticides, solid, toxic, n.o.s. (CARBARYL / PYRETHRINS), 6.1, UN2588, PGII	D004 D008 D013 D014 D015 D016 D020 U036 U066 U114
DV157392-42	LP-PES-01	AV68328	DM	55	I2	RQ Waste Pesticides, liquid, flammable, toxic, [flash point less than 23 degrees C], 3, UN3021, PGII	D001 D013 D014 D015 D016 D020 D031 U036 U129 U185
DV157429-17	LP-FUE-02	AV76628-5	DM	55	I2	RQ Waste Flammable liquids, n.o.s. (NAPHTHA / PETROLEUM DISTILLATES), 3, UN1993, PGII	D001
DV157433-1	FS-LIQ-04	AV60356	DM	85	I2	Waste Flammable liquids, n.o.s. (METHYLENE CHLORIDE / PYRIDINE), 3, UN1993, PGII	D001 D038 F002 F005
DV157433-2	LF-SLD-03	AV60357	DM	15	I2	Waste Flammable solids, organic, n.o.s. (METHYLENE CHLORIDE / PYRIDINE), 4.1, UN1325, PGII	D001 D038 F002 F005
DV157433-3	LF-SLD-03	AV60357	DM	15	I2	Waste Flammable solids, organic, n.o.s. (METHYLENE CHLORIDE / PYRIDINE), 4.1, UN1325, PGII	D001 D038 F002 F005
DV157511-4	FS-LIQ-02	AV64192	DM	30	I2	DOT/ NON REGULATED MATERIAL (WATER BASED ACRYLIC PAINT),	
DV157529-1	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-2	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-35	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-36	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-37	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-38	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157531-3	RC-OIL-02	AV77063	DM	15	I2	Other Regulated Substances,Liquid,N.O.S.(Oil,Chloroflurocarbons), 9, NA3082, PGIII	
DV157533-1	FS-CAN-02	AV72515	CF	55	I2	RQ Waste Flammable liquids, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 3, UN1993, PGII	D001 D035
DV157533-3	LP-FUE-02	AV71307	DM	55	I2	RQ, Waste Paint [including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base], 3,	D001 D035
DV157538-1	FS-LIQ-04	AV61166	DM	55	I2	Non-Regulated Material, .,	
DV157568-2	LF-SLD-03	AV60014	DM	15	I2	RQ Waste Flammable solids, organic, n.o.s. (ACETONE / METHANOL) VIALS, 4.1, UN1325, PGII	D001 F003 F005
DV157573-1	LF-NRL-01	AV67754	DM	5	I2	Waste Toxic liquid, inorganic, n.o.s. (ARSENIC / LEAD), 6.1, UN3287, PGII	D004 D008
DV157575-1	FS-LIQ-02	AV76387	DM	55	I2	Waste Paint related material(Barium), 3, UN1263, PGIII	D001 D005
DV157575-2	FS-LIQ-02	AV76387	DM	55	I2	Waste Paint related material(Barium), 3, UN1263, PGIII	D001 D005
DV157575-3	FS-LIQ-02	AV76387	DM	55	I2	Waste Paint related material(Barium), 3, UN1263, PGIII	D001 D005
DV157581-1	FS-LIQ-02	AV67175	DM	15	I2	RQ Waste Flammable liquids, n.o.s. (XYLENE / ALCOHOL), 3, UN1993, PGII	D001 F003
DV157590-5	FS-LIQ-01	AV68036	DM	30	I2	RQ OTHER REGULATED SUBSTANCES, LIQUID, N.O.S. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV157637-1	LP-FUE-02	AV68243	DM	55	I2	RQ Waste Flammable liquids, n.o.s. (METHANOL / ETHANOL), 3, UN1993, PGII	D001 F003
DV157669-1	LP-FUE-02	AV74286	DM	55	I2	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 D035
DV157669-2	LP-FUE-02	AV74286	DM	55	I2	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 D035
DV157687-1	LP-FUE-02	AV76324	DM	220	I2	Waste Paint related material, 3, UN1263, PGII	D001 D007 D008 D035
DV157688-1	LP-FUE-02	AV77140-1	DM	55	I2	Waste Flammable liquids, n.o.s.(Xylene,Ligroine), 3, UN1993, PGIII	D001
DV157691-2	FS-LIQ-02	AV77066	DF	15	I2	Waste Nitromethane, 3, UN1261, PGII	D001
DV157727-3	RC-OIL-02	AV77202	DM	15	I2	NON-RCRA,NON-DOT,N.O.S.(USED OIL FOR RECYCLE),	
DV157761-26	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-29	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-30	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-39	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-40	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-44	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-45	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-46	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005

DV157761-57	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-58	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157834-1	FS-LIQ-02	AV72854	DM	55	I2	Waste Combustible liquid, n.o.s.(Petroleum Distillates/Diopropylene Glycol/Methyl Ether), ., NA1993, PGIII	D001
DV157834-2	FS-LIQ-02	AV72854	DM	55	I2	Waste Combustible liquid, n.o.s.(Petroleum Distillates/Diopropylene Glycol/Methyl Ether), ., NA1993, PGIII	D001
DV157834-3	FS-LIQ-02	AV72854	DM	55	I2	Waste Combustible liquid, n.o.s.(Petroleum Distillates/Diopropylene Glycol/Methyl Ether), ., NA1993, PGIII	D001
DV157834-4	FS-LIQ-02	AV72854	DM	55	I2	Waste Combustible liquid, n.o.s.(Petroleum Distillates/Diopropylene Glycol/Methyl Ether), ., NA1993, PGIII	D001
DV157834-5	FS-LIQ-02	AV72854	DM	55	I2	Waste Combustible liquid, n.o.s.(Petroleum Distillates/Diopropylene Glycol/Methyl Ether), ., NA1993, PGIII	D001
DV157834-6	FS-LIQ-02	AV72854	DM	55	I2	Waste Combustible liquid, n.o.s.(Petroleum Distillates/Diopropylene Glycol/Methyl Ether), ., NA1993, PGIII	D001
DV157834-7	FS-LIQ-02	AV72854	DM	55	I2	Waste Combustible liquid, n.o.s.(Petroleum Distillates/Diopropylene Glycol/Methyl Ether), ., NA1993, PGIII	D001
DV157834-8	FS-LIQ-02	AV72854	DM	55	I2	Waste Combustible liquid, n.o.s.(Petroleum Distillates/Diopropylene Glycol/Methyl Ether), ., NA1993, PGIII	D001
DV157834-9	FS-LIQ-02	AV72854	DM	55	I2	Waste Combustible liquid, n.o.s.(Petroleum Distillates/Diopropylene Glycol/Methyl Ether), ., NA1993, PGIII	D001
DV157834-10	FS-LIQ-02	AV72854	DM	55	I2	Waste Combustible liquid, n.o.s.(Petroleum Distillates/Diopropylene Glycol/Methyl Ether), ., NA1993, PGIII	D001
DV157835-1	LP-FUE-02	AV75962	DF	55	I2	RQ Waste Flammable liquids, n.o.s. (ALCOHOL / METHANOL), 3, UN1993, PGII	D001 F003
DV157836-1	LP-FUE-02	AV76203	DM	55	I2	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV157907-1	LF-ACD-02	AV57473	DM	55	I2	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (CHROMIC ACID, ALUMINUM OXIDE), 8, UN3264, PGII	D002 D007
DV157907-2	LF-SLD-03	AV62155	DM	55	I2	Non Regulated Material (Coolant & Oil Dry),	
DV157970-38	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-39	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-40	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-41	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-53	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-54	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-55	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-56	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-62	LF-SLD-03	AVAG1856	DM	55	I2	RQ Hazardous waste solid, n.o.s. (Toluene, Cadmium, Styrene), 9, NA3077, PGIII	D001 D006 D022 F003 F005
DV157989-1	LP-FUE-02	AV77262-4	DF	30	I2	Waste Flammable liquids, n.o.s.(Hexane,Methanol), 3, UN1993, PGII	D001 F003
DV157990-2	FS-LIQ-04	AV68982	DF	55	I2	Non-Regulated Material, .	
DV158027-1	LP-FUE-02	AV69801	CY	220	I2	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV158027-4	LP-FUE-02	AV69801	CY	220	I2	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV158034-1	IN-SLD-01	AV72962	DM	55	I2	Hazardous waste, solid, n.o.s. (CREOSOTE), 9, NA3077, PGIII	F032 F034
DV158034-2	IN-SLD-01	AV72962	DM	55	I2	Hazardous waste, solid, n.o.s. (CREOSOTE), 9, NA3077, PGIII	F032 F034
DV158034-3	IN-SLD-01	AV72962	DM	55	I2	Hazardous waste, solid, n.o.s. (CREOSOTE), 9, NA3077, PGIII	F032 F034
DV158034-4	IN-SLD-01	AV72962	DM	55	I2	Hazardous waste, solid, n.o.s. (CREOSOTE), 9, NA3077, PGIII	F032 F034
DV158034-5	IN-SLD-01	AV72962	DM	55	I2	Hazardous waste, solid, n.o.s. (CREOSOTE), 9, NA3077, PGIII	F032 F034
DV158034-6	IN-SLD-01	AV72962	DM	55	I2	Hazardous waste, solid, n.o.s. (CREOSOTE), 9, NA3077, PGIII	F032 F034
DV158034-7	IN-SLD-01	AV72962	DM	55	I2	Hazardous waste, solid, n.o.s. (CREOSOTE), 9, NA3077, PGIII	F032 F034
DV158034-8	IN-SLD-01	AV72962	DM	55	I2	Hazardous waste, solid, n.o.s. (CREOSOTE), 9, NA3077, PGIII	F032 F034
DV158065-3	IN-PES-01	AV77542	DM	55	I2	Combustible liquid, n.o.s.(Petroleum Naphtha,Pyrethrins), ., NA1993, PGIII	
DV158172-1	RC-OIL-02	AV77625	DM	55	I2	Other regulated substances, liquid, n.o.s. (Oil,Chlorofluorocarbons), 9, NA3082, PGIII	
DV158327-3	IN-REA-02	AV77364	DM	55	I2	Hazardous waste, solid, n.o.s. (Silicates,hydrochloric acid residue), 9, NA3077, PGIII	D003
DV158327-4	IN-REA-02	AV77364	DM	55	I2	Hazardous waste, solid, n.o.s. (Silicates,hydrochloric acid residue), 9, NA3077, PGIII	D003
DV158327-8	IN-REA-02	AV77364	DM	55	I2	Hazardous waste, solid, n.o.s. (Silicates,hydrochloric acid residue), 9, NA3077, PGIII	D003
DV158327-9	IN-REA-02	AV77364	DM	55	I2	Hazardous waste, solid, n.o.s. (Silicates,hydrochloric acid residue), 9, NA3077, PGIII	D003
DV158407-1	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-2	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-3	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-4	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-5	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-6	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-7	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-8	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005

DV158407-17	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-18	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-19	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-20	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-21	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-22	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-23	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-24	IN-LIQ-02	AVAG1855	DM	55	I2	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158445-1	FS-LIQ-01	BER6987	DM	55	I2	RQ Waste Paint [including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base], 3,	D001 F003 F005
DV158477-14	LP-AER-02	AV75574	CY	220	I2	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV158557-1	FS-LIQ-04	AV72783	DM	330	I2	Hazardous waste, liquid, n.o.s.benzo(a)pyrene,benzo(a)antracene, 9, NA3082, PGIII	F032
DV153029-20	IN-LIQ-02	AV73446	DM	55	I3	Hazardous waste, liquid, n.o.s. (TETRACHLOROETHYLENE / WATER), 9, NA3082, PGIII	D039
DV155588-3	LP-FUE-02	AV72943	DM	55	I3	NON-REGULATED MATERIAL (ETHOXYLATED ALCOHOLS, WAXES),	
DV156662-2	LP-FUE-02	AV68243	DM	55	I3	RQ Waste Flammable liquids, n.o.s. (METHANOL / ETHANOL), 3, UN1993, PGII	D001 F003
DV156827-21	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-22	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-23	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-24	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-41	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-42	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-43	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-44	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157187-1	FS-LIQ-04	AV72783	DM	220	I3	Hazardous waste, liquid, n.o.s.benzo(a)pyrene,benzo(a)antracene, 9, NA3082, PGIII	F032
DV157392-20	FS-SLG-02	AV68308	DM	55	I3	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157392-38	LP-PES-01	AV68328	DM	55	I3	RQ Waste Pesticides, liquid, flammable, toxic, [flash point less than 23 degrees C], 3, UN3021, PGII	D001 D013 D014 D015 D016 D020 D031 U036 U129 U185
DV157709-1	RC-OIL-02	AV75481-1	DF	5	I3	Other regulated substances, liquid, n.o.s. (HYDRAULIC OIL), 9, NA3082, PGIII	
DV157740-9	FS-LIQ-02	AV61410	DM	55	I3	WASTE PAINT RELATED MATERIAL, 3, UN1263, PGII	D001 D035 F003 F005
DV157761-31	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-32	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-37	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-38	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-47	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-48	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-55	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-56	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157808-1	FS-LIQ-04	AV73941	DM	55	I3	Hazardous waste, liquid, n.o.s. (CHROMIUM / OIL), 9, NA3082, PGIII	D007
DV157809-1	FS-LIQ-02	AV76822	DM	55	I3	Waste Paint related material, 3, UN1263, PGII	D001 D035 F003 F005
DV157809-2	FS-LIQ-02	AV76822	DM	55	I3	Waste Paint related material, 3, UN1263, PGII	D001 D035 F003 F005
DV157902-3	LP-BAS-01	AV77301-3	DF	5	I3	Waste Corrosive liquids, toxic, n.o.s.(Sodium Hydroxide,Barium Hydroxide), 8, UN2922, PGII	D002 D005
DV157970-1	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-2	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-3	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-4	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-5	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-6	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-7	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-8	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-9	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-10	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-11	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-12	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005

DV157970-13	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-14	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-15	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-16	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-17	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-18	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-19	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-20	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-21	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-22	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-23	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-24	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-25	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-26	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-27	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-28	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-29	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-30	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-31	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-32	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-33	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-34	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-35	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-36	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-37	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-42	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-43	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-44	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-45	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-46	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-47	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-48	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-49	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-50	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-51	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-52	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-57	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-58	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-59	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-60	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-61	IN-LIQ-02	AVAG1855	DM	55	I3	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157970-63	LF-SLD-03	AVAG1854	DM	55	I3	RQ Hazardous waste solid, n.o.s.(Toluene, Methanol), 9, NA3077, PGIII	D001 D022 F003 F005
DV157970-64	FS-LIQ-02	AV77343	DM	55	I3	Waste Methanol, 3, UN1230, PGII	D001 U154
DV157970-65	FS-LIQ-01	AV59071	DM	55	I3	CHLOROFORM	D022 U044
DV158013-25	RC-OIL-02	AV77128	DM	55	I3	NON-REGULATED MATERIAL (OIL FOR RECYCLE)	
DV158013-26	RC-OIL-02	AV77128	DM	55	I3	NON-REGULATED MATERIAL (OIL FOR RECYCLE)	
DV158013-30	LF-NRS-01	AV77126	DM	55	I3	NON-REGULATED MATERIAL (CALCIUM CHLORIDE)	
DV158014-1	LP-FUE-02	AV77500	CM	220	I3	Waste Ethanol [or] Ethyl alcohol [or] Ethanol solutions [or] Ethyl alcohol solutions, 3, UN1170, PGII	D001
DV158027-2	LP-FUE-02	AV69801	CY	220	I3	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV158147-1	FS-LIQ-02	AV76822	DM	55	I3	Waste Paint related material, 3, UN1263, PGII	D001 D035 F003 F005
DV158147-2	FS-LIQ-02	AV76822	DM	55	I3	Waste Paint related material, 3, UN1263, PGII	D001 D035 F003 F005

DV158147-3	LF-SLD-03	AV76841	DM	55	I3	Waste Solids containing flammable liquid, n.o.s.(Methyl Ethyl Ketone,Toluene), 4.1, UN3175, PGII	D001 D035 F003 F005
DV158194-1	FS-LIQ-02	DRJG1205	DF	5	I3	RQ Waste Xylenes, 3, UN1307, PGII	D001 F003
DV158194-2	FS-LIQ-02	DRJG1205	DF	5	I3	RQ Waste Xylenes, 3, UN1307, PGII	D001 F003
DV158197-3	FS-LIQ-02	AV63478	DF	30	I3	NON REGULATED,	
DV158233-1	FS-LIQ-04	AV77600	DF	30	I3	NON-REGULATED MATERIAL (Formaldehyde,Propylene Glycol),	
DV158389-1	FS-LIQ-02	AV77789	DM	30	I3	Waste Paint related material, 3, UN1263, PGII	D001 D035 F003 F005
DV158390-1	LP-INC-01	AV77782-1	DF	5	I3	Waste Toxic, liquids, organic, n.o.s.(Phenol,Cantharidin), 6.1, UN2810, PGII	U188
DV158391-9	IN-ASL-01	AV77696	DM	55	I3	Waste Aerosols,flammable, 2.1, UN1950,	D001
DV158391-10	IN-ASL-01	AV77696	DM	55	I3	Waste Aerosols,flammable, 2.1, UN1950,	D001
DV158391-11	IN-ASL-01	AV77696	DM	55	I3	Waste Aerosols,flammable, 2.1, UN1950,	D001
DV158391-14	IN-ASL-01	AV77696	DM	55	I3	Waste Aerosols,flammable, 2.1, UN1950,	D001
DV158391-22	FS-LIQ-02	AV77695	DM	55	I3	Waste Paint related material, 3, UN1263, PGII	D001 D007 D008 D035
DV158391-23	LP-FUE-02	AV77687	DM	55	I3	Waste Paint related material, 3, UN1263, PGII	D001 D007 D008 D035
DV158391-25	LP-FUE-02	AV77687	DM	55	I3	Waste Paint related material, 3, UN1263, PGII	D001 D007 D008 D035
DV158391-26	LP-FUE-02	AV77687	DM	55	I3	Waste Paint related material, 3, UN1263, PGII	D001 D007 D008 D035
DV158391-38	LP-PES-01	AV77686	DM	55	I3	Waste Pesticides, liquid, flammable, toxic (Chlordane,Xylenes), 3,(6.1), UN3021, PGII	D001 D004 D013 D014 D015 D016 D020 D031 U036 U114
DV158391-40	LP-PES-01	AV77686	DM	55	I3	Waste Pesticides, liquid, flammable, toxic (Chlordane,Xylenes), 3,(6.1), UN3021, PGII	D001 D004 D013 D014 D015 D016 D020 D031 U036 U114
DV158391-41	LP-PES-01	AV77686	DM	55	I3	Waste Pesticides, liquid, flammable, toxic (Chlordane,Xylenes), 3,(6.1), UN3021, PGII	D001 D004 D013 D014 D015 D016 D020 D031 U036 U114
DV158391-47	LP-PES-02	AV77683	DF	55	I3	Waste Pesticides, solid, toxic, n.o.s.(Chlordane,Diazinon), 6.1, UN2588, PGII	D004 D008 D013 D014 D015 D016 D020 D031 U036 U114
DV158391-49	LF-ACD-02	AV77693	DM	55	I3	Waste Corrosive liquid, acidic, inorganic, n.o.s.(Hydrochloric Acid,Sulfuric Acid), 8, UN3264, PGII	D002
DV158391-57	RC-OIL-02	AV77691	DM	55	I3	NON-REGULATED (USED OIL,WATER),	
DV158440-13	LP-FUE-02	AV77741-1	DM	55	I3	Waste Flammable liquids, n.o.s. (METHANOL, TOLUENE), 3, UN1993, PGII	D001 D018 D019 F003 F005 U002 U122 U220
DV158464-2	LP-FUE-02	AV77843	CF	55	I3	Waste Paint related material, 3, UN1263, PGII	D001
DV158464-3	LP-FUE-02	AV77843	CF	55	I3	Waste Paint related material, 3, UN1263, PGII	D001
DV158470-4	RC-OIL-02	AV77865-4	DM	30	I3	Other regulated substances, liquid, n.o.s.(Oil,Chlorofluorocarbons), 9, NA3082, PGIII	
DV152874-7	FS-LIQ-02	GELG3537	DM	55	I4	RQ, Hazardous waste liquid, n.o.s., 9, NA3082, PGIII	D010
DV154067-2	RC-GLY-01	AV66393	DM	30	I4	NON REGULATED MATERIAL,	
DV154728-16	LF-SLD-03	AV74383-13	DM	30	I4	Non-Regulated Material (CORN STARCH / PLASTER), .	
DV155084-1	FS-LIQ-05	AV62512	DM	55	I4	WASTE FLAMMABLE LIQUIDS,TOXIC,n.o.s. (methylene chloride,hexane), 3, UN1992, PGII	D001 F002 F003 F005
DV155198-1	FS-LIQ-02	AV74862	DM	15	I4	Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV155447-5	LP-BAS-01	AV75241-1	DM	55	I4	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (AMMONIUM HYDROXIDE / SODIUM HYDROXIDE), 8, UN3266, PGII	D002
DV155568-15	IN-ASL-01	AV65251	DM	55	I4	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV155788-21	LP-PES-02	AV75562-1	DM	55	I4	RQ Waste Pesticides, solid, toxic, n.o.s. (DIAZINON / METHOXYCHLOR), 6.1, UN2588, PGII	D014 U185 U244 U271 U279
DV156132-32	LF-LIQ-01	AV75286	LB	55	I4	Hazardous waste, liquid, n.o.s. (SILVER / HYDROQUINONE), 9, NA3082, PGIII	D011
DV156208-6	LP-FUE-02	AV71307	DM	55	I4	RQ, Waste Paint [including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base], 3,	D001 D035
DV156208-7	LP-FUE-02	AV71307	DM	55	I4	RQ, Waste Paint [including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base], 3,	D001 D035
DV156208-8	LP-FUE-02	AV71307	DM	55	I4	RQ, Waste Paint [including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base], 3,	D001 D035
DV156209-4	LP-FUE-02	AV75920	DM	55	I4	Waste Paint related material, 3, UN1263, PGII	D001
DV156214-2	LF-SLD-03	AV75981	DF	5	I4	Waste Flammable solids, organic, n.o.s. (JET FUEL), 4.1, UN1325, PGIII	D001
DV156450-3	FS-LIQ-02	AV76120	DM	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 F003 F005
DV156450-4	FS-LIQ-02	AV76120	DM	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 F003 F005
DV156450-5	FS-LIQ-02	AV76120	DM	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 F003 F005
DV156641-1	FS-LIQ-05	AV62636	DM	55	I4	Waste Tetrachloroethylene, 6.1, UN1897, PGIII	D039 F002
DV156657-1	FS-LIQ-02	AV72352	DM	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV156827-4	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-5	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-6	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-15	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-16	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-17	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-18	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005

DV156827-25	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-26	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-27	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-28	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-29	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-30	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-31	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-32	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-33	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-34	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-35	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-36	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-37	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-38	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-39	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-40	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-45	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-46	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-47	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-48	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-49	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-50	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-51	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-56	FS-LIQ-02	AV75847	DM	55	I4	Waste Acetone, 3, UN1090, PGII	D001 U002
DV156871-3	FS-LIQ-02	AV58925	DM	55	I4	Waste Paint [including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base], 3,	D001 D035
DV156905-28	LP-FUE-02	AV69801	LB	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV156905-29	LP-FUE-02	AV69801	LB	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV156905-30	LP-FUE-02	AV69801	LB	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV156905-31	LP-FUE-02	AV69801	LB	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV156905-32	LP-FUE-02	AV69801	LB	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV156969-46	LP-FUE-02	AV76247	DM	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 D035
DV156969-48	LP-FUE-02	AV76247	DM	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 D035
DV156969-49	LP-FUE-02	AV76247	DM	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 D035
DV156970-11	LP-FUE-03	AV76244	LB	55	I4	Non-Regulated Material (EPOXY RESINS / WAXES), .	
DV156970-14	LP-FUE-03	AV76244	LB	55	I4	Non-Regulated Material (EPOXY RESINS / WAXES), .	
DV157072-2	LF-LIQ-03	AV70966	DM	55	I4	RQ Hazardous waste, liquid, n.o.s. (TETRACHLOROETHYLENE / WATER), 9, NA3082, PGIII	F002
DV157119-3	RC-GLY-01	AV76749	DF	30	I4	NON REGULATED MATERIAL (ANTIFREEZE)	
DV157137-27	FS-CAN-03	AV65253	DM	55	I4	Waste Solids containing flammable liquid, n.o.s. (NAPHTHA / PETROLEUM DISTILLATES), 4.1, UN3175, PGII	D001 D035
DV157168-10	FS-LIQ-04	AV76720	DF	55	I4	Hazardous waste, liquid, n.o.s. (BARIUM ALKYLNAPHTHALENE SULFONATE / BENZYL ALCOHOL), 9, NA3082, PGIII	D005
DV157168-11	FS-LIQ-04	AV76720	DF	55	I4	Hazardous waste, liquid, n.o.s. (BARIUM ALKYLNAPHTHALENE SULFONATE / BENZYL ALCOHOL), 9, NA3082, PGIII	D005
DV157390-3	LP-FUE-02	AV76587	DM	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV157390-4	LP-FUE-02	AV76587	DM	55	I4	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV157740-4	FS-LIQ-02	AV61410	DM	55	I4	WASTE PAINT RELATED MATERIAL, 3, UN1263, PGII	D001 D035 F003 F005
DV157761-1	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-2	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-3	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-4	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-5	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-6	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-7	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-8	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005

DV157761-9	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-10	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-11	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-12	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-13	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-14	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-15	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-16	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-17	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-18	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-19	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-20	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-21	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-22	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-23	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-24	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-25	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-27	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-28	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-33	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-34	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-35	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-36	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-41	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-42	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-43	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-49	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-51	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157761-52	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157762-1	LP-MER-03	AV73280	DF	55	I4	RQ Waste Corrosive liquids, toxic, n.o.s. (SULFURIC ACID / MERCURIC SULFATE), 8, UN2922, PGII	D002 D007 D009 D011
DV157822-5	IN-SLD-02	AV64993	DM	55	I4	Hazardous waste, solid, n.o.s. (SOIL SAMPLES W/VARIOUS METALS), 9, NA3077, PGIII	D004 D005 D006 D007 D008 D009 D010 D011 D012 D013
DV157855-4	FS-SLD-01	AV65903	DM	55	I4	Non-Regulated Material (EPOXY RESIN), .	
DV157887-1	IN-LIQ-02	AV77320	DM	55	I4	Hazardous waste, liquid, n.o.s.(Tetrachloroethylene,Water), 9, NA3082, PGIII	D039 F002
DV157929-2	LP-FUE-02	AV71307	DM	55	I4	RQ, Waste Paint [including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base], 3,	D001 D035
DV158033-1	IN-LIQ-01	AV72438	DM	55	I4	Hazardous waste, liquid, n.o.s.(Tetrachloroethylene,Trichloroethylene), 9, NA3082, PGIII	F002
DV158035-1	LF-SLD-03	AV68239	DM	55	I4	RQ RQ,Hazardous waste, solid, n.o.s.(Chromium), 9, NA3077, PGIII	D007
DV158035-2	LF-SLD-02	AV67875	DM	55	I4	Hazardous waste, liquid, n.o.s. (CADMIUM / SELENIUM), 9, NA3082, PGIII	D006 D010
DV158035-3	LF-SLD-02	AV67875	DM	55	I4	Hazardous waste, liquid, n.o.s. (CADMIUM / SELENIUM), 9, NA3082, PGIII	D006 D010
DV158035-4	LF-SLD-02	AV67875	DM	55	I4	Hazardous waste, liquid, n.o.s. (CADMIUM / SELENIUM), 9, NA3082, PGIII	D006 D010
DV158035-5	LP-FUE-02	AV77440-1	DM	30	I4	Waste Flammable liquids, n.o.s.(Methyl Ethyl Ketone,Toluene, 3, UN1993, PGII	D001 D007 D035
DV158036-1	LF-SLD-02	AV77347-1	DM	55	I4	Waste Toxic solid, inorganic, n.o.s.(LEAD), 6.1, UN3288, PGII	D008
DV158036-3	LP-ACD-01	AV77347-4	DM	55	I4	Waste Corrosive liquid, acidic, inorganic, n.o.s.(Sulfuric Acid,Boric Acid), 8, UN3264, PGII	D002
DV158036-5	LP-ACD-01	AV77347-5	DM	30	I4	Waste Nitric acid, 8, UN2031, PGII	D002
DV158036-6	LF-SLD-03	AV77347-6	DM	15	I4	Waste Solids containing flammable liquid, n.o.s.(Hexanes,Methyl Ethyl Ketone), 4.1, UN3175, PGII	D001 D035
DV158036-7	LP-FUE-02	AV77347-7	DM	15	I4	Waste Flammable liquids, n.o.s.(Toluene,Petroleum Distillates), 3, UN1993, PGII	D001
DV158230-11	LP-FUE-02	AV77709-1	DM	55	I4	Waste Flammable liquids, n.o.s.(Gasoline,Diesel Fuel), 3, UN1993, PGII	D001
DV158391-8	IN-ASL-01	AV77696	DM	55	I4	Waste Aerosols,flammable, 2.1, UN1950,	D001
DV158391-15	IN-ASL-01	AV77696	DM	55	I4	Waste Aerosols,flammable, 2.1, UN1950,	D001
DV158391-35	LP-PES-01	AV77686	DM	55	I4	Waste Pesticides, liquid, flammable, toxic (Chlordane,Xylenes), 3,(6.1), UN3021, PGII	D001 D004 D013 D014 D015 D016 D020 D031 U036 U114
DV158391-36	LP-PES-01	AV77686	DM	55	I4	Waste Pesticides, liquid, flammable, toxic (Chlordane,Xylenes), 3,(6.1), UN3021, PGII	D001 D004 D013 D014 D015 D016 D020 D031 U036 U114
DV158391-37	LP-PES-01	AV77686	DM	55	I4	Waste Pesticides, liquid, flammable, toxic (Chlordane,Xylenes), 3,(6.1), UN3021, PGII	D001 D004 D013 D014 D015 D016 D020 D031 U036 U114

DV158391-42	LP-PES-01	AV77686	DM	55	I4	Waste Pesticides, liquid, flammable, toxic (Chlordane,Xylenes), 3,(6.1), UN3021, PGII	D001 D004 D013 D014 D015 D016 D020 D031 U036 U114
DV158391-43	LP-PES-01	AV77686	DM	55	I4	Waste Pesticides, liquid, flammable, toxic (Chlordane,Xylenes), 3,(6.1), UN3021, PGII	D001 D004 D013 D014 D015 D016 D020 D031 U036 U114
DV158391-44	LP-PES-01	AV77686	DM	55	I4	Waste Pesticides, liquid, flammable, toxic (Chlordane,Xylenes), 3,(6.1), UN3021, PGII	D001 D004 D013 D014 D015 D016 D020 D031 U036 U114
DV158407-25	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-26	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-27	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-28	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-45	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-46	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-47	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-48	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158435-1	LP-FUE-02	AV77620-1	DM	30	I4	Waste Paint related material, 3, UN1263, PGIII	D001 D005 D007 D018 D035
DV158437-1	FS-LIQ-02	AV72122	DM	85	I4	Waste Flammable liquids, n.o.s.(Methanol,Napthalene), 3, UN1993, PGII	D001 D018 D035 F003 F005
DV158437-2	FS-LIQ-02	AV72122	DM	85	I4	Waste Flammable liquids, n.o.s.(Methanol,Napthalene), 3, UN1993, PGII	D001 D018 D035 F003 F005
DV158439-1	LP-FUE-03	AV77864	DM	55	I4	Waste Flammable liquids, n.o.s.(Light Hydrotreated Destillate), 3, UN1993, PGII	D001
DV158456-1	LP-FUE-01	AV70381	DM	55	I4	Waste Flammable liquids, n.o.s. (XYLENE / ISOPROPANOL), 3, UN1993, PGII	D001 F003
DV158464-4	LP-FUE-02	AV77843	CF	55	I4	Waste Paint related material, 3, UN1263, PGII	D001
DV158464-5	LP-FUE-02	AV77843	CF	55	I4	Waste Paint related material, 3, UN1263, PGII	D001
DV158470-1	LP-FUE-02	AV77865-1	DM	55	I4	Waste Flammable liquids, n.o.s. (XYLENE / ETHANOL), 3, UN1993, PGII	D001 F003
DV158472-2	LP-FUE-02	AV77881-1	DM	30	I4	Waste Flammable liquids, n.o.s.(XYLENE,PETROLEUM DISTILLATES), 3, UN1993, PGII	D001
DV158472-5	FS-LIQ-02	AV67859	DM	55	I4	OTHER REGULATED SUBSTANCES, LIQUID, N.O.S. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV158490-52	LF-SLD-03	AV70510	DM	55	I4	Waste Paint, 3, UN1263, PGII	D001 D035 F003 F005
DV158490-60	FS-BAS-02	AV55710	DM	55	I4	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (Sodium Hydroxide), 8, UN3266, PGII	D002
DV158490-62	LF-SLD-03	AV70626	DM	55	I4	RQ,Waste Solids containing flammable liquid, n.o.s.(Ethanol,Heptane), 4.1, UN3175, PGII	D001 D035
DV158490-63	LF-SLD-03	AV70626	DM	55	I4	RQ,Waste Solids containing flammable liquid, n.o.s.(Ethanol,Heptane), 4.1, UN3175, PGII	D001 D035
DV158490-64	LF-SLD-03	AV70626	DM	55	I4	RQ,Waste Solids containing flammable liquid, n.o.s.(Ethanol,Heptane), 4.1, UN3175, PGII	D001 D035
DV158490-88	IN-SLD-01	AQ25493	DM	55	I4	Hazardous waste, solid, n.o.s.(TOLUENE, XYLENE), 9, NA3077, PGIII	F003 F005
DV158589-25	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158589-26	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158589-35	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158589-36	IN-LIQ-02	AVAG1855	DM	55	I4	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV152987-2	LF-LIQ-03	AV70966	DM	55	I5	RQ Hazardous waste, liquid, n.o.s. (TETRACHLOROETHYLENE / WATER), 9, NA3082, PGIII	F002
DV153028-1	LP-HOC-01	AV73361-1	DM	55	I5	Waste Flammable liquids, toxic, n.o.s. (ETHYLENE DICHLORIDE / 1,2 DICHLOROETHANE), 3, UN1992, PGII	D001 D028 U077 U079
DV153891-1	FS-BAS-02	AV73602	DM	55	I5	RQ Waste Ammonia solutions, [relative density between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but	D002
DV153891-2	FS-BAS-02	AV73602	DM	55	I5	RQ Waste Ammonia solutions, [relative density between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but	D002
DV153891-3	FS-BAS-02	AV73602	DM	55	I5	RQ Waste Ammonia solutions, [relative density between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but	D002
DV153891-4	FS-BAS-02	AV73602	DM	55	I5	RQ Waste Ammonia solutions, [relative density between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but	D002
DV154207-4	FS-LIQ-04	AV61779	DM	55	I5	Non-Regulated Material, .,	
DV154207-5	FS-LIQ-04	AV61779	DM	55	I5	Non-Regulated Material, .,	
DV154207-6	FS-LIQ-04	AV61779	DM	55	I5	Non-Regulated Material, .,	
DV154207-7	FS-LIQ-04	AV61779	DM	55	I5	Non-Regulated Material, .,	
DV154207-8	FS-LIQ-04	AV61779	DM	55	I5	Non-Regulated Material, .,	
DV154207-9	FS-LIQ-04	AV61779	DM	55	I5	Non-Regulated Material, .,	
DV154207-10	FS-LIQ-04	AV61779	DM	55	I5	Non-Regulated Material, .,	
DV154314-1	FS-LIQ-02	AV61113	DM	55	I5	WASTE PAINT RELATED MATERIAL, 3, UN1263, PGII	D001
DV154431-2	LP-FUE-02	AV74320-1	DF	30	I5	Waste Flammable liquids, toxic, n.o.s. (METHANOL / CHLOROFORM), 3, UN1992, PGII	D001 D022 F003 F005
DV154447-3	LF-NRL-01	AV74280	DM	55	I5	RQ Hazardous waste, liquid, n.o.s. (LEAD / WATER), 9, NA3082, PGIII	D008
DV154693-2	FS-LIQ-03	AV63156	DM	55	I5	Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 F001
DV155753-3	RC-GLY-01	AV65351	DM	55	I5	Non Regulated Material	
DV155966-3	FS-LIQ-02	AV75381	DM	55	I5	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001
DV155966-4	FS-LIQ-02	AV75381	DM	55	I5	RQ Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001

DV156527-4	FS-LIQ-02	AV75706	TP	55	I5	Combustible liquid, n.o.s. (Diesel,Kerosene,Oil), ., NA1993, PGIII	
DV156527-5	FS-LIQ-02	AV75706	TP	55	I5	Combustible liquid, n.o.s. (Diesel,Kerosene,Oil), ., NA1993, PGIII	
DV156527-7	FS-LIQ-02	AV75706	TP	55	I5	Combustible liquid, n.o.s. (Diesel,Kerosene,Oil), ., NA1993, PGIII	
DV156527-8	FS-LIQ-02	AV75706	TP	55	I5	Combustible liquid, n.o.s. (Diesel,Kerosene,Oil), ., NA1993, PGIII	
DV156581-3	FS-LIQ-02	AV76287	DM	55	I5	Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 F003 F005
DV156716-1	IN-LIQ-01	AV57127	DM	55	I5	Waste Paint [ALUMINUM FLAKE), 3, UN1263, PGII	D001 F003
DV156716-2	IN-LIQ-01	AV57127	DM	55	I5	Waste Paint [ALUMINUM FLAKE), 3, UN1263, PGII	D001 F003
DV157007-55	FS-LIQ-04	AV70507	DM	55	I5	NON REGULATED MATERIAL	
DV157007-56	FS-LIQ-04	AV70507	DM	55	I5	NON REGULATED MATERIAL	
DV157007-57	FS-LIQ-04	AV70507	DM	55	I5	NON REGULATED MATERIAL	
DV157007-58	FS-LIQ-04	AV70507	DM	55	I5	NON REGULATED MATERIAL	
DV157037-6	LF-SLD-03	AV71880	DF	5	I5	Hazardous solid, n.o.s. (SOLIDIFIED ACIDS / OIL DRY), 9, NA3077, PGIII	
DV157316-3	LF-SLD-03	AV69818	DM	55	I5	Waste Flammable solids, organic, n.o.s. (PARRAFIN / XYLENE), 4.1, UN1325, PGII	D001 F003
DV157326-1	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-2	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-3	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-4	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-5	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-8	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-9	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-10	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-11	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-13	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-14	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-15	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-16	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-17	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-18	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-19	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-20	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-21	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-22	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-23	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-24	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-25	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-26	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-27	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-28	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-29	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-30	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-31	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-32	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-33	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-34	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-35	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-36	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-37	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-39	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-40	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-41	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-42	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005

DV157326-43	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-44	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-45	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-47	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-48	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157326-49	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157392-4	FS-SLG-02	AV68308	DM	55	I5	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157392-12	FS-SLG-02	AV68308	DM	55	I5	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157392-13	FS-SLG-02	AV68308	DM	55	I5	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157392-39	LP-PES-01	AV68328	DM	55	I5	RQ Waste Pesticides, liquid, flammable, toxic, [flash point less than 23 degrees C], 3, UN3021, PGII	D001 D013 D014 D015 D016 D020 D031 U036 U129 U185
DV157393-18	FS-SLG-02	AV68318	DM	55	I5	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157393-19	FS-SLG-02	AV68318	DM	55	I5	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157393-25	FS-SLG-02	AV68318	DM	55	I5	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157393-26	FS-SLG-02	AV68318	DM	55	I5	Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV157529-3	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-4	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-5	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-6	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-7	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-8	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-9	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-10	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-12	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-13	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-15	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-16	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-17	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-18	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-19	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-20	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-21	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-22	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-23	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-24	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-25	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-26	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-27	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-28	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-29	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-31	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-32	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157807-1	LP-FUE-02	AV77025	CY	220	I5	Waste Solids containing flammable liquid, n.o.s.(Xylene,Toluene), 4.1, UN3175, PGII	D001 F003 F005
DV157853-1	LF-NRS-01	AV76740	DM	55	I5	Non-Regulated Material (HYDROXYTERMINATED BUTADIENE ACRYLONITRILE), .,	
DV157853-2	LF-NRS-01	AV76741	DM	55	I5	Non-Regulated Material (PPE / PROPARGYL BENZENE SULFONATE), .,	
DV158013-27	RC-OIL-02	AV77132	DM	30	I5	Non-Regulated (Oil for Recycle)	
DV158013-32	LF-NRS-01	AV77133	DM	55	I5	Non-Regulated (LatexPaint)	
DV158236-1	IN-LIQ-01	AV72063	DF	55	I5	Non-Regulated Material (Fire Red Ink for incineration),	
DV158327-1	IN-REA-02	AV77364	DM	55	I5	Hazardous waste, solid, n.o.s. (Silicates,hydrochloric acid residue), 9, NA3077, PGIII	D003
DV158327-2	IN-REA-02	AV77364	DM	55	I5	Hazardous waste, solid, n.o.s. (Silicates,hydrochloric acid residue), 9, NA3077, PGIII	D003
DV158327-6	IN-REA-02	AV77364	DM	55	I5	Hazardous waste, solid, n.o.s. (Silicates,hydrochloric acid residue), 9, NA3077, PGIII	D003
DV158327-10	IN-REA-02	AV77364	DM	55	I5	Hazardous waste, solid, n.o.s. (Silicates,hydrochloric acid residue), 9, NA3077, PGIII	D003

DV158327-11	IN-REA-02	AV77364	DM	55	I5	Hazardous waste, solid, n.o.s. (Silicates,hydrochloric acid residue), 9, NA3077, PGIII	D003
DV158391-12	IN-ASL-01	AV77696	DM	55	I5	Waste Aerosols,flammable, 2.1, UN1950,	D001
DV158391-13	IN-ASL-01	AV77696	DM	55	I5	Waste Aerosols,flammable, 2.1, UN1950,	D001
DV158391-39	LP-PES-01	AV77686	DM	55	I5	Waste Pesticides, liquid, flammable, toxic (Chlordane,Xylenes), 3,(6.1), UN3021, PGII	D001 D004 D013 D014 D015 D016 D020 D031 U036 U114
DV158407-29	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-30	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-31	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-33	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-34	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-35	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-36	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-37	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-38	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-39	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-40	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-41	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-42	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-43	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-44	IN-LIQ-02	AVAG1855	DM	55	I5	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-59	IN-LIQ-02	AVAG1187	DM	55	I5	RQ Hazardous waste liquid, n.o.s.(CHLOROFORM, XYLENE), 9, NA3082, PGIII	D022 F003 F005
DV158490-44	LF-SLD-03	AV70510	DM	55	I5	Waste Paint, 3, UN1263, PGII	D001 D035 F003 F005
DV158490-45	LF-SLD-03	AV70510	DM	55	I5	Waste Paint, 3, UN1263, PGII	D001 D035 F003 F005
DV158490-46	LF-SLD-03	AV70510	DM	55	I5	Waste Paint, 3, UN1263, PGII	D001 D035 F003 F005
DV158490-47	LF-SLD-03	AV70510	DM	55	I5	Waste Paint, 3, UN1263, PGII	D001 D035 F003 F005
DV158490-50	LF-SLD-03	AV70510	DM	55	I5	Waste Paint, 3, UN1263, PGII	D001 D035 F003 F005
DV158490-53	LF-SLD-03	AV70510	DM	55	I5	Waste Paint, 3, UN1263, PGII	D001 D035 F003 F005
DV158490-54	LF-SLD-03	AV70510	DM	55	I5	Waste Paint, 3, UN1263, PGII	D001 D035 F003 F005
DV154909-4	LP-INC-01	AV74756-2	DF	5	I6	Non-Regulated Material (DEVELOPER RINSE), .,	
DV155032-9	FS-LIQ-02	AV70881	DM	55	I6	RQ Non-Regulated Material (BISPHENOL A EPOXY RESIN / BENZYL ALCOHOL), .,	
DV155032-10	FS-LIQ-02	AV70881	DM	55	I6	RQ Non-Regulated Material (BISPHENOL A EPOXY RESIN / BENZYL ALCOHOL), .,	
DV155089-10	FS-BAS-02	AV75023	DF	5	I6	Waste Corrosive liquid, basic, organic, n.o.s. (SODIUM METASILICATE / TRIPROPYLENE GLYCOL METHYL ETHER), 8,	D002
DV155408-1	LP-BAS-03	AV75362-1	DM	55	I6	Waste Corrosive liquid, basic, organic, n.o.s. (DIETHANOLAMINE / MONOETHANOLAMINE), 8, UN3267, PGII	D002
DV155447-6	LP-BAS-02	AV75241-6	DF	5	I6	RQ Waste Amines, liquid, corrosive, n.o.s. (DIETHYLENE TRIAMINE / TRIETHYLENE TETRAMINE), 8, UN2735, PGIII	D002
DV155527-3	LP-BAS-01	AV75364-2	DF	15	I6	Waste Ammonia solutions, [relative density between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but not	D002
DV155568-23	LP-PES-01	AV65283	DM	55	I6	RQ Waste Pesticides, liquid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2902, PGII	D004 D016 U066 U114 U240 U279
DV155568-24	LP-PES-01	AV65283	DM	55	I6	RQ Waste Pesticides, liquid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2902, PGII	D004 D016 U066 U114 U240 U279
DV155568-28	LP-PES-02	AV65286	DM	55	I6	RQ Waste Pesticides, solid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2588, PGII	D004 D008 D013 D014 D015 D016 D020 U036 U061 U066
DV155568-29	LP-PES-02	AV65286	DM	55	I6	RQ Waste Pesticides, solid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2588, PGII	D004 D008 D013 D014 D015 D016 D020 U036 U061 U066
DV156389-3	FS-LIQ-04	AV68982	DF	55	I6	Non-Regulated Material, .,	
DV156447-1	FS-SLG-02	AV54954	DM	55	I6	RQ Waste Paint related material, 3, UN1263, PGIII	D001 D035 F003 F005
DV156448-8	FS-LIQ-04	AV72720	DM	55	I6	Non-Regulated Material (WATER / ASPHALTIC EMULSION), .,	
DV156449-39	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156553-3	LF-NRL-01	AV70740	DF	5	I6	Environmentally hazardous substances, liquid, n.o.s. (FORMALIN), 9, UN3082, PGIII	
DV156587-2	IN-SLD-01	AV72962	DM	55	I6	Hazardous waste, solid, n.o.s. (CREOSOTE), 9, NA3077, PGIII	F032 F034
DV156758-4	LP-ACD-01	AV76423-4	DF	15	I6	Waste Corrosive liquids, flammable, n.o.s.(Acetic Anhydride,Toluene), 8,(3), UN2920, PGII	D001 D002
DV156767-4	LP-FUE-02	AV76479-1	CF	220	I6	Waste Paint related material, 3, UN1263, PGIII	D001 D005
DV156827-9	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-10	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-11	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156827-12	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV156905-13	LP-FUE-03	AV69812	DM	55	I6	RQ Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035

DV156931-23	MR-BAL-01	AV73500	LBS	30	I6	NON REGULATED MATERIAL	
DV157007-54	FS-LIQ-04	AV70507	DM	55	I6	NON REGULATED MATERIAL	
DV157007-59	FS-LIQ-04	AV70507	DM	55	I6	NON REGULATED MATERIAL	
DV157007-60	FS-LIQ-04	AV70507	DM	55	I6	NON REGULATED MATERIAL	
DV157068-1	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-2	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-3	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-4	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-5	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-6	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-7	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-8	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-9	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-10	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-11	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-12	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-13	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-14	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-15	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-16	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-18	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-19	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-20	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-21	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-22	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-23	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-24	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-25	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-26	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-27	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-28	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-29	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-30	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-31	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-32	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-33	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-34	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-35	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-36	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-37	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-38	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-39	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-41	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-42	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-43	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-44	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-45	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-46	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-47	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-48	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-49	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005

DV157068-50	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-51	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-52	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-53	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-54	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-55	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157068-56	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157350-17	FS-CAN-02	AV69197	CY	220	I6	Waste Tars, liquid, 3, UN1999, PGIII	D001
DV157388-2	LP-FUE-02	AV76933-3	DM	55	I6	Waste Flammable liquids, n.o.s.(Xylene,Methyl Ethyl Ketone), 3, UN1993, PGII	D001 D007 D008 D035
DV157389-2	LP-FUE-03	AV76924-3	DM	55	I6	Waste Solids containing flammable liquid, n.o.s.(Petroleum Distillates,Methanol), 4.1, UN3175, PGII	D001
DV157407-3	FS-LIQ-02	AV76822	DM	55	I6	Waste Paint related material, 3, UN1263, PGII	D001 D035 F003 F005
DV157529-33	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-34	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-39	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157529-40	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV157593-2	LP-BAS-01	AV77086-2	DM	55	I6	Waste Corrosive liquid, basic, inorganic, n.o.s.(Sodium Hydroxide,Sodium Metasillicate), 8, UN3266, PGII	D002
DV157688-2	LP-BAS-03	AV77140-2	DM	55	I6	Waste Flammable liquids, corrosive, n.o.s.(Methanol,Sodium Hydroxide), 3, UN2924, PGII	D001 D002
DV157689-4	LP-BAS-01	AV77081-3	DF	55	I6	Waste Corrosive liquid, basic, inorganic, n.o.s.(Sodium Hydroxide,Sodium Carbonate), 8, UN3266, PGII	D002
DV157693-1	IN-ASL-01	AV77200	DM	30	I6	Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV157890-3	FS-LIQ-01	AV60712	CM	220	I6	Waste Paint related material [including paint thinning, drying, removing, or reducing compound], 3, UN1263, PGII	D001 F003 F005
DV158108-1	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-2	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-3	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-4	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-5	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-6	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-7	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-8	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-9	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-10	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-12	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-13	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-14	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-15	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-16	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-17	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-18	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-19	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-20	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-21	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-22	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-23	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158108-24	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-9	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-10	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-11	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-12	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-13	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-14	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-15	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-16	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005

DV158407-32	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-49	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-50	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-51	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-52	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-53	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV158407-54	IN-LIQ-02	AVAG1855	DM	55	I6	RQ Waste Flammable liquids, n.o.s.(CHLOROFORM, ACETONE), 3, UN1993, PGII	D001 D022 F003 F005
DV152750-53	FS-LIQ-02	AVAG0044	DM	55	I7	RQ, Hazardous waste liquid, n.o.s. (Oil, Chloroform), 9, NA3082, PGIII	D022
DV154550-1	FS-BAS-02	AV74446	DF	55	I7	RQ Waste Corrosive liquid, basic, organic, n.o.s. (SODIUM 2-MERCAPTOBENZOTRIAZOLE), 8, UN3267, PGII	D002
DV155195-3	LP-ACD-01	AV75100-3	DM	55	I7	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / COBALT CHLORIDE), 8, UN3264, PGII	D002
DV155195-4	LP-ACD-01	AV75100-2	DM	55	I7	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / PHOSPHORIC ACID), 8, UN3264, PGII	D002 D005
DV155195-5	LP-BAS-01	AV75100-4	DM	55	I7	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (SODIUM HYDROXIDE / AMMONIUM HYDROXIDE), 8, UN3266, PGII	D002 D005
DV155195-6	LP-BAS-01	AV75100-5	DM	55	I7	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (SODIUM HYDROXIDE / AMMONIUM HYDROXIDE), 8, UN3266, PGII	D002
DV155788-38	LF-NRL-01	AV70650	DF	85	I7	Non-Regulated Material (POLYOL), .	
DV156208-15	LF-BAS-01	AV75461	DM	55	I7	Waste Corrosive liquid, basic, inorganic, n.o.s. (SODIUM SILICATE / POTASSIUM PYROPHOSPHATE), 8, UN3266, PGIII	D002
DV156269-4	LP-BAS-01	AV75787-4	DF	5	I7	Waste Corrosive liquid, basic, inorganic, n.o.s. (AMMONIUM HYDROXIDE / SODIUM HYDROXIDE), 8, UN3266, PGII	D002
DV156661-1	FS-LIQ-04	AV73904	DM	55	I7	Waste Methanol, 3, UN1230, PGII	D001 F003
DV156710-1	LP-BAS-01	AV76254	DF	20	I7	Waste Corrosive solid, basic, inorganic, n.o.s.(Sodium Solids,Potassium Hydroxide), 8, UN3262, PGII	
DV157090-1	FS-LIQ-05	AO11947	DM	30	I7	RQ Waste Tetrachloroethylene, 6.1, UN1897, PGIII	D039 F001
DV157090-2	FS-LIQ-05	AO11947	DM	30	I7	RQ Waste Tetrachloroethylene, 6.1, UN1897, PGIII	D039 F001
DV157090-3	FS-LIQ-05	AO11947	DM	30	I7	RQ Waste Tetrachloroethylene, 6.1, UN1897, PGIII	D039 F001
DV157090-4	FS-LIQ-05	AO11947	DM	30	I7	RQ Waste Tetrachloroethylene, 6.1, UN1897, PGIII	D039 F001
DV157090-5	FS-LIQ-05	AO11947	DM	30	I7	RQ Waste Tetrachloroethylene, 6.1, UN1897, PGIII	D039 F001
DV158327-5	IN-REA-02	AV77364	DM	55	I7	Hazardous waste, solid, n.o.s. (Silicates,hydrochloric acid residue), 9, NA3077, PGIII	D003
DV152408-1	IN-LIQ-02	AV72860	DM	55	I8	RQ Waste Flammable liquids, toxic, n.o.s. (METHANOL / METHYLENE CHLORIDE), 3, UN1992, PGII	D001 F002 F003 F005
DV153033-1	IN-LIQ-01	AV72100	DM	55	I8	Non-Regulated Material (SODIUM SULFATE / POTASSIUM CARBONATE), .,	
DV153033-2	IN-LIQ-01	AV72100	DM	55	I8	Non-Regulated Material (SODIUM SULFATE / POTASSIUM CARBONATE), .,	
DV153843-6	LP-BAS-01	AV73642-2	DF	55	I8	RQ Waste Corrosive liquids, toxic, n.o.s. (SODIUM HYDROXIDE / PHENOL), 8, UN2922, PGII	D002 D009
DV154767-54	FS-PES-01	AV69195	DM	55	I8	Waste Pesticides, liquid, toxic, n.o.s.(Pyrethrins,Chlorpyrifos), 6.1, UN2902, PGIII	
DV154767-55	FS-PES-01	AV69195	DM	55	I8	Waste Pesticides, liquid, toxic, n.o.s.(Pyrethrins,Chlorpyrifos), 6.1, UN2902, PGIII	
DV154820-2	FS-LIQ-02	AV74782	DM	5	I8	RQ Environmentally hazardous substances, liquid, n.o.s. (PENTAFLUOROETHANE / OIL), 9, UN3082, PGIII	
DV155083-3	LP-LDF-01	AV74560-4	DF	5	I8	Hazardous waste, liquid, n.o.s.(Dibultyltin Dilaurate, Silver), 9, NA3082, PGIII	D011
DV155089-7	LF-BAS-01	AV75020	DF	15	I8	Waste Sodium hydroxide solution, 8, UN1824, PGII	D002
DV155394-5	IN-LIQ-02	AV75341	DF	5	I8	Waste Trichloroethylene, 6.1, UN1710, PGIII	D040
DV155433-4	LP-PES-01	AV65282	DM	55	I8	RQ Waste Pesticides, liquid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2902, PGII	D004 D016 U066 U114 U240 U279
DV155544-1	LF-SLD-03	AV75482	DF	5	I8	RQ Waste Toxic solids, organic, n.o.s. (PHENOL / CHLOROFORM), 6.1, UN2811, PGII	U044 U188
DV155568-11	IN-ASL-01	AV65251	DM	55	I8	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV155568-12	IN-ASL-01	AV65251	DM	55	I8	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV155699-5	LF-SLD-03	AV75606	DM	55	I8	RQ Other regulated substances, liquid, n.o.s. (OIL / CLEAN-UP DEBRIS), 9, NA3082, PGIII	
DV155966-5	IN-LIQ-02	AV75380	DM	5	I8	RQ Environmentally hazardous substances, liquid, n.o.s. (PENTAFLUOROETHANE / OIL), 9, UN3082, PGIII	
DV155966-6	IN-LIQ-02	AV75380	DM	5	I8	RQ Environmentally hazardous substances, liquid, n.o.s. (PENTAFLUOROETHANE / OIL), 9, UN3082, PGIII	
DV156254-3	LP-FUE-03	AV76020-3	DF	5	I8	Waste Naphthalene, crude or refined, 4.1, UN1334, PGIII	D001 U165
DV156491-2	LP-FUE-03	AV69812	DM	55	I8	RQ Waste Solids containing flammable liquid, n.o.s. (TOLUENE / METHYL ETHYL KETONE), 4.1, UN3175, PGII	D001 D035
DV156756-1	LP-BAS-03	AV76462-1	DF	5	I8	Waste Amines, liquid, corrosive, n.o.s.,(Polyamise,N-N-diamethylacetamide), 8, UN2735, PGIII	D007
DV156757-6	IN-LIQ-02	AV76420	DM	30	I8	Waste Toxic, liquids, organic, n.o.s.(Chloroform,Methylene Chloride), 6.1, UN2810, PGII	D022 D039 U044 U080 U210
DV156758-9	LP-BAS-03	AV76423-9	DM	5	I8	Waste Amines, liquid, corrosive, flammable, n.o.s.(Ethylene Diamine), 8, UN2734, PGII	D001 D002
DV157054-1	LP-FUE-02	AV76373-1	DM	55	I8	Waste Flammable liquids, n.o.s. (ETHANOL / METHANOL), 3, UN1993, PGII	D001 F002 F003
DV157431-1	LF-NRL-01	AV67754	DM	5	I8	Waste Toxic liquid, inorganic, n.o.s. (ARSENIC / LEAD), 6.1, UN3287, PGII	D004 D008
DV157434-1	FS-ACD-01	AV65702	DF	15	I8	RQ Hazardous waste, liquid, n.o.s. (CHROMIUM), 9, NA3082, PGIII	D007
DV157992-2	CYL-NHA-01	AV77341	CY	5	I8	Waste Nitrogen, compressed, 2.2, UN1066,	
DV158027-5	IN-PES-01	AV69803	DM	55	I8	Waste Pesticides, liquid, toxic, flammable, n.o.s. [flash point not less than 23 degrees C] (CHLORDANE / XYLENES), 6.1,	D001 D013 D014 D015 D020 D031 U036 U061 U129 U185

DV158027-9	IN-PES-01	AV69803	DM	55	I8	Waste Pesticides, liquid, toxic, flammable, n.o.s. [flash point not less than 23 degrees C] (CHLORDANE / XYLENES), 6.1,	D001 D013 D014 D015 D020 D031 U036 U061 U129 U185
DV158027-18	LP-AER-02	AV69783	DM	55	I8	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV158027-20	LF-ACD-02	AV69811	DM	55	I8	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / SULFURIC ACID), 8, UN3264, PGII	D002
DV158209-1	LF-ACD-02	AV75705	DF	5	I8	RQ Waste Hydrochloric acid, 8, UN1789, PGII	D002
DV158230-12	LF-ACD-02	AV61851	DM	5	I8	Waste Hydrochloric acid, 8, UN1789, PGII	D002
VC0939-1	FS-LIQ-02	VC0939-1		275	I8	REPACKED ITEM	0000 D001 D011 D018 D022 F002 F003 F005
VC0940-1	LP-BAS-03	VC0940-1		55	I8	REPACKED ITEM	D001 D002 D019 D022 D039 F001 F002 F003
VC0942-1	LP-PES-01	VC0942-1		55	I8	Waste Pesticides, liquid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), UN2902, 6.1, pg II	D004 D008 D013 D014 D015 D016 D020 U036 U061 U066
DV154669-1	LF-SLD-03	AV61348	DM	55	I9	RQ Waste Flammable solid, inorganic, n.o.s. (XYLENE / TOLUENE) PAINT BOOTH FILTERS, 4.1, UN3178, PGII	D001 F003 F005
DV154743-1	FS-ACD-02	AV74702	DM	15	I9	Waste Flammable liquids, corrosive, n.o.s. (METHANOL / HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV154909-2	LP-ACD-01	AV74756-4	DM	5	I9	Waste Hydrochloric acid, 8, UN1789, PGII	D002
DV155997-1	LP-FUE-02	AV75750-1	DF	15	I9	Waste Flammable liquids, n.o.s. (METHANOL / TOLUENE), 3, UN1993, PGII	D001 U004 U154 U220
DV156208-21	FS-LIQ-02	AV75908	DF	5	I9	Combustible liquid, n.o.s. (ALIPHATIC PETROLEUM DISTILLATES), ., NA1993, PGIII	
DV156208-22	FS-LIQ-02	AV75908	DF	5	I9	Combustible liquid, n.o.s. (ALIPHATIC PETROLEUM DISTILLATES), ., NA1993, PGIII	
DV156298-3	LF-SLD-03	AV60014	DM	15	I9	RQ Waste Flammable solids, organic, n.o.s. (ACETONE / METHANOL) VIALS, 4.1, UN1325, PGII	D001 F003 F005
DV156867-2	RC-GLY-01	AV62000	DM	55	I9	Non-Regulated Material, .	
DV157128-3	LF-SLD-03	AV76745-3	DF	5	I9	Waste Solids containing flammable liquid, n.o.s. (MORPHOLINE / ABSORBENTS), 4.1, UN3175, PGIII	D001
DV157389-1	LP-FUE-02	AV76924-2	DM	30	I9	Waste Flammable liquids, n.o.s.(Isopropanol,Naphtha), 3, UN1993, PGII	D001
DV157515-1	LF-SLD-03	AV77060	DM	5	I9	Waste Solids containing corrosive liquid, n.o.s.(Sulfuric Solution Spill Clean-up), 8, UN3244, PGII	D002
DV157629-1	LF-NRL-01	AV67754	DM	5	I9	Waste Toxic liquid, inorganic, n.o.s. (ARSENIC / LEAD), 6.1, UN3287, PGII	D004 D008
DV157667-5	LP-FUE-02	AV77147-1	DM	30	I9	Waste Flammable liquids, n.o.s.(Toluene,Xylene), 3, UN1993, PGII	D001 F003 F005
DV157744-2	FS-LIQ-02	AV67553	DM	55	I9	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, UN3082, PGIII	
DV157744-3	FS-LIQ-02	AV67553	DM	55	I9	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, UN3082, PGIII	
VC0941-1	LP-HOC-02	VC0941-1		55	I9	REPACKED ITEM	D004 D019 D022 D039 F001 F002 U007 U044 U188
DV152930-4	LP-BAS-02	AV73300	DF	5	P	Waste Amines, solid, corrosive, n.o.s.,(Tatraethylene pentamine), 8, UN3259, PGIII	
DV152931-4	LP-BAS-03	AV73261-4	DF	15	P	Waste Amines, liquid, corrosive, n.o.s. (ALIPHATIC AMINES / TRIETHANOLAMINE), 8, UN2735, PGIII	D002
DV153587-45	IN-ACD-01	AV65302	DM	5	P	Non-Regulated Material, .,	
DV154370-3	FS-BAS-02	AV69484	DM	55	P	RQ Waste Corrosive liquids, flammable, n.o.s. (POTASSIUM HYDROXIDE / METHANOL), 8, UN2920, PGII	D001 D002 F003
DV154430-3	FS-ACD-02	AV68980	DM	55	P	Environmentally hazardous substances, liquid, n.o.s. (CHLOROACETIC ACID, DIETHYLENETRIAMINE-PENTAACETIC	
DV154573-2	FS-ACD-01	AV69600	DM	55	P	Waste Flammable liquids, corrosive, n.o.s. (METHANOL / HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV154648-1	IN-LIQ-01	AV74601	DM	55	P	NON REGULATED MATERIAL,	
DV154648-2	IN-LIQ-01	AV74601	DM	55	P	NON REGULATED MATERIAL,	
DV154888-4	IN-BAS-01	AV74684	DF	55	P	Amines, liquid, corrosive, n.o.s. (ARYLAMINE / ETHOXYLATED AMINE), 8, UN2735, PGIII	
DV154888-6	IN-LIQ-01	AV74690	DM	55	P	Environmentally hazardous substances, liquid, n.o.s. (2,5-DIMERCAPTO-1,3,4 THIADIAZOLE / ALKYLPOLYCARBOXYLATES),	
DV155009-1	FS-ACD-01	AV60611	DM	55	P	Waste Flammable liquids, corrosive, n.o.s. (PHOSPHORIC ACID / ACETONITRILE), 3, UN2924, PGII	D001 D002 F003
DV156887-2	LP-BAS-02	AV76564	DM	55	P	Waste Amines, liquid, corrosive, flammable, n.o.s. (XYLENES / POLYAMINES), 8, UN2734, PGII	D001 D002
DV156887-3	LP-BAS-02	AV76564	DM	55	P	Waste Amines, liquid, corrosive, flammable, n.o.s. (XYLENES / POLYAMINES), 8, UN2734, PGII	D001 D002
DV156895-2	FS-LIQ-02	AV61181	DM	55	P	Waste Flammable liquids, n.o.s. (PETROLEUM DISTILLATES / HYDROXYACETIC ACID BUTYL ESTER), 3, UN1993, PGII	D001
DV157167-2	LP-FUE-02	AV76540-1	DF	15	P	Waste Flammable liquids, n.o.s. (ACETONE / METHANOL), 3, UN1993, PGII	D001 F003
DV157217-2	FS-ACD-02	AV68981	DM	55	P	RQ Hazardous waste, liquid, n.o.s. (GLACIAL ACETIC ACID, LEAD), 9, NA3082, PGIII	D008
DV157317-1	FS-LIQ-04	AV76880	DM	20	P	Waste Formaldehyde, solutions, [with not less than 25 percent formaldehyde], 8, UN2209, PGIII	U122
DV157317-2	FS-LIQ-04	AV76880	DM	20	P	Waste Formaldehyde, solutions, [with not less than 25 percent formaldehyde], 8, UN2209, PGIII	U122
DV157321-2	FS-LIQ-02	AV74782	DM	55	P	RQ Environmentally hazardous substances, liquid, n.o.s. (PENTAFLUOROETHANE / OIL), 9, UN3082, PGIII	
DV157667-3	LF-ACD-01	AV69182	DF	55	P	Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / SULFURIC ACID), 8, UN3264, PGII	D002 D006 D009
DV157694-5	LF-ACD-02	AV75285	LB	55	P	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / SULFURIC ACID), 8, UN3264, PGII	D002 D007
DV157694-6	LF-ACD-02	AV75285	LB	55	P	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / SULFURIC ACID), 8, UN3264, PGII	D002 D007
DV157694-12	LF-LIQ-01	AV75286	LB	55	P	Hazardous waste, liquid, n.o.s. (SILVER / HYDROQUINONE), 9, NA3082, PGIII	D011
DV157905-65	FS-ACD-02	AO53508	DF	55	P	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV157905-66	FS-ACD-02	AO53508	DF	55	P	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV157905-67	FS-ACD-02	AO53508	DF	55	P	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV157905-68	FS-ACD-02	AO53508	DF	55	P	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003

DV157905-73	FS-ACD-02	AO53508	DF	55	P	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV157905-74	FS-ACD-02	AO53508	DF	55	P	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV157905-75	FS-ACD-02	AO53508	DF	55	P	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV157905-76	FS-ACD-02	AO53508	DF	55	P	Waste Flammable liquids, corrosive, n.o.s.(ACETONE, HYDROCHLORIC ACID), 3, UN2924, PGII	D001 D002 F003
DV158110-4	LF-ACD-01	AV69681	DM	55	P	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / CHROMIC ACID), 8, UN3264, PGII	D002 D007
DV158110-5	LF-ACD-01	AV69681	DM	55	P	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / CHROMIC ACID), 8, UN3264, PGII	D002 D007
DV158110-6	LF-ACD-01	AV69681	DM	55	P	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / CHROMIC ACID), 8, UN3264, PGII	D002 D007
DV158110-7	LF-ACD-01	AV69681	DM	55	P	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / CHROMIC ACID), 8, UN3264, PGII	D002 D007
DV152846-3	FS-LIQ-04	AV73202	DF	5	DRUMS	NON REGULATED MATERIAL,	
DV152846-4	FS-LIQ-04	AV73202	DF	5	DRUMS	NON REGULATED MATERIAL,	
DV153028-10	LF-NRL-01	AV73361-10	DF	30	DRUMS	Non-Regulated Material (ETHYLENE GLYCOL / SODIUM OXALATE), .	
DV153154-1	LF-NRL-01	AV72868	DM	55	DRUMS	RQ Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV153154-2	LF-NRL-01	AV72868	DM	55	DRUMS	RQ Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV153154-3	LF-NRL-01	AV72868	DM	20	DRUMS	RQ Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV153231-1	RC-OIL-02	AV73441	DM	55	DRUMS	Non-Regulated Material, .,	
DV153370-2	LF-NRL-01	AV69332	DM	55	DRUMS	Non-Regulated Material, .,	
DV153370-3	LF-NRL-01	AV69332	DM	55	DRUMS	Non-Regulated Material, .,	
DV153400-5	RC-GLY-01	AV71849	DM	55	DRUMS	Non-Regulated Material,	
DV153447-1	LF-NRL-01	AV72866	DM	55	DRUMS	RQ Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV153507-4	RC-OIL-04	AV73740	DM	55	DRUMS	Non-Regulated Material	
DV153639-1	FS-CAN-02	AV68387	DM	55	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV153639-2	FS-CAN-02	AV68387	DM	55	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV153747-2	RC-OIL-02-BB	AV74120	GAL	55	DRUMS	Non-Regulated Liquid, .	
DV153979-1	FS-LIQ-02	AV70065	DF	55	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	
DV153979-2	FS-LIQ-02	AV70065	DF	55	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	
DV154121-1	RC-OIL-02	AV74161	DM	55	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV154394-1	LF-NRL-01	AV69021	DF	30	DRUMS	Non-Regulated Material,	
DV154496-3	RC-OIL-02	AV74481	DM	55	DRUMS	RQ Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	
DV154553-3	FS-LIQ-02	AV74445	DM	55	DRUMS	Non-Regulated Material (ETHYLENE GLYCOL), .,	
DV154553-4	FS-LIQ-02	AV74443	DM	55	DRUMS	Non-Regulated Material (HEXYLENE GLYCOL), .,	
DV154553-5	FS-LIQ-02	AV74443	DM	55	DRUMS	Non-Regulated Material (HEXYLENE GLYCOL), .,	
DV154684-1	RC-OIL-02	AV74639	DM	15	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV155276-1	RC-OIL-02	AV75221	DM	55	DRUMS	RQ Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	
DV155360-2	RC-OIL-02	AV75317	DF	5	DRUMS	Waste Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	
DV155478-2	IN-LIQ-02	AV75380	DM	55	DRUMS	RQ Environmentally hazardous substances, liquid, n.o.s. (PENTAFLUOROETHANE / OIL), 9, UN3082, PGIII	
DV155543-2	LF-NRL-01	AV63685	DM	55	DRUMS	Non-Regulated Material,	
DV155647-3	RC-GLY-01	AV75404	DM	55	DRUMS	Non-Regulated Material (USED ANTIFREEZE FOR RECYCLE), .,	
DV155647-4	RC-GLY-01	AV75404	DM	55	DRUMS	Non-Regulated Material (USED ANTIFREEZE FOR RECYCLE), .,	
DV155647-5	RC-GLY-01	AV75404	DF	55	DRUMS	Non-Regulated Material (USED ANTIFREEZE FOR RECYCLE), .	
DV155647-6	RC-GLY-01	AV75404	DF	55	DRUMS	Non-Regulated Material (USED ANTIFREEZE FOR RECYCLE), .	
DV155698-1	RC-OIL-02	AV75609-4	DF	5	DRUMS	Other regulated substances, liquid, n.o.s. (PUMP OIL), 9, NA3082, PGIII	
DV155699-2	RC-OIL-02	AV75605	DM	30	DRUMS	RQ Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	
DV155699-3	RC-OIL-02	AV75605	DM	30	DRUMS	RQ Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	
DV155699-4	RC-OIL-02	AV75605	DM	30	DRUMS	RQ Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	
DV155706-2	IN-LIQ-01	AV71670	DM	5	DRUMS	RQ,Hazardous waste, liquid, n.o.s.(SILVER), 9, NA3082, PGIII	D011
DV155706-3	IN-LIQ-01	AV71670	DM	5	DRUMS	RQ,Hazardous waste, liquid, n.o.s.(SILVER), 9, NA3082, PGIII	D011
DV155788-36	LP-HOC-01	AV75573	DF	15	DRUMS	RQ Environmentally hazardous substances, liquid, n.o.s. (OIL / TRICHLOROFLUOROMETHANE), 9, UN3082, PGIII	
DV155790-6	LF-SLD-03	AV63901	DM	30	DRUMS	Hazardous waste, solid, n.o.s. (FORMAMIDE / GUANIDINE ISOTHIOCYANATE), 9, NA3077, PGIII	
DV155818-1	FS-CAN-02	AV72948	DM	5	DRUMS	OTHER REGULATED SUBSTANCES,LIQUID,N.O.S.(OIL,CHLOROFLUROCARBONS), NA3082, PGIII	
DV155845-1	RC-GLY-01	AV75708	DM	55	DRUMS	NON REGULATED MATERIAL (ANTIFREEZE)	
DV155949-1	RC-OIL-02	AV75760	DM	5	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	

DV155950-1	RC-OIL-02	AV75745	DM	55	DRUMS	RQ Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	
DV155950-2	RC-OIL-02	AV75745	DM	55	DRUMS	RQ Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	
DV155998-7	LP-FUE-02	AV70248	DM	55	DRUMS	RQ Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV156012-4	LF-NRL-01	AV56682	DM	220	DRUMS	Non-Regulated Material (distributor products)	
DV156108-2	RC-GLY-01	AV69922	DM	55	DRUMS	Non-Regulated Liquid, .,	
DV156108-3	RC-GLY-01	AV69922	DM	55	DRUMS	Non-Regulated Liquid, .,	
DV156108-4	RC-GLY-01	AV69922	DM	55	DRUMS	Non-Regulated Liquid, .,	
DV156108-5	RC-OIL-02	AV69921	DM	55	DRUMS	NON-REGULATED MATERIAL,	
DV156132-9	FS-LIQ-02	AV75281	LB	55	DRUMS	RQ Waste Flammable liquids, n.o.s. (BENZENE / PETROLEUM DISTILLATES), 3, UN1993, PGII	D001 D018 D035 F003 F005
DV156208-28	LF-NRL-01	AV72580	DM	55	DRUMS	RQ Non-Regulated Material (4,4' METHYLENE DIPHENYL DIISOCYANATE), .,	
DV156247-16	LF-NRL-01	AV75881	DM	55	DRUMS	Non-Regulated Material (DIETHYLENE GLYCOL BUTYL ETHER / WATER), .,	
DV156248-1	RC-GLY-01	AV75823	DM	55	DRUMS	Non-Regulated Material (USED ANTIFREEZE FOR RECYCLE), .,	
DV156312-1	RC-OIL-02	AV76086	DM	55	DRUMS	Non-Regulated Material (OIL / CHLOROFLUROCARBONS), .	
DV156328-3	FS-LIQ-02	AV65122	DM	55	DRUMS	Non-Regulated Material, .,	
DV156549-1	FS-CAN-02	AV68387	DM	55	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV156556-1	RC-GLY-01	AV73740	DM	55	DRUMS	Non-Regulated Material,	
DV156580-1	RC-OIL-02	AV76288	DM	55	DRUMS	Waste Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	
DV156615-1	FS-LIQ-01	AV68036	DM	55	DRUMS	RQ OTHER REGULATED SUBSTANCES, LIQUID, N.O.S. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV156688-1	RC-OIL-02	AV76365	DM	55	DRUMS	RQ Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV156748-3	LF-NRL-01	AV76065	DM	30	DRUMS	Non-Regulated Material,	
DV156782-1	FS-LIQ-02	AV70065	DF	55	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	
DV156798-2	LF-NRL-01	AV64222	DF	30	DRUMS	Non-Regulated Material (Waterborne Paint)	
DV156801-4	RC-GLY-01	AV70629	DM	55	DRUMS	Non-Regulated Material,	
DV156801-5	RC-OIL-02	AV70630	DM	55	DRUMS	Non-Regulated Material,	
DV156802-2	LF-NRL-01	AV69332	DM	55	DRUMS	Non-Regulated Material, .,	
DV156902-9	FS-LIQ-02	AV67859	DM	55	DRUMS	OTHER REGULATED SUBSTANCES, LIQUID, N.O.S. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV156934-2	FS-LIQ-01	AV57694	DM	55	DRUMS	Non-Regulated Liquid (USED OIL), N/A, N/A, PGN/A	
DV156947-3	LF-NRL-01	AV76361	DM	55	DRUMS	Non-Regulated Material (WATER / POLYACRYLAMIDE POLYMERS), .,	
DV156970-3	RC-GLY-01	AV76226	LB	55	DRUMS	Non-Regulated Material (ANTIFREEZE), .,	
DV156970-4	RC-GLY-01	AV76226	LB	55	DRUMS	Non-Regulated Material (ANTIFREEZE), .,	
DV156970-15	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-16	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-17	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-18	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-19	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-20	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-22	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-23	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-24	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-25	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-26	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-27	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-28	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-29	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-30	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-31	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-32	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-33	RC-OIL-02	AV76257	LB	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV156970-34	RC-OIL-02	AV76257	LB	30	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .	
DV156970-35	RC-OIL-02	AV76257	LB	30	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .	
DV157010-5	FS-LIQ-04	AV65484	DF	55	DRUMS	DOT/ NON REGULATED MATERIAL (WATER BASED ACRYLIC PAINT)	

DV157032-1	FS-CAN-02	AV68296	DM	30	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV157047-25	RC-OIL-02	AV76603	DM	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV157047-26	RC-OIL-02	AV76603	DM	55	DRUMS	Non-Regulated Material (USED OIL FOR RECYCLE), .,	
DV157108-1	RC-OIL-02	AV71785	DM	55	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUROCARBONS), 9, NA3082, PGIII	
DV157122-2	RC-GLY-01	AV76744	DM	55	DRUMS	Non-Regulated Material,	
DV157168-5	LF-NRL-01	AV72580	DM	55	DRUMS	RQ Non-Regulated Material (4,4' METHYLENE DIPHENYL DIISOCYANATE), .,	
DV157170-1	LF-NRL-01	AV71101	DM	55	DRUMS	Non-Regulated Material (POLYOL / PENTAFLUOROPROPANE), .,	
DV157170-2	LF-NRL-01	AV71101	DF	55	DRUMS	Non-Regulated Material (POLYOL / PENTAFLUOROPROPANE), ,	
DV157210-1	RC-OIL-02	AV76591	DM	55	DRUMS	Non-Regulated Material (Hydraulic fluid), .,	
DV157210-2	RC-GLY-01	AV76780	DM	55	DRUMS	Non-Regulated Material, .,	
DV157487-1	LF-NRS-01	AV72521	DM	55	DRUMS	NON-REGULATED MATERIAL,	
DV157488-1	RC-GLY-01	AV77022	DM	55	DRUMS	NON HAZARDOUS NON REGULATED MATERIAL,	
DV157488-2	RC-GLY-01	AV77022	DM	55	DRUMS	NON HAZARDOUS NON REGULATED MATERIAL,	
DV157488-3	RC-OIL-02	AV77023	DM	55	DRUMS	NON-REGULATED MATERIAL,	
DV157511-2	RC-GLY-01	AV66393	DM	55	DRUMS	NON REGULATED MATERIAL,	
DV157511-3	RC-GLY-01	AV66393	DM	55	DRUMS	NON REGULATED MATERIAL,	
DV157593-5	LF-NRS-01	AV77091	DM	55	DRUMS	NON-REGULATED MATERIAL,	
DV157640-13	RC-OIL-02	AV76965	DM	55	DRUMS	Non-Regulated Liquid (VACUUM TOWER GAS OIL), .,	
DV157640-14	RC-OIL-02	AV76965	DM	55	DRUMS	Non-Regulated Liquid (VACUUM TOWER GAS OIL), .,	
DV157640-15	RC-OIL-02	AV76965	DM	55	DRUMS	Non-Regulated Liquid (VACUUM TOWER GAS OIL), .,	
DV157640-16	RC-OIL-02	AV76965	DM	55	DRUMS	Non-Regulated Liquid (VACUUM TOWER GAS OIL), .,	
DV157640-17	RC-OIL-02	AV76965	DM	55	DRUMS	Non-Regulated Liquid (VACUUM TOWER GAS OIL), .,	
DV157640-18	RC-OIL-02	AV76964	DM	55	DRUMS	NON-REGULATED LIQUID,	
DV157640-19	RC-OIL-02	AV76964	DM	55	DRUMS	NON-REGULATED LIQUID,	
DV157728-1	FS-LIQ-04	AV66263	DM	55	DRUMS	NON REGULATED WASTE,	
DV157812-5	LF-NRL-01	AV70740	DF	5	DRUMS	Environmentally hazardous substances, liquid, n.o.s. (FORMALIN), 9, UN3082, PGIII	
DV157853-3	LF-NRS-01	AV76742	DM	55	DRUMS	Non-Regulated Material (PAPER / METRAMID RESIN), .,	
DV157853-4	LP-NRG-02	AV77461	DF	55	DRUMS	NON-REGULATED MATERIAL	
DV157935-1	FS-LIQ-02	AV67553	DM	55	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, UN3082, PGIII	
DV157935-2	FS-LIQ-02	AV67553	DM	55	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, UN3082, PGIII	
DV158175-1	MR-MER-02	AV77283	DM	55	DRUMS	Hazardous waste, solid, n.o.s.(Mercury), 9, NA3077, PGIII	D009 U151
DV158248-1	LF-NRL-01	AV77642	DM	55	DRUMS	Non-Regulated Material (GROUNDWATER INVESTIGATION-DERIVED WASTE), .,	
DV158347-2	FS-NHS-02	AV62216	DM	55	DRUMS	NON RCRA/DOT REGULATED WASTE,	
DV158347-3	LF-NRL-01	AV77724	DF	55	DRUMS	Non-Regulated Material (Waterborne Paint),	
DV158356-1	LF-NRL-02	AV77725	DM	15	DRUMS	NON DOT REGULATED MATERIAL,	
DV158407-60	FS-SLG-01	AVAG8595	DM	55	DRUMS	RQ Hazardous waste solid, n.o.s.(CHLOROFORM, CADMIUM CHLORIDE), 9, NA3077, PGIII	D006 D022 F003 F005
DV158407-66	DR-EMT-01	AV58005	DM	55	DRUMS	Non-Regulated Material,	
DV158436-1	LF-NRS-01	AV77622	DM	55	DRUMS	NON-REGULATED MATERIAL,	
DV158436-2	LF-NRL-01	AV77623	DM	55	DRUMS	NON-REGULATED MATERIAL (WELL WATER),	
DV158449-1	FS-LIQ-02	AV69564	DM	55	DRUMS	RQ Non-Regulated Material (POLYETHER POLYOL, 1,4 BUTANEDIOL), .,	
DV158449-2	FS-LIQ-02	AV69564	DM	55	DRUMS	RQ Non-Regulated Material (POLYETHER POLYOL, 1,4 BUTANEDIOL), .,	
DV158449-3	FS-LIQ-02	AV69564	DM	55	DRUMS	RQ Non-Regulated Material (POLYETHER POLYOL, 1,4 BUTANEDIOL), .,	
DV158449-4	LF-ISO-01	AV69565	DM	55	DRUMS	RQ Non-Regulated Material (4,4' METHYLENE DIPHENYL DIISOCYANATE), .,	
DV158449-5	LF-ISO-01	AV69565	DM	55	DRUMS	RQ Non-Regulated Material (4,4' METHYLENE DIPHENYL DIISOCYANATE), .,	
DV158550-3	LF-NRL-01	AV77659	DM	15	DRUMS	NON-REGULATED MATERIAL (LATEX PAINT),	
DV158552-1	FS-LIQ-04	AV77657	DF	20	DRUMS	Hazardous waste, liquid, n.o.s. (Silver,Hydroquinone), 9, NA3082, PGIII	D011
DV158553-2	LF-NRL-01	AV77656	DM	55	DRUMS	NON-REGULATED MATERIAL (LATEX PAINT),	
DV158558-2	LF-NRL-01	AV69265	DF	55	DRUMS	Non-Regulated Material (LATEX PAINT), .,	
DV158629-2	LP-ACD-02	AV77884-2	DF	30	DRUMS	Waste Flammable liquids, corrosive, n.o.s.(Methanol,Phosphoric Acid), 3(8), UN2924, PGII	D001 D002
DV158629-3	LP-INC-01	AV77884-3	DF	5	DRUMS	Waste Toxic, liquids, organic, n.o.s.(Methylene Chloride,Arsenic), 6.1, UN2810, PGII	D004 F002
DV158629-4	LP-INC-02	AV77884-4	DF	5	DRUMS	Waste Toxic solids, organic, n.o.s.(Chloroform,Phenol), 6.1, UN2811, PGII	D006 D022

DV158652-2	NH-SLD-02	AV63525	DM	55	DRUMS	Non-Regulated Material (SAND BLAST MEDIA), .,	
DV158652-3	NH-SLD-02	AV63525	DM	55	DRUMS	Non-Regulated Material (SAND BLAST MEDIA), .,	
DV158652-4	NH-SLD-02	AV63525	DM	55	DRUMS	Non-Regulated Material (SAND BLAST MEDIA), .,	
DV158652-5	NH-SLD-02	AV63525	DM	55	DRUMS	Non-Regulated Material (SAND BLAST MEDIA), .,	
DV158652-6	NH-SLD-02	AV63525	DM	55	DRUMS	Non-Regulated Material (SAND BLAST MEDIA), .,	
DV158652-7	NH-SLD-02	AV63525	DM	55	DRUMS	Non-Regulated Material (SAND BLAST MEDIA), .,	
DV158652-8	NH-SLD-02	AV63525	DM	55	DRUMS	Non-Regulated Material (SAND BLAST MEDIA), .,	
DV158652-9	NH-SLD-02	AV63525	DM	55	DRUMS	Non-Regulated Material (SAND BLAST MEDIA), .,	
DV158652-10	NH-SLD-02	AV63525	DM	55	DRUMS	Non-Regulated Material (SAND BLAST MEDIA), .,	
DV158652-11	NH-SLD-02	AV63525	DM	55	DRUMS	Non-Regulated Material (SAND BLAST MEDIA), .,	
DV158652-12	NH-SLD-02	AV63525	DM	55	DRUMS	Non-Regulated Material (SAND BLAST MEDIA), .,	
DV158652-13	NH-SLD-02	AV63525	DM	55	DRUMS	Non-Regulated Material (SAND BLAST MEDIA), .,	
DV158652-14	NH-SLD-02	AV63525	DM	55	DRUMS	Non-Regulated Material (SAND BLAST MEDIA), .,	
DV158667-7	IN-ASL-01	AV65251	LB	55	DRUMS	RQ Waste Aerosols, [flammable, (each not exceeding 1 L capacity)], 2.1, UN1950,	D001
DV158667-9	LF-ACD-02	AV65248	DM	55	DRUMS	RQ Waste Corrosive liquid, acidic, inorganic, n.o.s. (HYDROCHLORIC ACID / SULFURIC ACID), 8, UN3264, PGII	D002
DV158667-10	LF-BAS-01	AV65299	DF	55	DRUMS	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (SODIUM HYDROXIDE / SODIUM METASILICATE), 8, UN3266, PGII	D002
DV158667-11	LF-BAS-01	AV65299	DF	55	DRUMS	RQ Waste Corrosive liquid, basic, inorganic, n.o.s. (SODIUM HYDROXIDE / SODIUM METASILICATE), 8, UN3266, PGII	D002
DV158667-13	LP-PES-01	AV65283	DM	55	DRUMS	RQ Waste Pesticides, liquid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2902, PGII	D004 D016 U066 U114 U240 U279
DV158667-14	LP-PES-01	AV65283	DM	55	DRUMS	RQ Waste Pesticides, liquid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2902, PGII	D004 D016 U066 U114 U240 U279
DV158667-15	LP-PES-01	AV65283	DM	55	DRUMS	RQ Waste Pesticides, liquid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2902, PGII	D004 D016 U066 U114 U240 U279
DV158667-20	LP-PES-02	AV65286	DM	55	DRUMS	RQ Waste Pesticides, solid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2588, PGII	D004 D008 D013 D014 D015 D016 D020 U036 U061 U066
DV158667-21	LP-PES-02	AV65286	DM	55	DRUMS	RQ Waste Pesticides, solid, toxic, n.o.s. (CARBARYL, 2,4 D SALTS & ESTERS), 6.1, UN2588, PGII	D004 D008 D013 D014 D015 D016 D020 U036 U061 U066
DV158667-23	LF-OXI-02	AV65263	DF	30	DRUMS	Waste Oxidizing solid, n.o.s. (CALCIUM HYPOCHLORITE / POTASSIUM NITRATE), 5.1, UN1479, PGII	D001
DV158667-24	MR-MER-05	AV65259	DM	5	DRUMS	RQ Hazardous waste, solid, n.o.s. (MERCURY / GLASS), 9, NA3077, PGIII	D009
DV158667-25	LF-ACD-01	AV65291	DF	5	DRUMS	RQ Corrosive solid, acidic, inorganic, n.o.s. (SODIUM BISULFATE / SULFAMIC ACID), 8, UN3260, PGII	
DV158667-26	LF-BAS-03	AV65255	DF	30	DRUMS	RQ Corrosive solid, basic, inorganic, n.o.s. (SODIUM HYDROXIDE / SODIUM METASILICATE), 8, UN3262, PGII	
DV158668-11	LF-BAS-03	AV65254	DF	30	DRUMS	RQ Corrosive solid, basic, inorganic, n.o.s. (SODIUM HYDROXIDE / SODIUM METASILICATE), 8, UN3262, PGII	
DV158668-12	LF-SLD-03	AV67379	DM	55	DRUMS	NON REGULATED MATERIAL (Ammonium Phosphate,Potash)	
DV158712-1	FS-LIQ-02	AV70065	DF	55	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	
DV158712-2	FS-LIQ-02	AV70065	DF	55	DRUMS	Other regulated substances, liquid, n.o.s. (OIL / CHLOROFLUOROCARBONS), 9, NA3082, PGIII	

A — FDID: 09204 * | State: GA * | Incident Date (MM DD YYYY): 08 14 2013 * | Station: 9-3 | Incident Number: 13-0001972 * | Exposure: 000 * | ☐ Delete ☐ Change ☐ No Activity | NFIRS -1 Basic

B Location*

☐ Check this box to Indicate that the address for this incident is provided on the Wildland Fire Module In Section B "Alternative Location Specification". Use only for Wildland fires.

Census Tract: 2959 -

☒ Street address
☐ Intersection
☐ In front of
☐ Rear of
☐ Adjacent to
☐ Directions

Number/Milepost: 1612 | Prefix: | Street or Highway: James P. Rodgers | Street Type: CIR | Suffix:

Apt./Suite/Room: | City: Valdosta | State: GA | Zip Code: 31601 -

Cross street or directions, as applicable:

C Incident Type *

111 Building fire
Incident Type

D Aid Given or Received*

1 ☒ Mutual aid received
2 ☐ Automatic aid recv.
3 ☐ Mutual aid given
4 ☐ Automatic aid given
5 ☐ Other aid given
N ☐ None

Their FDID: 09201 | Their State:
Their Incident Number:

E1 Date & Times — Midnight is 0000

Check boxes if dates are the same as Alarm Date.

	Month	Day	Year	Hr Min Sec
Alarm * (ALARM always required)	08	14	2013	14:22:00
☒ Arrival * (ARRIVAL required, unless canceled or did not arrive)	08	14	2013	14:28:00
☐ Controlled (CONTROLLED Optional, Except for wildland fires)				
☒ Last Unit Cleared (LAST UNIT CLEARED, required except for wildland fires)	08	14	2013	20:01:00

E2 Shift & Alarms

Local Option

Shift or Platoon: A | Alarms: 02 | District: 3

E3 Special Studies

Local Option

Special Study ID#: | Special Study Value:

F Actions Taken*

11 Extinguishment by fire service personnel
Primary Action Taken (1)

12 Salvage & overhaul
Additional Action Taken (2)

86 Investigate
Additional Action Taken (3)

G1 Resources*

☒ Check this box and skip this section if an Apparatus or Personnel form is used.

	Apparatus	Personnel
Suppression	0016	0071
EMS		
Other		

☐ Check box if resource counts include aid received resources.

G2 Estimated Dollar Losses & Values

LOSSES: Required for all fires if known. Optional for non fires.

		None
Property $	000,000	☐
Contents $	000,000	☐

PRE-INCIDENT VALUE: Optional

Property $	000,000	☐
Contents $	000,000	☐

Completed Modules

☒ Fire-2
☒ Structure-3
☒ Civil Fire Cas.-4
☐ Fire Serv. Cas.-5
☐ EMS-6
☒ HazMat-7
☐ Wildland Fire-8
☒ Apparatus-9
☒ Personnel-10
☐ Arson-11

H1 Casualties* ☐ None

	Deaths	Injuries
Fire Service		
Civilian		003

H2 Detector

Required for Confined Fires.

1 ☐ Detector alerted occupants
2 ☐ Detector did not alert them
U ☒ Unknown

H3 Hazardous Materials Release

N ☐ None
1 ☐ Natural Gas: slow leak, no evaluation or HazMat actions
2 ☐ Propane gas: <21 lb. tank (as in home BBQ grill)
3 ☐ Gasoline: vehicle fuel tank or portable container
4 ☐ Kerosene: fuel burning equipment or portable storage
5 ☐ Diesel fuel/fuel oil: vehicle fuel tank or portable
6 ☐ Household solvents: home/office spill, cleanup only
7 ☐ Motor oil: from engine or portable container
8 ☐ Paint: from paint cans totaling < 55 gallons
0 ☒ Other: Special HazMat actions required or spill > 55gal., Please complete the HazMat form

I Mixed Use Property

NN ☐ Not Mixed
10 ☐ Assembly use
20 ☐ Education use
33 ☐ Medical use
40 ☐ Residential use
51 ☐ Row of stores
53 ☐ Enclosed mall
58 ☐ Bus. & Residential
59 ☐ Office use
60 ☒ Industrial use
63 ☐ Military use
65 ☐ Farm use
00 ☐ Other mixed use

J Property Use* — Structures

131 ☐ Church, place of worship
161 ☐ Restaurant or cafeteria
162 ☐ Bar/Tavern or nightclub
213 ☐ Elementary school or kindergarten
215 ☐ High school or junior high
241 ☐ College, adult education
311 ☐ Care facility for the aged
331 ☐ Hospital
341 ☐ Clinic, clinic type infirmary
342 ☐ Doctor/dentist office
361 ☐ Prison or jail, not juvenile
419 ☐ 1-or 2-family dwelling
429 ☐ Multi-family dwelling
439 ☐ Rooming/boarding house
449 ☐ Commercial hotel or motel
459 ☐ Residential, board and care
464 ☐ Dormitory/barracks
519 ☐ Food and beverage sales
539 ☐ Household goods, sales, repairs
579 ☐ Motor vehicle/boat sales/repair
571 ☐ Gas or service station
599 ☐ Business office
615 ☐ Electric generating plant
629 ☐ Laboratory/science lab
700 ☒ Manufacturing plant
819 ☐ Livestock/poultry storage (barn)
882 ☐ Non-residential parking garage
891 ☐ Warehouse

Outside

124 ☐ Playground or park
655 ☐ Crops or orchard
669 ☐ Forest (timberland)
807 ☐ Outdoor storage area
919 ☐ Dump or sanitary landfill
931 ☐ Open land or field
936 ☐ Vacant lot
938 ☐ Graded/care for plot of land
946 ☐ Lake, river, stream
951 ☐ Railroad right of way
960 ☐ Other street
961 ☐ Highway/divided highway
962 ☐ Residential street/driveway
981 ☐ Construction site
984 ☐ Industrial plant yard

Lookup and enter a Property Use code only if you have NOT checked a Property Use box:

Property Use: 700

Manufacturing, processing

NFIRS-1 Revision 03/11/99

K1 Person/Entity Involved
Local Option

PERMA FIX
Business name (if applicable)

Area Code - Phone Number

☐ Check This Box if same address as incident location. Then skip the three duplicate address lines.

MR — Mr., Ms., Mrs.
Vince — First Name
MI
Phillips — Last Name
Suffix

Number
Prefix
Street or Highway
Street Type
Suffix

Post Office Box
Apt./Suite/Room
Valdosta — City

GA — State
31601 — Zip Code

☐ **More people involved? Check this box and attach Supplemental Forms (NFIRS-1S) as necessary**

K2 Owner
Local Option

☐ Same as person involved? Then check this box and skip The rest of this section.

Business name (if Applicable)

Area Code - Phone Number

☐ Check this box if same address as incident location. Then skip the three duplicate address lines.

Mr., Ms., Mrs.
First Name
MI
Last Name
Suffix

Number
Prefix
Street or Highway
Street Type
Suffix

Post Office Box
Apt./Suite/Room
City

State
Zip Code

L Remarks
Local Option

While training at the Valdosta Regional Training Center, Valdosta Fire Department units were dispatched to 1612 James P. Rogers Circle for a structure fire at approximately 1415. I (Capt. Ronald Skrine) responded in command car 200 immediately. I also told personnel who were on shift and attending the class to respond. While enroute to the scene we were updated via radio that there had been an explosion and multiple injuries. Unit 402(Lt. Derek Willis) notified us via radio that there was a large amount of flammable liquids involved. I immediately contacted dispatch and called for a second alarm. Once I arrived on the scene I observed one man down at the intersection of James P. Rogers Drive and James P. Rogers Circle. They were already being attended to by personnel on scene and EMS was on their way. I drove down James P. Rogers Circle about mid-way where there was a drive on the side of GA Petroleum and positioned 200 there and assumed command. At this time I saw heavy black smoke and flames coming from the structure. Captain Kenneth Gallagher was appointed OPS and Captain Carl Smith was appointed Safety. Chief Rice, Chief Catlett, and Chief McMillan were all contacted and notified of the incident. It was decided that we would proceed with a defensive attack and started to call in additional resources to include off-duty personnel, LCFR, Moody Air Force Base, VPD, LCSO and GA State Patrol. Engine One established a water source from the hydrant just outside the front gate of the business. Engine Three established a water source from the hydrant at James P. Rogers Circle and James P. Rogers Dr. Captain John Wisenbaker came to assist me with the command post at 200 and checking in personnel as they arrived on scene. Lt. Jeff Talley was assigned to staging. Lt. Michael Walden & Lt. Garrick Burton were assigned to Rehab/Medical. Dispatch was also asked to get GA Power to the scene to cut power to the facility. Unit 402(Lt. Derek Willis) was assigned to the Valdosta Police Department Command Unit where unified command was set up. Lt. Willis served as the Valdosta Fire Department representative. Mr. Lason Kirkland, a Perma Fix representative was asked to assist with identifying some of the chemicals that were burning. It was determined that we needed to evacuate everyone within a 1 mile radius of the fire. This was done by VPD, LCSO, and GSP officers. We were notified of a large natural gas line that ran between the Perma Fix Facility and GA Petroleum. AP1 Crew was assigned to shut the natural gas line down which they were able to locate with the help of an employee and shut down. Lines were stretched from E1 to establish an unmanned monitor on the A side of the structure. E3 stretched lines to establish an unmanned monitor along with hand lines on the B side of the structure to stop the fire spread and cool the tanks closest to the fire on the GA Petroleum property. Chief Catlett notified us that he was on his way and that VFD personnel were being called in to assist, also, mutual aid had been requested from Moody Air Force Base and Lowndes County Fire & Rescue. After several more explosions I instructed Engine One to pull back and re-position. I was notified by Unit 401(Lt. Tooley) that we may be able to get to the fire from the C side of the structure also that he thought that part of the fire was possible being fed by a gas line. Once Chief Catlett arrived he and Ap1 and E6 were assigned to try and establish a fire attack on the C side of the structure. Chief

L Authorization

3201 — Officer in charge ID
Skrine, Ronald — Signature
CP — Position of Tank
Assignment
08 — Month
15 — Day
2013 — Year

Check Box if same as Officer in charge

X 3201 — Member making report ID
Skrine, Ronald — Signature
CP — Position of Tank
Assignment
08 — Month
15 — Day
2013 — Year

FDID *	State *	MM Incident Date *	DD Incident Date *	YYYY Incident Date *	Station	Incident Number *	Exposure *	Complete Narrative
09204	GA	8	14	2013	9-3	13-0001972	000	

Narrative:

While training at the Valdosta Regional Training Center, Valdosta Fire Department units were dispatched to 1612 James P. Rogers Circle for a structure fire at approximately 1415. I (Capt. Ronald Skrine) responded in command car 200 immediately. I also told personnel who were on shift and attending the class to respond. While enroute to the scene we were updated via radio that there had been an explosion and multiple injuries. Unit 402(Lt. Derek Willis) notified us via radio that there was a large amount of flammable liquids involved. I immediately contacted dispatch and called for a second alarm. Once I arrived on the scene I observed one man down at the intersection of James P. Rogers Drive and James P. Rogers Circle. They were already being attended to by personnel on scene and EMS was on their way. I drove down James P. Rogers Circle about mid-way where there was a drive on the side of GA Petroleum and positioned 200 there and assumed command. At this time I saw heavy black smoke and flames coming from the structure. Captain Kenneth Gallagher was appointed OPS and Captain Carl Smith was appointed Safety. Chief Rice, Chief Catlett, and Chief McMillan were all contacted and notified of the incident. It was decided that we would proceed with a defensive attack and started to call in additional resources to include off-duty personnel, LCFR, Moody Air Force Base, VPD, LCSO and GA State Patrol. Engine One established a water source from the hydrant just outside the front gate of the business. Engine Three established a water source from the hydrant at James P. Rogers Circle and James P. Rogers Dr. Captain John Wisenbaker came to assist me with the command post at 200 and checking in personnel as they arrived on scene. Lt. Jeff Talley was assigned to staging. Lt. Michael Walden & Lt. Garrick Burton were assigned to Rehab/Medical. Dispatch was also asked to get GA Power to the scene to cut power to the facility. Unit 402(Lt. Derek Willis) was assigned to the Valdosta Police Department Command Unit where unified command was set up. Lt. Willis served as the Valdosta Fire Department representative. Mr. Lason Kirkland, a Perma Fix representative was asked to assist with identifying some of the chemicals that were burning. It was determined that we needed to evacuate everyone within a 1 mile radius of the fire. This was done by VPD, LCSO, and GSP officers. We were notified of a large natural gas line that ran between the Perma Fix Facility and GA Petroleum. AP1 Crew was assigned to shut the natural gas line down which they were able to locate with the help of an employee and shut down. Lines were stretched from E1 to establish an unmanned monitor on the A side of the structure. E3 stretched lines to establish an unmanned monitor along with hand lines on the B side of the structure to stop the fire spread and cool the tanks closest to the fire on the GA Petroleum property. Chief Catlett notified us that he was on his way and that VFD personnel were being called in to assist, also, mutual aid had been requested from Moody Air Force Base and Lowndes County Fire & Rescue. After several more explosions I instructed Engine One to pull back and re-position. I was notified by Unit 401(Lt. Tooley) that we may be able to get to the fire from the C side of the structure also that he thought that part of the fire was possible being fed by a gas line. Once Chief Catlett arrived he and Ap1 and E6 were assigned to try and establish a fire attack on the C side of the structure. Chief McMillan arrived and was briefed at the VFD command then went to assist with Operations on the fireground. Staging was set up by Lt. Jeff Talley to handle all incoming resources out on James P. Rogers Dr. Rehab was set up on James P. Rogers Circle by Sgt. Chris Feuerstien on James P. Rogers Circle inside the gate of Ryder Truck Rental. AP1 was able to find a good vantage point behind Perma Fix between 1549 & 1551 M.E. Thompson Dr. AP1 was set up with the assistance of E6 crew and established fire attack on the C side of the Structure. I was notified that we also had an attack line stretched across the railroad tracks on the C side of the structure. I then asked dispatch to notify the Railroad Company to stop all train activity on that track. We were notified by dispatch that a storm front was coming in and headed straight for us. We continued to fight the fire making adjustments where needed. The storm eventually came in with moderate winds and heavy rain. The smoke column from the fire came down almost like a tree directly on top of all of us and straight up the street in front of the structure. The storm did not last long and only cooled the atmosphere a bit to allow us to work a little longer. Once we were able to get the fire controlled enough to get a bit closer we started to

FDID *	State *	MM Incident Date *	DD Incident Date *	YYYY Incident Date *	Station	Incident Number *	Exposure *	Complete Narrative
09204	GA	8	14	2013	9-3	13-0001972	000	

A | 09204 (FDID *) | GA (State *) | MM 08 / DD 14 / YYYY 2013 (Incident Date *) | 9-3 (Station) | 13-0001972 (Incident Number *) | 000 (Exposure *) | ☐ Delete ☐ Change ☐ No Activity | NFIRS -2 Fire

B Property Details

B1 [ ] ☒ Not Residential
Estimated Number of residential living units in building of origin whether or not all units became involved

B2 [001] ☐ Buildings not involved
Number of buildings involved

B3 [ ] ☒ None
Acres burned (outside fires) ☐ Less than one acre

C On-Site Materials or Products ☐ None

Complete if there were any significant amounts of commercial, industrial, energy or agricultural products or materials on the Property, whether or not they became involved

Enter up to three codes. Check one or more boxes for each code entered.

500	Flammables, chemicals, plastics, other	1 ☒ Bulk storage or warehousing 2 ☐ Processing or manufacturing 3 ☐ Packaged goods for sale 4 ☐ Repair or service
On-site material (1)		
510	Flammables, combustible liquids, other	1 ☐ Bulk storage or warehousing 2 ☒ Processing or manufacturing 3 ☐ Packaged goods for sale 4 ☐ Repair or service
On-site material (2)		
512	Flammable liquid, hot gasoline	1 ☐ Bulk storage or warehousing 2 ☐ Processing or manufacturing 3 ☐ Packaged goods for sale 4 ☒ Repair or service
On-site material (3)		

D Ignition

D1 90 | Outside area, Other
Area of fire origin *

D2 UU | Undetermined
Heat source *

D3 UU | Undetermined
Item first ignited * 1 ☐ Check Box if fire spread was confined to object of origin

D4 UU | Undetermined
Type of material first ignited — Required only if item first ignited code is 00 or <70

E1 Cause of Ignition

☐ Check box if this is an exposure report. Skip to section G

1 ☐ Intentional
2 ☐ Unintentional
3 ☐ Failure of equipment or heat source
4 ☐ Act of nature
5 ☒ Cause under investigation
U ☐ Cause undetermined after investigation

E2 Factors Contributing To Ignition

☒ None

UU | Undetermined
Factor Contributing To Ignition (1)

[ ] [ ]
Factor Contributing To Ignition (2)

E3 Human Factors Contributing To Ignition

Check all applicable boxes

1 ☒ Asleep ☒ None
2 ☐ Possibly impaired by alcohol or drugs
3 ☐ Unattended person
4 ☐ Possibly mental disabled
5 ☐ Physically Disabled
6 ☐ Multiple persons involved
7 ☐ Age was a factor

Estimated age of person envolved [ ]

1 ☐ Male 2 ☐ Female

F1 Equipment Involved In Ignition

☐ None If Equipment was not involved, Skip to Section G

[ ] [ ]
Equipment Involved

Brand
Model
Serial #
Year

F2 Equipment Power

[ ] [ ]
Equipment Power Source

F3 Equipment Portability

1 ☐ Portable
2 ☐ Stationary

Portable equipment normally can be moved by one person, is designed to be use in multiple locations, and requires no tools to install.

G Fire Suppression Factors

Enter up to three codes. ☐ None

300 | On-site materials, other
Fire suppression factor (1)

[ ] [ ]
Fire suppression factor (2)

[ ] [ ]
Fire suppression factor (3)

H1 Mobile Property Involved

☐ None

1 ☐ Not involved in ignition, but burned
2 ☐ Involved in ignition, but did not burn
3 ☐ Involved in ignition and burned

H2 Mobile Property Type & Make

[ ] [ ]
Mobile property type

[ ] [ ]
Mobile property make

Moblie property model — Year

License Plate Number — State — VIN Number

Local Use

☐ Pre-Fire Plan Available
Some of the information presented in this report may be based upon reports from other Agencies

☐ Arson report attached
☐ Police report attached
☐ Coroner report attached
☐ Other reports attached

NFIRS-2 Revision 01/19/99

I1 Structure Type *
If Fire was In enclosed building or a portable/mobile structure complete the rest of this form

1 ☐ Enclosed Building
2 ☐ Portable/mobile structure
3 ☒ Open structure
4 ☐ Air supported structure
5 ☐ Tent
6 ☐ Open platform (e.g. piers)
7 ☐ Underground structure (work areas)
8 ☐ Connective structure (e.g. fences)
0 ☐ Other type of structure

I2 Building Status *

1 ☐ Under construction
2 ☒ Occupied & operating
3 ☐ Idle, not routinely used
4 ☐ Under major renovation
5 ☐ Vacant and secured
6 ☐ Vacant and unsecured
7 ☐ Being demolished
0 ☐ Other
U ☐ Undetermined

I3 Building * Height
Count the ROOF as part of the highest story

[ ] Total number of stories at or above grade

[ ] Total number of stories below grade

I4 Main Floor Size*

NFIRS-3 Structure Fire

[ ] , [006] , [100]
Total square feet

OR

[ ] , [ ] BY [ ] , [ ]
Lenght in feet Width in feet

J1 Fire Origin *

[ ] ☐ Below Grade
Story of fire origin

J2 Fire Spread *

1 ☐ Confined to object of origin
2 ☐ Confined to room of origin
3 ☐ Confined to floor of origin
4 ☒ Confined to building of origin
5 ☐ Beyond building of origin

J3 Number of Stories Damaged By Flame
Count the ROOF as part of the highest story

[ ] Number of stories w/ minor damage (1 to 24% flame damage)

[ ] Number of stories w/ significant damage (25 to 49% flame damage)

[ ] Number of stories w/ heavy damage (50 to 74% flame damage)

[001] Number of stories w/ extreme damage (75 to 100% flame damage)

K Material Contributing Most To Flame Spread

☐ Check if no flame spread OR same as material first ignited OR unable to determine — Skip To Section L

K1 [99] [Multiple items first ignited
Item contributing most to flame spread

K2 [20] [Flammable or combustible liqu
Type of material contributing most of flame spread — Required only if item contributing code is 00 or<70

L1 Presence of Detectors *
(In area of the fire)

N ☐ None Present — Skip to section M
1 ☐ Present
U ☒ Undetermined

L2 Detector Type

1 ☐ Smoke
2 ☐ Heat
3 ☐ Combination smoke - heat
4 ☐ Sprinkler, water flow detection
5 ☐ More than 1 type present
0 ☐ Other _____
U ☐ Undetermined

L3 Detector Power Supply

1 ☐ Battery only
2 ☐ Hardwire only
3 ☐ Plug in
4 ☐ Hardwire with battery
5 ☐ Plug in with battery
6 ☐ Mechanical
7 ☐ Multple detectors & power supplies
0 ☐ Other _____
U ☒ Undetermined

L4 Detector Operation

1 ☐ Fire too small to activate
2 ☐ Operated (Complete Section L5)
3 ☐ Failed to Operate (Complete Section L6)
U ☒ Undetermined

L5 Detector Effectiveness
Required if detector operated

1 ☐ Alerted Occupants, occupants responded
2 ☐ Occupants failed to respond
3 ☐ There were no occupants
4 ☐ Failed to alert occupants
U ☐ Undetermined

L6 Detector Failure Reason
Required if detector failed to operate

1 ☐ Power failure, shutoff or disconnect
2 ☐ Improper installation or placement
3 ☐ Defective
4 ☐ Lack of maintenance, includes cleaning
5 ☐ Battery missing or disconnected
6 ☐ Battery discharged or dead
0 ☐ Other _____
U ☐ Undetermined

M1 Presence of Automatic Extinguishment System *

N ☒ None Present
1 ☐ Present — Complete rest of Section M

M2 Type of Automatic Extinguishment System *
Required if fire was within designed range of AES

1 ☐ Wet pipe sprinkler
2 ☐ Dry pipe sprinkler
3 ☐ Other sprinkler system
4 ☐ Dry chemical system
5 ☐ Foam system
6 ☐ Halogen type system
7 ☐ Carbon dioxide (CO_2) system
0 ☐ Other special hazard system
U ☐ Undetermined

M3 Automatic Extinguishment System Operation
Required if fire was within designed range

1 ☐ Operated & effective (Go to M4)
2 ☐ Operated & not effective (M4)
3 ☐ Fire too small to activate
4 ☐ Failed to operate (Go to M5)
0 ☐ Other
U ☐ Undetermined

M4 Number of Sprinkler Heads Operating
Required if system operated

[ ] Number of sprinkler heads operating

M5 Automatic Extinguishment System Failure Reason
Required if system failed

1 ☐ System shut off
2 ☐ Not enough agent discharged
3 ☐ Agent discharged but did not reach fire
4 ☐ Wrong type of system
5 ☐ Fire not in area protected
6 ☐ System components damaged
7 ☐ Lack of maintenance
8 ☐ Manual Intervention
0 ☐ Other _____
U ☐ Undetermined

NFIRS-3 Revision 01/19/99

A | FDID * 09204 | State * GA | Incident Date * MM 8 DD 14 YYYY 2013 | Station 9-3 | Incident Number * 13-00019720000 | Exposure 0000 | Haz No * | ☐ Delete ☐ Change | NFIRS - 7 HazMat

B HazMat ID

UN Number | DOT Hazard Classification | CAS Registration Number | Chemical * Name

C_1 Container Type

Container Type

More hazardous Materials? Use additional sheets.

C_2 Estimated Container Capacity

Capacity: by volume or Weight

C_3 Units: Capacity Check one box

VOLUME		WEIGHT	
11	☐ Ounces	21	☐ Ounces
12	☐ Gallons	22	☐ Pounds
13	☐ Barrels: 42 gal.	23	☐ Grams
14	☐ Liters	24	☐ Kilograms
15	☐ Cubic feet		
16	☐ Cubic meters		

D_1 Estimated Amount Released

Amount released: by Volume or weight

D_2 Units: Released Check one box

VOLUME		WEIGHT	
11	☐ Ounces	21	☐ Ounces
12	☐ Gallons	22	☐ Pounds
13	☐ Barrels: 42 gal.	23	☐ Grams
14	☐ Liters	24	☐ Kilograms
15	☐ Cubic feet		
16	☐ Cubic meters		

E_1 Physical State When Released

1 ☐ Solid
2 ☐ Liquid
3 ☐ Gas
U ☐ Undetermined

E_2 Released Into

Released into

Complete the remainder of this form only for the first hazardous material involved in this incident.

F_1 Released From:

Check all applicable boxes

☐ Below grade
1 ☒ Inside/on structure
1 Story of Release
2 ☐ Outside of structure

F_2 Population Density

1 ☐ Urban
2 ☐ Suburban
3 ☐ Rural

G_1 Area Affected

1 ☐ Square Feet
2 ☐ Blocks
3 ☐ Square miles

Enter Measurement

G_2 Area Evacuated ☐ None

1 ☐ Square Feet
2 ☐ Blocks
3 ☐ Square miles

Enter Measurement

G_3 Estimated Number of People Evacuated

G_4 Estimated Number of Buildings Evacuated

☐ None

H HazMat Actions Taken

Enter up to three actions taken

Primary Action Taken (1)

Additional Action Taken (2)

Additional Action Taken (3)

I If fire or explosion is involved with a release, which occurred first?

1 ☐ Ignition
2 ☐ Release
U ☒ Undetermined

J Cause Of Release *

1 ☐ Intentional
2 ☐ Unintentional release
3 ☐ Container/ containment failure
4 ☐ Act of nature
5 ☒ Cause under investigation
U ☐ Cause undetermined after investigation

K Factors Contributing to Release

Enter up to three contributing factors

Factor Contributing To Release (1)

Factor Contributing To Release (2)

Factor Contributing To Release (3)

L Factors Affecting Mitigation

Enter up to three factors or impediments that affected the mitigation of the incident

Factor or impediment (1)

Factor or impediment (2)

Factor or impediment (3)

M Equipment Involved In Release ☐ None

Equipment involved in release

Brand

Model

Serial Number

Year

N Mobile Property Involved In Release ☐ None

Mobile property type

Mobile property make

Mobile property model | Year

License Plate Number | State

DOT Number/ ICC Number

O HazMat Disposition *

1 ☐ Completed by fire service only
2 ☐ Completed w/ fire service present
3 ☐ Released to local agency
4 ☐ Released to county agency
5 ☐ Released to state agency
6 ☐ Released to federal agency
7 ☐ Released to a private agency
8 ☐ Released to property owner or manager

O HazMat Civilian Casualties

Deaths | Injuries

A

FDID *	State *	Incident Date * (MM / DD / YYYY)	Station	Incident Number *	Exposure *	Delete / Change	NFIRS - 10 Personnel
09204	GA	8 / 14 / 2013	9-3	13-0001972	000	☐ / ☐	

B Apparatus or Resource * (Use codes listed below) | Date and Times (Check if same as alarm date) | Sent [X] | Number of People * | Use (Check ONE box for each apparatus to indicate its main use at the incident.) | Actions Taken (List up to 4 actions for each apparatus and each personnel.)

1 ID 10 | Type 11

	Month	Day	Year	Hours/mins
Dispatch	[X] 8	14	2013	14:22
Arrival	[X] 8	14	2013	14:28
Clear	[X] 8	14	2013	18:34

Sent [X] | Number of People: 3 | Use: [X] Suppression ☐ EMS ☐ Other | Actions Taken: 10, 12

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
110255	Bush, Brandon	FF	X				
3189	Young, Billy	LT	X				
3416	Haynes, Marcus	SGT	X				

2 ID 20 | Type 11

	Month	Day	Year	Hours/mins
Dispatch	[X] 8	14	2013	14:29
Arrival	[X] 8	14	2013	14:39
Clear	[X] 8	14	2013	20:01

Sent [X] | Number of People: 4 | Use: [X] Suppression ☐ EMS ☐ Other | Actions Taken: 10, 12

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
110121	Williams, Michael	FF	X				
3091	Warren, Justin	LT	X				
3415	Hendley, John	SGT	X				
3434	Detweiler, Travis	FF	X				

3 ID 200 | Type 92

	Month	Day	Year	Hours/mins
Dispatch	[X] 8	14	2013	14:22
Arrival	[X] 8	14	2013	14:28
Clear	[X] 8	14	2013	20:01

Sent [X] | Number of People: 3 | Use: [X] Suppression ☐ EMS ☐ Other | Actions Taken: 81, 53

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3127	McMillan, Franklin	BC	X				
3201	Skrine, Ronald	CP	X				
3209	Catlett, Ralph	BC	X				

A

FDID *	State *	Incident Date * (MM / DD / YYYY)	Station	Incident Number *	Exposure *	Delete / Change	NFIRS - 10 Personnel
09204	GA	8 / 14 / 2013	9-3	13-0001972	000	☐ / ☐	

B Apparatus or Resource * (Use codes listed below) | Date and Times (Check if same as alarm date) | Sent [X] | Number of People * | Use (Check ONE box for each apparatus to indicate its main use at the incident.) | Actions Taken (List up to 4 actions for each apparatus and each personnel.)

1 ID 30 / Type 11

	Month	Day	Year	Hours/mins
Dispatch	[X] 8	14	2013	14:22
Arrival	[X] 8	14	2013	14:28
Clear	[X] 8	14	2013	19:56

Sent [X] | Number of People: 6 | Use: [X] Suppression ☐ EMS ☐ Other | Actions Taken: ☐ ☐ ☐ ☐

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
110252	Chastain, Roger	FF	X				
3128	Thomas, Troy	SGT	X				
3419	Williams, Walter	FF	X				
3426	Richardson, Rasean	FF	X				
3431	Lyons, Aaron	FF	X				
3437	Bell, Remus	FF	X				

2 ID 300 / Type 00

	Month	Day	Year	Hours/mins
Dispatch	[X] 8	14	2013	14:22
Arrival	[X] 8	14	2013	14:28
Clear	[X] 8	14	2013	19:56

Sent [X] | Number of People: 1 | Use: [X] Suppression ☐ EMS ☐ Other | Actions Taken: ☐ ☐ ☐ ☐

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3154	Gallagher, Kenneth	CP	X				

3 ID 301 / Type 00

	Month	Day	Year	Hours/mins
Dispatch	[X] 8	14	2013	14:22
Arrival	[X] 8	14	2013	14:28
Clear	[X] 8	14	2013	19:56

Sent [X] | Number of People: 0 | Use: [X] Suppression ☐ EMS ☐ Other | Actions Taken: ☐ ☐ ☐ ☐

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken

A

FDID *	State *	Incident Date * (MM / DD / YYYY)	Station	Incident Number *	Exposure *	Delete / Change	NFIRS - 10 Personnel
09204	GA	8 / 14 / 2013	9-3	13-0001972	000	☐ Delete ☐ Change	

B Apparatus or Resource * (Use codes listed below) | Date and Times (Check if same as alarm date) | Sent [X] | Number of People * | Use (Check ONE box for each apparatus to indicate its main use at the incident.) | Actions Taken (List up to 4 actions for each apparatus and each personnel.)

1 ID 302 | Type 00

	Month	Day	Year	Hours/mins
Dispatch	[X] 8	14	2013	14:22
Arrival	[X] 8	14	2013	14:28
Clear	[X] 8	14	2013	19:56

Sent [X] | Number of People: 1 | Use: [X] Suppression ☐ EMS ☐ Other | Actions Taken: ☐ ☐ ☐ ☐

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3169	Kennedy, Bennie	SGT	X				

2 ID 40 | Type 11

	Month	Day	Year	Hours/mins
Dispatch	[X] 8	14	2013	14:55
Arrival	[X] 8	14	2013	15:05
Clear	[X] 8	14	2013	18:01

Sent [X] | Number of People: 4 | Use: [X] Suppression ☐ EMS ☐ Other | Actions Taken: 10, 12 | ☐ ☐

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
110123	Tilton, Shannon	FF	X				
3215	Crump, Michael	LT	X				
3424	Womack, Phillip	SGT	X				
3441	Stevick, Chris	FF	X				

3 ID 400 | Type 00

	Month	Day	Year	Hours/mins
Dispatch	[X] 8	14	2013	14:22
Arrival	[X] 8	14	2013	14:28
Clear	[X] 8	14	2013	19:56

Sent [X] | Number of People: 1 | Use: [X] Suppression ☐ EMS ☐ Other | Actions Taken: ☐ ☐ ☐ ☐

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3036	Wisenbaker, John	FM	X				

A

FDID *	State *	Incident Date * (MM / DD / YYYY)	Station	Incident Number *	Exposure *	Delete / Change	NFIRS - 10 Personnel
09204	GA	8 / 14 / 2013	9-3	13-0001972	000	☐ Delete ☐ Change	

B Apparatus or Resource * (Use codes listed below)	Date and Times (Check if same as alarm date)	Sent [X]	Number of People *	Use (Check ONE box for each apparatus to indicate its main use at the incident.)	Actions Taken (List up to 4 actions for each apparatus and each personnel)
1 ID 401 Type 00	Dispatch [X] 8 / 14 / 2013 / 14:22 Arrival [X] 8 / 14 / 2013 / 14:28 Clear [X] 8 / 14 / 2013 / 19:56	Sent [X]	1	[X] Suppression ☐ EMS ☐ Other	

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3191	Tooley, Edgar	LT	X				

2 ID 402 Type 00	Dispatch [X] 8 / 14 / 2013 / 14:22 Arrival [X] 8 / 14 / 2013 / 14:28 Clear [X] 8 / 14 / 2013 / 19:56	Sent [X]	1	[X] Suppression ☐ EMS ☐ Other	

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3176	Willis, John	FF	X				

3 ID 403 Type 00	Dispatch [X] 8 / 14 / 2013 / 14:22 Arrival [X] 8 / 14 / 2013 / 14:28 Clear [X] 8 / 14 / 2013 / 19:56	Sent [X]	0	[X] Suppression ☐ EMS ☐ Other	

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken

A

FDID *	State *	Incident Date * (MM / DD / YYYY)	Station	Incident Number *	Exposure *		
09204	GA	8 / 14 / 2013	9-3	13-0001972	000	☐ Delete ☐ Change	NFIRS - 10 Personnel

B

Apparatus or Resource * (Use codes listed below)	Date and Times (Check if same as alarm date)	Month	Day	Year	Hours/mins	Sent [X]	Number of People *	Use (Check ONE box for each apparatus to indicate its main use at the incident.)	Actions Taken (List up to 4 actions for each apparatus and each personnel.)
1 ID 60 Type 11	Dispatch [X]	8	14	2013	14:22	[X]	3	[X] Suppression ☐ EMS ☐ Other	10, 12
	Arrival [X]	8	14	2013	14:30				
	Clear [X]	8	14	2013	19:20				

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
110192	Jones, Alvin		X				
3202	Talley, Jeffrey	LT	X				
3282	Briggs, Wade	SGT	X				

2 ID AIR 1 Type 62	Dispatch [X]	8	14	2013	14:22	[X]	2	[X] Suppression ☐ EMS ☐ Other	10
	Arrival [X]	8	14	2013	14:28				
	Clear [X]	8	14	2013	20:01				

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
3188	Walden, Michael	LT	X				
3234	Thompson, D	SGT	X				

3 ID AP1 Type 12	Dispatch [X]	8	14	2013	14:22	[X]	4	[X] Suppression ☐ EMS ☐ Other	10, 12
	Arrival [X]	8	14	2013	14:29				
	Clear [X]	8	14	2013	19:16				

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
110193	Garcia, Brian	FF	X				
3193	Roe, Chad	LT	X				
3213	Bruhl, Joseph	SGT	X				
3442	Matheny, Brandon	FF	X				

A

FDID *	State *	Incident Date * (MM DD YYYY)	Station	Incident Number *	Exposure *	Delete / Change	NFIRS - 10 Personnel
09204	GA	8 14 2013	9-3	13-0001972	000	☐ Delete ☐ Change	

B Apparatus or Resource * (Use codes listed below) | Date and Times (Check if same as alarm date; Month Day Year Hours/mins) | Sent [X] | Number of People * | Use (Check ONE box for each apparatus to indicate its main use at the incident.) | Actions Taken (List up to 4 actions for each apparatus and each personnel.)

			Sent	Number of People	Use	Actions Taken
1 ID N/A Type NN	Dispatch [X] 8 14 2013 14:22 Arrival [X] 8 14 2013 14:28 Clear [X] 8 14 2013 20:01		[X]	36	[X] Suppression ☐ EMS ☐ Other	10
2 ID Type	Dispatch ☐ Arrival ☐ Clear ☐		☐		☐ Suppression ☐ EMS ☐ Other	
3 ID Type	Dispatch ☐ Arrival ☐ Clear ☐		☐		☐ Suppression ☐ EMS ☐ Other	

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
105657	Bacon, Jimmie	FF	X				
110119	Williams, Darren	FF	X				
110122	McBride, Joshua	FF	X				
110187	Daugherty, Blake	FF	X				
110190	Sapp, Jamie		X				
110191	Cummings, Lloyd	FF	X				
110248	Carter, William	FF	X				
3093	Rowan, Jason	CP	X				
3137	Moore, Shelly	FF	X				
3145	Weeks, Ricky	LT	X				
3147	Roe, Ronald	LT	X				
3164	Taylor, Kenneth	FF	X				
3166	Clark, Robert	LT	X				
3167	Boutwell, Brian	CP	X				
3190	Ply, Justin	LT	X				
3194	Carter, Allen	SGT	X				
~~3203~~	~~Miller, Shelley~~	~~SGT~~	X				
3207	Rowan, Deanna	LT	X				
3214	Thibodeau, Jeff	SGT	X				
~~3218~~	~~Burton, Garrick~~	~~LT~~	X				
3220	Henry, Johnny	LT	X				
3221	Washington, Jordan	FF	X				
~~3223~~	~~Huffmaster, Nathan~~	~~SGT~~	X				
3226	Courson, Henry	FF	X				
3228	Whitehead, Blake	SGT	X				
3229	Shoemake, Ronald	SGT	X				
3252	Compagno, Edward	SGT	X				
3272	Stubbs, Jim	SGT	X				
3274	Bennett, Doug	FF	X				
3281	Niehanke, Keith		X				
3427	Garren, Scott	FF	X				
3430	Reed, Tyshon	FF	X				
3433	Cothron, Trey	FF	X				
3436	Scott, Christopher	FF	X				
~~3438~~	~~Strickland, Ryan~~		X				
5632	Phillips, Charles	FF	X				
			☐				
			☐				
			☐				
			☐				

FDID	State	Incident Date			Station	Incident Number	Exposure	Responding Units/Personnel
09204	GA	8	14	2013	9-3	13-0001972	000	

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
10 Engine One	14:22:00	14:22:00	14:28:00	18:34:00

Staff ID\Staff Name		Activity	Rank	Position	Role
110255	Bush, Brandon	On Duty	Firefighter	Firefighter	
3189	Young, Billy	On Duty	Lieutenant	Lieutenant	
3416	Haynes, Marcus J	On Duty	Sergeant	Seargent	

Unit Narrative

On Wednesday August 14, 2013 a structure fire at 1612 James P Rogers Circle was dispatched at 14:22. Engine 1 arrived on scene at 14:28. Engine 1 pulled down to the end of the cul-de-sac and deployed a 5" supply line from a class "A" hydrant. A deluge set was set up at the entrance into the complex supplied by a 5" supply hose to a manifold and 2 ½" supplying the deluge set. A 2 ½" attack line was advanced into the complex toward the A-B corner for an attack on the fire. After several explosions the crew on the 2 ½" attack line at the "A-B" corner was pulled back and reported to rehab. The crew on the deluge set stayed in place. While fire was intensifying Engine 1 was repositioned further down James P. Rogers Circle. Deluge set continued to flow until the bulk of the fire was extinguished. The 2 ½" attack line was used for smoldering fires in the A-B corner. When Moody Air Force Base personnel arrived on scene with the foam trailer all Engine 1 operation was shut down. All Engine 1 crew members throughout the operational period were assigned to different task until Engine 1 left the scene to go and get fuel.

Personnel on Engine 1:

Lt. B. Young
Sgt. M. Haynes
FF B. Bush
FF. B. Matheny

During the first fire watch period a small fire was reported in a semi trailer under the awning. A 5" supply line was deployed to Engine 1 with a 1 ½" attack line was put in place to attack the fire. A ladder was used to reach into the semi trailer. The fire was extinguished and all hoses were left at the scene for further use.

Personnel on Engine 1 during fire watch:

Lt. B. Young
Sgt. M. Haynes
FF. B. Bush
FF. B. Matheny

Lieutenant B. Young

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
20 Engine 2	14:29:00	14:39:00	14:39:00	20:01:00

Staff ID\Staff Name		Activity	Rank	Position	Role
110121	Williams, Michael	On Duty	Firefighter	Firefighter	
3091	Warren, Justin Wayne	On Duty	Lieutenant	Lieutenant	
3415	Hendley, John	On Duty	Sergeant		
3434	Detweiler, Travis	On Duty	Firefighter	Firefighter	

Unit Narrative

Engine 2 responded when the 2nd alarm was dispatched. Once E-2 approached the over pass we could see the plume of smoke rising in the air. Once on scene E-2 was assigned to the landing zone for the Life flights. I Lt. Warren left and went to the command post to receive assignment while the E-2 crew was on standby. I was directed to go assist with the E-3 down where Georgia Petroleum was at. E-3 had a malfunction in the pump and was replaced by E-2. E-2 pumped to the monitor base and a 2 ½ line with a smoothbore tip. The monitor was used to cool off the oil tanks and the 2 ½ was used to put water upon the fire. E-2 was relieved and went to rehab. Lt. Warren and Sgt. Thompson left and went to the gate to the facility and assisted with foam operation set up of equipment. We then removed lines to allow for Moody's foam trailer to gain access inside the fence. E-2 assisted with foam operations clean up and getting trucks in service.

Lt. Justin Warren

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200 Battalion Chief Explorer 14:22:00 14:22:00 14:28:00 20:01:00

Staff ID\Staff Name		Activity	Rank	Position	Role
3127	McMillan, Franklin Williams	On Duty	Battalion C	Battallion C	
3201	Skrine, Ronald	On Duty	Captain	Captain	
3209	Catlett, Ralph	On Duty	Battalion C	Battallion C	

Unit Narrative

While training at the Valdosta Regional Training Center, Valdosta Fire Department units were dispatched to 1612 James P. Rogers Circle for a structure fire at approximately 1415. I (Capt. Ronald Skrine) responded in command car 200 immediately. I also told personnel who were on shift and attending the class to respond. While enroute to the scene we were updated via radio that there had been an explosion and multiple injuries. Unit 402(Lt. Derek Willis) notified us via radio that there was a large amount of flammable liquids involved. I immediately contacted dispatch and called for a second alarm. Once I arrived on the scene I observed one man down at the intersection of James P. Rogers Drive and James P. Rogers Circle. They were already being attended to by personnel on scene and EMS was on their way. I drove down James P. Rogers Circle about mid-way where there was a drive on the side of GA Petroleum and positioned 200 there and assumed command. At this time I saw heavy black smoke and flames coming from the structure. Captain Kenneth Gallagher was appointed OPS and Captain Carl Smith was appointed Safety. Chief Rice, Chief Catlett, and Chief McMillan were all contacted and notified of the incident. It was decided that we would proceed with a defensive attack and started to call in additional resources to include off-duty personnel, LCFR, Moody Air Force Base, VPD, LCSO and GA State Patrol. Engine One established a water source from the hydrant just outside the front gate of the business. Engine Three established a water source from the hydrant at James P. Rogers Circle and James P. Rogers Dr. Captain John Wisenbaker came to assist me with the command post at 200 and checking in personnel as they arrived on scene. Lt. Jeff Talley was assigned to staging. Lt. Michael Walden & Lt. Garrick Burton were assigned to Rehab/Medical. Dispatch was also asked to get GA Power to the scene to cut power to the facility. Unit 402(Lt. Derek Willis) was assigned to the Valdosta Police Department Command Unit where unified command was set up. Lt. Willis served as the Valdosta Fire Department representative. Mr. Lason Kirkland, a Perma Fix representative was asked to assist with identifying some of the chemicals that were burning. It was determined that we needed to evacuate everyone within a 1 mile radius of the fire. This was done by VPD, LCSO, and GSP officers. We were notified of a large natural gas line that ran between the Perma Fix Facility and GA Petroleum. AP1 Crew was assigned to shut the natural gas line down which they were able to locate with the help of an employee and shut down. Lines were stretched from E1 to establish an unmanned monitor on the A side of the structure. E3 stretched lines to establish an unmanned monitor along with hand lines on the B side of the structure to stop the fire spread and cool the tanks closest to the fire on the GA Petroleum property. Chief Catlett notified us that he was on his way and that VFD personnel were being called in to assist, also, mutual aid had been requested from Moody Air Force Base and Lowndes County Fire & Rescue. After several more explosions I instructed Engine One to pull back and re-position. I was notified by

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FDID	State	Incident Date			Station	Incident Number	Exposure	

30 Engine Three 14:22:00 14:22:00 14:28:00 19:56:00

Staff ID\Staff Name		Activity	Rank	Position	Role
110252	Chastain, Roger Thomas	On Duty	Firefighter	Firefighter	
3128	Thomas, Troy	On Duty	Sergeant	Lieutenant	
3419	Williams, Walter	On Duty	Firefighter	Seargent	
3426	Richardson, Rasean	On Duty	Firefighter	Firefighter	
3431	Lyons, Aaron	On Duty	Firefighter	Firefighter	
3437	Bell, Remus	On Duty	Firefighter	Firefighter	

Unit Narrative

Engine three responded to 1612 James P Rodgers Cir to a Structure fire. Engine three arrived on scene to find that the fire was in a open part of the structure. Engine three stopped at the gate, Lt.Thomas and FF. Lyons got off the engine and walk around the side of the structure to see what was on fire. I (Lt. Thomas) radioed back to command to let him know where the fire was at. Engine three crew went back and lay one supply line from James P Rodgers Dr. Engine three crew then set up an unmanned monitor on side B. Too cool down the tanks at Georgia Petroleum Inc. Later engine three crew went to rehab. After rehab engine three crew reported back in and then did a secondary search of the structure.

FDID	State	Incident Date			Station	Incident Number	Exposure	Responding Units/Personnel
09204	GA	8	14	2013	9-3	13-0001972	000	

300 Special Services Explorer	14:22:00	14:22:00	14:28:00	19:56:00

Staff ID\Staff Name		Activity	Rank	Position	Role
3154	Gallagher, Kenneth	On Duty	Captain	Captain	

Unit Narrative

Narrative for Permafix structure fire on 8/14/2013 by Captain Ken Gallagher

At approximately 1415 on 8/14/2013 I responded to a structure fire at Permafix on 1612 James P. Rodgers. While in route I could see some smoke rising from the facility. On arrival conditions quickly deteriorated before any fire attack was initiated. Capt. Skrine assumed Command and I was assigned Operations. This was a defensive attack until conditions warranted a change in strategy. I instructed E-1 to pull back and not attempt to enter the fire area which was a roofed area with open walls on sides A,B.and C and warehouse space and offices on side D. I instructed E1 to set up an unmanned ground monitor on side A and attack the fire from there. I then requested an engine to come to side B, inside Georgia Petroleum property, to set up another ground monitor, this one manned as personnel were protected and we needed to protect exposures and attack the fire from side B. E3 was given this assignment and we proceeded with both operations. Lt. Young suggested he thought we could also deploy a 2-inch handline on side A. We tried this but determined it was ineffective (did not reach fire) and too hazardous for personnel. We had a mechanical malfunction with E3 and had to replace it with E10. I notified Command that I needed additional staffing and he began assigning additional command staff. I continued operations on side A until knock down and turned over my responsibilities to BC McMillan.

301 Training Captain Van	14:22:00	14:22:00	14:28:00	19:56:00

Staff ID\Staff Name	Activity	Rank	Position	Role

302 Training Lt. Van	14:22:00	14:22:00	14:28:00	19:56:00

Staff ID\Staff Name		Activity	Rank	Position	Role
3169	Kennedy, Bennie Edward	Fire At Scene	Sergeant	Lieutenant	

40 Engine Four	14:55:00	14:55:00	15:05:00	18:01:00

Staff ID\Staff Name		Activity	Rank	Position	Role
110123	Tilton, Shannon M	On Duty	Firefighter	Firefighter	
3215	Crump, Michael	On Duty	Lieutenant	Lieutenant	
3424	Womack, Phillip	On Duty	Sergeant	Seargent	
3441	Stevick, Chris	On Duty	Firefighter	Firefighter	

Unit Narrative

On August 14 The Valdosta Fire Dept was toned out to a structure fire at Perm Fix 1612 JP Rogers Cir. Shortly after this tone 200 directed Engine 4, Lt. Crump, Sgt Womack, FF Tilton to station 1 to catch any calls that came in to the city. After arriving at station 1 for a short time 200 then directed Engine 4 to be in route to Perm Fix and Engine 5 was to continue catching all calls in the city. As we arrived on scene 200 directed us to provide man power to the crews that were fighting fire. Engine 4 crew helped Lt. Young and his crew advance a 2.5" line with a smooth bore nozzle to the A-B corner and flowed water on the fire for approximately 30 minutes. We were then told to shut our line down so that they could hook the foam operation up, by this time we were running low on air so we reported to rehab where then we changed out our SEBA bottles out and hydrated with water, we were then told to stay in rehab till we were called in. Our next assignment was to help get the foam to the hot zone on side A. After that we helped Chief McMillan set it up. We were also asked to walk around the perimeter of the building to look for any other access to get a foam trailer inside the fence due to so many hoses blocking the main entrance. We come to find that there were none, so then we helped disassemble the lines enough to get Moody's foam trailer inside the complex. After getting the trailer into position we assisted in hooking the hoses to the trailer and started the foam operation. Engine 4 crew was told to respond to a structure fire at O'Neal's Country Buffet on Ashley Street. While

09204 FDID	GA State	8 14 2013 Incident Date	9-3 Station	13-0001972 Incident Number	000 Exposure	Responding Units/Personnel

100 Fire Prevention Captain Crown Victoria	14:22:00	14:22:00	14:28:00	19:56:00	

Staff ID\Staff Name		Activity	Rank	Position	Role
3036	Wisenbaker, John	On Duty	Fire Marsha	Captain	

401 Fire Prevention Lieutenant Expedition	14:22:00	14:22:00	14:28:00	19:56:00	

Staff ID\Staff Name		Activity	Rank	Position	Role
3191	Tooley, Edgar Cornelius	On Duty	Lieutenant	Lieutenant	

402 Fire Prevention Sergeant Van	14:22:00	14:22:00	14:28:00	19:56:00	

Staff ID\Staff Name		Activity	Rank	Position	Role
3176	Willis, John	On Duty	Firefighter	Lieutenant	

403 Educator Van	14:22:00	14:22:00	14:28:00	19:56:00	

Staff ID\Staff Name		Activity	Rank	Position	Role

60 Engine Six	14:22:00	14:22:00	14:30:00	19:20:00	

Staff ID\Staff Name		Activity	Rank	Position	Role
110192	Jones, Alvin	On Duty	Lieutenant	Firefighter	
3202	Talley, Jeffrey Derrel	On Duty	Sergeant	Lieutenant	
3282	Briggs, Wade	On Duty		Seargent	

Unit Narrative

On Wednesday August 14, 2013 at 1422 hours Engine 6 was dispatched to an explosion/chemical fire at the Perma Fix warehouse located at 1612 James P. Rodgers Cir. Engine 6 arrived on scene at 1430 hours, and began assisting Engine 1 with establishing a water source. In addition, Engine 6 crew assisted Engine 1 with setting up a monitor base, as well as a manifold for a defensive fire attack. Engine 6's crew (Sgt. Briggs, FF/RD Stevick, and FF A. Jones) manned the monitor base, while Engine 3 and Engine 1 crews manned the attack line coming off of the manifold. After fighting fire for several minutes with little positive result, Engine 6 crew was ordered to break down the supply lines to the monitor base and the manifold, and then reported back to the command post for reassignment.

Engine 6's crew was then paired with Lt. Herpin, Lt. Thibodeau, and Sgt. Bennett, and was assigned the task of setting up an aerial operation with Engine 6 supplying AP-1 on the back side of the warehouse from M.E. Thompson Drive. Engine 6 supplied AP-1 using a forward lay-return and pump from a Class A Hydrant located approximately 400 feet away. Lt. Herpin and Sgt. Bruhl manned the bucket of AP-1, while Lt. Thibodeau operated the pump. Sgt. Bennett and FF/RD Stevick operated the pump on Engine 6, while Sgt. Briggs and FF A. Jones made connections with a manifold to AP-1 to supply a ground attack line. LCFR Engine 10 showed up to assist in setting up the ground attack line from AP-1, and then manned the ground attack line coordinating a defensive fire attack with AP-1. While supplying AP-1 with water for firefighting operations, Engine 6 began to overheat, and had to temporarily shut down. Engine 6's temperature returned to normal after several minutes, and resumed supplying the aerial operation. FF/RD Stevick continued to operate the pump on Engine 6, and Sgt. Bennett was paired with Sgt. Briggs and FF A. Jones to relieve LCFR Engine 10 crew from the ground attack line so they could report to rehab.

Sgt. Briggs, Sgt. Bennett, and FF A. Jones then proceeded to extinguish the remaining fires and hot spots on the back side of the warehouse. Once the aerial operation was shut down and the fires on the back side were extinguished; Sgt. Briggs, Sgt. Bennett, and FF A. Jones reported to rehab. FF/RD Stevick remained with Engine 6 and discussed the issue of the truck overheating with VFD maintenance personnel; after which FF/RD Stevick reported to rehab.

After leaving the rehab area Engine 6 crew (Sgt. Briggs, FF/RD Stevick, and FF A. Jones) assisted with loading hose, and putting equipment back on the trucks until they were released by command at 1920 hours.

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09204	GA	8	14	2013	9-3	13-0001972	000	

\IR 1 Air & Light Truck 14:22:00 14:22:00 14:28:00 20:01:00

Staff ID\Staff Name		Activity	Rank	Position	Role
3188	Walden, Michael Lynn	On Duty	Lieutenant	Lieutenant	
3234	Thompson, D	On Duty	Sergeant	Seargent	

Unit Narrative

On August 14, 2013, Wednesday afternoon, I was in class at the Valdosta Regional Training Center. I was assigned to Air Light 1 during class time and I had Sgt D Thompson with me. During class we were dispatched to Perma-Fix of South Georgia located at 1612 James P Rodgers Cir for a structure fire with explosions and injuries. When we arrived I saw a huge column of heavy black smoke coming from the structure and traveling extremely high into the sky. There were explosions and fire under the overhang dock area of the structure. I saw lots of cop cars and ambulances. There were injured people being treated by EMS. We jumped out and put our gear on. We then reported to the command post. Capt. Skrine was the Incident Commander. Our first assignment was to set up rehab. Sgt Thompson moved Air Light 1 to a parking lot across from the command post. We set up the fans, tent, and chairs. Sgt. Fuerstein showed up and we went back to the command post. We let command know that Sgt. Fuerstein was handling rehab and it was set up. Sgt. Thompson got reassigned to Lt Warren and they went down to the fire. I was helping Capt. Wisenbaker look for the pre-plan on the structure. We were unable to locate it. Then I was assigned to the bravo side of the structure to Capt Gallagher. I was on a 2" hand line with Lt Warren for awhile. I then was on the deluge base set up with Lt Ply and Sgt Thompson. A thunderstorm come up and it rain on us. I noticed the whole time that I was in this area that all of the smoke went away from us. When I ran out of air, I went to Engine 2 and changed out my bottle and got some water. We were trying to keep some large tanks cool. We were here until the fire went out. Then we were all told to go to rehab. After cooling down in one of the ambulances and drinking water, Command called me over and told me that he needed me to be the rehab officer. I then went back to rehab and got with Sgt Fuerstein. I started to organize the area. I had those coming in from the fire go to medical to get checked out. They were given water or Gatorade and some crackers if we had it. Then they would move to the next area to finish hydrating and eating. Then when they were ready to go back in they moved to the staging area. We continued this until we were told to start breaking down the scene. Once we got rehab broke down and ready to go back in service it was sometime in the evening. Sgt. Thompson and I responded from 1612 James P Rodgers Cir to an address on Pine Cone Cir for a structure fire. After we worked this fire we went back to Station 2 and my assigned crew which is Engine 5 meet me there. We assisted Engine 2 and Air Light 1 with getting all of the equipment cleaned up and the trucks back in service. I moved back to Engine 5 and we got back to our station just after 10:00 pm.

Lt Michael Walden

09204	GA	8	14	2013	9-3	13-0001972	000	Responding Units/Personnel
FDID	State	Incident Date			Station	Incident Number	Exposure	

\P1 Bronto 14:22:00 14:22:00 14:29:00 19:16:00

Staff ID\Staff Name		Activity	Rank	Position	Role
110193	Garcia, Brian	On Duty	Firefighter	Firefighter	
3193	Roe, Chad	On Duty	Lieutenant	Lieutenant	
3213	Bruhl, Joseph James	On Duty	Sergeant	Seargent	
3442	Matheny, Brandon	On Duty	Firefighter	Firefighter	

Unit Narrative

On Wednesday August 14, 2013 a structure fire at 1612 James P Rodgers Circle was dispatched at 14:22. AP-1 arrived at 14:27. The crew on AP-1 which consisted of Lt Roe, Sgt Bruhl and FF Garcia, first task was to shut off the large natural gas line running between Permafix and Georgia Petroleum. Setting up unmanned monitors on the used oil tanks at Georgia Petroleum was the second task AP-1 crew undertook. After setting up the monitors Lt Roe went to assist E-1 in repositioning, Sgt Bruhl set up aerial operations on the C-side of the structure and FF Garcia went to rehab. All crew members then performed many different task on scene until released by command. AP-1 was second crew on fire watch from 2200 til 0100 and had nothing to report.

Lt Chad Roe

N/A Not applicable 14:22:00 14:22:00 14:28:00 20:01:00

Staff ID\Staff Name		Activity	Rank	Position	Role
105657	Bacon, Jimmie Roshian	On Duty	Firefighter	Firefighter	
110119	Williams, Darren	On Duty	Firefighter	Firefighter	
110122	McBride, Joshua	On Duty	Firefighter	Firefighter	
110187	Daugherty, Blake	On Duty	Firefighter	Firefighter	
110190	Sapp, Jamie	On Duty		Firefighter	
110191	Cummings, Lloyd	On Duty	Firefighter	Firefighter	
110248	Carter, William Jay	On Duty	Firefighter	Firefighter	
3093	Rowan, Jason Derek	On Duty	Captain	Captain	
3137	Moore, Shelly	On Duty	Firefighter	Firefighter	
3145	Weeks, Ricky	On Duty	Lieutenant	Lieutenant	
3147	Roe, Ronald Lynn	On Duty	Lieutenant	Lieutenant	
3164	Taylor, Kenneth Thomas	On Duty	Firefighter	Firefighter	
3166	Clark, Robert	On Duty	Lieutenant	Lieutenant	
3167	Boutwell, Brian S	On Duty	Captain	Captain	
3190	Ply, Justin	On Duty	Lieutenant	Lieutenant	
3194	Carter, Allen Raymond	On Duty	Sergeant	Seargent	
3203	Miller, Shelley Alan	On Duty	Sergeant	Seargent	
3207	Rowan, Deanna Jean	On Duty	Lieutenant	Lieutenant	
3214	Thibodeau, Jeff	On Duty	Sergeant	Lieutenant	
3218	Burton, Garrick Bernard	On Duty	Lieutenant	Lieutenant	
3220	Henry, Johnny	On Duty	Lieutenant	Lieutenant	
3221	Washington, Jordan Vaughn	On Duty	Firefighter	Seargent	
3223	Huffmaster, Nathan	On Duty	Sergeant	Lieutenant	
3226	Courson, Henry	On Duty	Firefighter		
3228	Whitehead, Blake	On Duty	Sergeant	Seargent	
3229	Shoemake, Ronald	On Duty	Sergeant	Lieutenant	
3252	Coppage, Edward	On Duty	Sergeant	Seargent	
3272	Stubbs, Jim	On Duty	Sergeant	Seargent	
3274	Bennett, Doug	On Duty	Firefighter	Seargent	
3281	Niehanke, Keith	On Duty		Seargent	
3427	Garren, Scott	On Duty	Firefighter	Firefighter	
3430	Reed, Tyshon	On Duty	Firefighter	Firefighter	
3433	Cothron, Trey	On Duty	Firefighter	Firefighter	
3436	Scott, Christopher	On Duty	Firefighter	Firefighter	

FDID	State	Incident Date			Station	Incident Number	Exposure	Responding Units/Personnel
09204	GA	8	14	2013	9-3	13-0001972	000	

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
N/A Not applicable	14:22:00	14:22:00	14:28:00	20:01:00

Staff ID\Staff Name	Activity	Rank	Position	Role

Unit Narrative

The personnel attached to this unit were called in from another shift for a large incident. Personnel were assigned to various tasks throughout the duration of the incident.

FDID *	State *	MM Incident Date *	DD Incident Date *	YYYY Incident Date *	Station	Incident Number *	Exposure *	Responding Personnel
09204	GA	8	14	2013	9-3	13-0001972	000	

Staff ID\Staff Name	Unit		Activity	Position	Rank	PayScl	Hrs	HrsPd	Pts
110255 Bush, Brandon	10		OD On Duty	FF	FF		24.00	5.57	0.00
3189 Young, Billy	10		OD On Duty	LT	LT		24.00	5.57	0.00
3416 Haynes, Marcus J	10		OD On Duty	SG	SGT		24.00	5.57	0.00
110121 Williams, Michael	20		OD On Duty	FF	FF		24.00	5.57	0.00
3091 Warren, Justin Wayne	20		OD On Duty	LT	LT		24.00	5.57	0.00
3415 Hendley, John	20	X	OD On Duty		SGT		24.00	5.65	0.00
3434 Detweiler, Travis	20		OD On Duty	FF	FF		24.00	5.57	0.00
3127 McMillan, Franklin Williams	200		OD On Duty	BC	BC		24.00	5.57	0.00
3201 Skrine, Ronald	200		OD On Duty	CT	CP		24.00	5.57	0.00
3209 Catlett, Ralph	200		OD On Duty	BC	BC		24.00	5.57	0.00
110252 Chastain, Roger Thomas	30		OD On Duty	FF	FF		24.00	5.57	0.00
3128 Thomas, Troy	30		OD On Duty	LT	SGT		24.00	5.57	0.00
3419 Williams, Walter	30		OD On Duty	SG	FF		24.00	5.57	0.00
3426 Richardson, Rasean	30		OD On Duty	FF	FF		24.00	5.57	0.00
3431 Lyons, Aaron	30		OD On Duty	FF	FF		24.00	5.57	0.00
3437 Bell, Remus	30		OD On Duty	FF	FF		24.00	5.57	0.00
3154 Gallagher, Kenneth	300		OD On Duty	CT	CP		24.00	5.57	0.00
3169 Kennedy, Bennie Edward	302		FX Fire At Scene	LT	SGT		24.00	5.57	1.00
110123 Tilton, Shannon M	40		OD On Duty	FF	FF		24.00	5.57	0.00
3215 Crump, Michael	40		OD On Duty	LT	LT		24.00	5.57	0.00
3424 Womack, Phillip	40		OD On Duty	SG	SGT		24.00	5.57	0.00
3441 Stevick, Chris	40		OD On Duty	FF	FF		24.00	5.57	0.00
3036 Wisenbaker, John	400		OD On Duty	CT	FM		24.00	5.57	0.00
3191 Tooley, Edgar Cornelius	401		OD On Duty	LT	LT		24.00	5.57	0.00
3176 Willis, John	402		OD On Duty	LT	FF		24.00	5.57	0.00
3160 Newkirk, Willie	500		OD On Duty		MAINT		24.00	5.57	0.00
110192 Jones, Alvin	60		OD On Duty	FF			24.00	5.57	0.00
3202 Talley, Jeffrey Derrel	60		OD On Duty	LT	LT		24.00	5.57	0.00
3282 Briggs, Wade	60		OD On Duty	SG	SGT		24.00	5.57	0.00
3188 Walden, Michael Lynn	AIR 1		OD On Duty	LT	LT		24.00	5.57	0.00
3234 Thompson, D	AIR 1		OD On Duty	SG	SGT		24.00	5.57	0.00
110193 Garcia, Brian	AP1		OD On Duty	FF	FF		24.00	5.57	0.00
3193 Roe, Chad	AP1		OD On Duty	LT	LT		24.00	5.57	0.00
3213 Bruhl, Joseph James	AP1		OD On Duty	SG	SGT		24.00	5.57	0.00
3442 Matheny, Brandon	AP1		OD On Duty	FF	FF		24.00	5.57	0.00
105657 Bacon, Jimmie Roshian	N/A		OD On Duty	FF	FF		24.00	5.57	0.00
110119 Williams, Darren	N/A		OD On Duty	FF	FF		24.00	5.57	0.00
110122 McBride, Joshua	N/A		OD On Duty	FF	FF		24.00	5.57	0.00
110187 Daugherty, Blake	N/A		OD On Duty	FF	FF		24.00	5.57	0.00
110190 Sapp, Jamie	N/A		OD On Duty	FF			24.00	5.57	0.00
110191 Cummings, Lloyd	N/A		OD On Duty	FF	FF		24.00	5.57	0.00
110248 Carter, William Jay	N/A		OD On Duty	FF	FF		24.00	5.57	0.00
3093 Rowan, Jason Derek	N/A		OD On Duty	CT	CP		24.00	5.57	0.00

An 'X' next to the unit denotes driver.

FDID *	State *	MM Incident Date *	DD Incident Date *	YYYY Incident Date *	Station	Incident Number *	Exposure *	Responding Personnel
09204	GA	8	14	2013	9-3	13-0001972	000	

3137	Moore, Shelly	N/A	OD	On Duty	FF	FF	24.00	5.57	0.00
3145	Weeks, Ricky	N/A	OD	On Duty	LT	LT	24.00	5.57	0.00
3147	Roe, Ronald Lynn	N/A	OD	On Duty	LT	LT	24.00	5.57	0.00
3164	Taylor, Kenneth Thomas	N/A	OD	On Duty	FF	FF	24.00	5.57	0.00
3166	Clark, Robert	N/A	OD	On Duty	LT	LT	24.00	5.57	0.00
3167	Boutwell, Brian S	N/A	OD	On Duty	CT	CP	24.00	5.57	0.00
3190	Ply, Justin	N/A	OD	On Duty	LT	LT	24.00	5.57	0.00
3194	Carter, Allen Raymond	N/A	OD	On Duty	SG	SGT	24.00	5.57	0.00
3203	Miller, Shelley Alan	N/A	OD	On Duty	SG	SGT	24.00	5.57	0.00
3207	Rowan, Deanna Jean	N/A	OD	On Duty	LT	LT	24.00	5.57	0.00
3214	Thibodeau, Jeff	N/A	OD	On Duty	LT	SGT	24.00	5.57	0.00
3218	Burton, Garrick Bernard	N/A	OD	On Duty	LT	LT	24.00	5.57	0.00
3220	Henry, Johnny	N/A	OD	On Duty	LT	LT	24.00	5.57	0.00
3221	Washington, Jordan Vaughn	N/A	OD	On Duty	SG	FF	24.00	5.57	0.00
3223	Huffmaster, Nathan	N/A	OD	On Duty	LT	SGT	24.00	5.57	0.00
3226	Courson, Henry	N/A	OD	On Duty		FF	24.00	5.57	0.00
3228	Whitehead, Blake	N/A	OD	On Duty	SG	SGT	24.00	5.57	0.00
3229	Shoemake, Ronald	N/A	OD	On Duty	LT	SGT	24.00	5.57	0.00
3252	Coppage, Edward	N/A	OD	On Duty	SG	SGT	24.00	5.57	0.00
3272	Stubbs, Jim	N/A	OD	On Duty	SG	SGT	24.00	5.57	0.00
3274	Bennett, Doug	N/A	OD	On Duty	SG	FF	24.00	5.57	0.00
3281	Niehanke, Keith	N/A	OD	On Duty	SG		24.00	5.57	0.00
3427	Garren, Scott	N/A	OD	On Duty	FF	FF	24.00	5.57	0.00
3430	Reed, Tyshon	N/A	OD	On Duty	FF	FF	24.00	5.57	0.00
3433	Cothron, Trey	N/A	OD	On Duty	FF	FF	24.00	5.57	0.00
3436	Scott, Christopher	N/A	OD	On Duty	FF	FF	24.00	5.57	0.00
3438	Strickland, Ryan	N/A	OD	On Duty	FF		24.00	5.57	0.00
5632	Phillips, Charles	N/A	OD	On Duty	SG	FF	24.00	5.57	0.00

Total Participants: 71

Total Personnel Hours: 1704.00

An 'X' next to the unit denotes driver.

M. REFERENCES

Bureau of Economic Analysis (BEA). 2024. GDP Price Deflator. Available from: https://apps.bea.gov/iTable/?reqid=19&step=3&isuri=1&1921=survey&1903=11.

Cameron-Cole. 2022a. Post-Closure Care Plan, Perma-Fix of South Georgia, Inc., 1612 James P. Rodgers Circle, Valdosta, GA, 31601, Prepared for Perma Fix Environmental Services. April 1.

Cameron-Cole. 2022b. 2021 Annual Groundwater Monitoring Report, Perma-Fix of South Georgia, Inc., 1612 James P. Rodgers Circle, Valdosta, GA, 31601, Prepared for Perma Fix Environmental Services. February 14.

Cameron-Cole. 2022c. Groundwater Sampling and Analysis Plan, Perma-Fix of South Georgia, Inc., 1612 James P. Rodgers Circle, Valdosta, GA, 31601, Prepared for Perma Fix Environmental Services. Revised. April 1.

Chemical Conservation of Georgia, Inc. (CCGI). 1991. Contamination Assessment Plan for the Bulk Storage Tank Farm Containment Area. Dated September 6, 1991.

C.S. Chen. 1965. The regional Lithostratigraphic analysis of Paleocene and Eocene rocks of Florida. Florida Geological Survey Bulletin. 1965.

C.W. Fetter. 1993. Contaminant Hydrogeology. Macmillian Publishing, New York. 1993.

Georgia Department of Natural Resources, Environmental Protection Division (GDNR-EPD). 2022. Subject 391-3-11 Hazardous Waste Management. Rules and Regulations of the State of Georgia. Available from: https://rules.sos.ga.gov/gac/391-3-11.

Georgia Department of Natural Resources, Environmental Protection Division (GDNR). 2020. Hazardous Waste Facility Permit, Perma-Fix of South Georgia, Inc. (PFSG), Valdosta, Georgia, EPA ID No. GAD093380814. February 11.

HSA Environmental, Inc. (HSA). 1995. Bulk Storage Tank Farm Contamination Assessment Report for Chemical Conservation of Georgia, Inc., Valdosta, GA, HSA Project No. 6-92-3277A. December.

Iowa State University. 2022. Iowa Environmental Mesonet Wind Roses. Available from: https://mesonet.agron.iastate.edu/sites/windrose.phtml?station=VLD&network=GA_ASOS.

J. A. Miller. 1986. Hydrogeologic Framework of the Floridian Aquifer System in Florida and Parts of Georgia, Alabama, and South Carolina. Department of the Interior, U.S. Geological Survey. 1986.

J.B. McConnell, C.M. Hacke. 1993. Hydrogeology, water quality, and water-resources development potential of the upper Floridian Aquifer in the Valdosta area, south-central Georgia. U.S. Geological Survey, Water-Resource Investigations Report 93-4044. 1993.

National Fire Protection Association (NFPA). 2021. NFPA 30 Flammable and Combustible Liquids Code.

Perma-Fix of South Georgia (PFSG). 2008. Permit Application. January 9.

Perma-Fix of South Georgia (PFSG). 2022. Post-Closure Care Permit Application. Submitted August 2016; Revised April 2022.

P.B. Bedient, H.S. Rifai, C.J. Newell. 1999. Ground Water Contamination: Transport and Remediation, 2nd ed. Prentice Hall-PTR Publishing, Upper Saddle River, NJ. 1999.

P.F. Huddlestun. 1988. A revision of the lithostratigraphic units of the Coastal Plain of Georgia, Miocene through Holocene: Georgia Geologic Survey Bulletin. 1988.

R.H. Johnston and J.A. Miller. 1988. Region 24, Southeastern United States, The Geology of North America, Volume 0-2, Hydrogeology, the Geological Society of America. 1988.

State of Georgia, Environmental Protection Division (EPD). 1995. RCRA Facility Assessment of Chemical Conservation of Georgia, Inc. May.

State of Georgia, Environmental Protection Division (EPD). 1996. RCRA Facility Assessment of Chemical Conservation of Georgia, Inc.

T.M. Scott. 1988. The Lithostratigraphy of the Hawthorn Group (Miocene) of Florida. Bulletin 59, Florida Geological Survey, Florida Department of Natural Resources, Tallahassee, FL. 1988.

T. M. Scott. 1990. A Brief Overview of Miocene Lithostratigraphy – Norther Florida and Eastern Georgia: Florida Geological Survey Open File Report, 31. 1990.

United States Environmental Protection Agency (USEPA). 1982. A Guide for Preparing RCRA Permit Applications for Existing Storage Facilities. USEPA.

United States Environmental Protection Agency Office of Resource Conservation and Recovery (USEPA). 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance. March 2009.

United States Environmental Protection Agency (USEPA). 2000. Guidance for Data Quality Assessment, Practical Methods for Data Analysis, EPA QA/G-9, QA00 Update, EPA 600/R-96/084. July 2000.

United States Environmental Protection Agency (USEPA). 1992. Methods for Evaluating Attainment of Cleanup Standards, Volume 2: Groundwater. EPA 230-R-92-014. July 1992.

United States Environmental Protection Agency (USEPA). 1980. A Method for Determining the Compatibility of Hazardous Wastes, EPA-600/2-80-076. April 1980. Available from: https://www.epa.gov/sites/default/files/2016-03/documents/compat-haz-waste.pdf.

United States Geological Survey (USGS). 2020. 1:24,000-Scale, 7.5 Minute Digital Raster Graphic Quadrangle, Valdosta, Georgia.

Valdosta-Lowndes-Regional Geographic Information System (VALOR). 2022a. Interactive Maps of Lowndes County. Available from: https://www.valorgis.com/maps/valdzone42.pdf.

List of Acronyms

1,1,1-TCA	1,1,1-trichloroethane
1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
1,2-DCE	1,1-dichloroethene
µg/L	micrograms per liter
AASHTO	American Association of State Highway and Transportation Officials
AOC	Area of Concern
ASTM	American Society for Testing and Materials
bgs	below ground surface
BSTF	Bulk Storage Tank Farm
BTOC	below top of casing
CCGI	Chemical Conservation of Georgia, Inc.
CFR	Code of Federal Regulations
cm/s	centimeters per second
CAO	Corrective Action Order
CY	cubic yards
COC	constituent of concern
CPR	cardiopulmonary resuscitation
DOT	Department of Transportation
DSIA	Drum Storage and Inspection Area
DSIP	Drum Sampling and Inspection Pad
DSPA 1	Drum Storage and Process Area 1
DSPA 2	Drum Storage and Process Area 2
EPA	Environmental Protection Agency
EPD	Environmental Protection Division
ft	feet

List of Acronyms (cont.)

ft^2	square feet
ft/ft	foot of head per linear foot
ft/day	feet per day
ft^2/ day	square feet per day
ft/yr	feet per year
GC	Gas Chromatography
DEP	Environmental Protection Division
GWMR	Groundwater Monitoring Report
GWPS	Groundwater Protection Standard
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSA	HSA Environmental, Inc.
HWMR	Hazardous Waste Management Rule
HWMU	Hazardous Waste Management Unit
IBR	Incorporated by Reference
k	hydraulic conductivity
kPa	kilopascal
LDRN	Land Disposal Restriction Notification
m^3	cubic meter
MCLs	Maximum Contaminant Levels
mg/L	milligrams per liter
MODFLOW/MT3D	Modular three-dimensional finite-difference groundwater-flow model /Model Transport in 3 dimensions
Modification	Class 3 Permit Modification
MSL	mean sea level
NAPL	nonaqueous phase liquid
NAICS	North American Industry Classification System

List of Acronyms (cont.)

NFPA	National Fire Protection Association
OJT	on the job training
OSHA	Occupational Safety and Health Administration
PCCP	Post-Closure Care Period
PCE	Perchloroethylene
PFSG	Perma-Fix of South Georgia, Inc.
POC	Point of Compliance
ppm	parts per million
ppmw	parts per million per weight
PQL	practical quantitation limits
psi	pounds per square inch
psig	pounds per square inch gauge
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RGN	reactivity group numbers
SAP	sampling and analysis plan
SDS	Safety Data Sheet
SIC	Standard Industrial Classification
SRA	Solvent Recovery Area
SSA	Solidification and Stabilization Area
SVOC	semi-volatile organic compound
SWMU	Solid Waste Management Unit
TIAP	Tank Integrity Assessment Procedures
TCE	Trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure

List of Acronyms (cont.)

UL	Underwriters Laboratories
USEPA	United States Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound
WBUA	Waste Bulking and Unloading Area
WMA	Waste Management Area