WASTE MANAGEMENT

WASTE MANAGEMENT OF NORTH FLORIDA, INC.

HWY 121@ CHESSER ISLAND ROAD | FOLKSTON, GEORGIA 31537

CHESSER ISLAND ROAD MSW LANDFILL COAL COMBUSTION RESIDUALS (CCR) MANAGEMENT PLAN ANNUAL UPDATE

PERMIT #: 024-006D(SL)

ANNUAL CCR MANAGEMENT PLAN AND DUST CONTROL REPORT

ATLANTIC COAST CONSULTING, INC.

March 2019

Annual CCR Management Plan and Dust Control Report

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ATLANTIC COAST CONSULTING, INC.

This CCR management and fugitive dust report was prepared in accordance with OCGA Solid Waste Management Rule 391-3-4-.07(5) and the Annual Coal Combustion Residuals (CCR) Management Plan and Dust Control Report Guidance Document provided by Georgia Department of Natural Resources, Environmental Protection Division (EPD) dated May 2018.

SUMMARY:

The Chesser Island Municipal Solid Waste (MSW) Landfill is comprised of an active Municipal Solid Waste (MSW) Landfill (LF) unit that is separated in two phases and a closed MSWLF unit that also contains two phases. The closed areas are known as Phase 1 and Phase 2 while the active portions are deemed Phase 3 and Phase 4. The facility's current CCR Management Plan was established through a minor modification approved by Georgia's Environmental Protection Division (EPD) on May 19, 2017.

FACILITY LOCATION AND DESCRIPTION:

The existing landfill is located west of the intersection of Hwy 23 and Willie Dixon Road south of Folkston, GA near the Georgia-Florida border. The facility is comprised of two active MSWLF phases known as Phase 3 and 4. Phases 1 and 2 were closed in 2005. In 2010, Phase 4 was expanded to the west of Phase 3 to form a contiguous 243 acre MSW landfill on the southern portion of the property.

CCR MANAGEMENT ACTIVITIES:

CCR and Non-CCR Waste Volumes:

Chesser Island MSWLF currently receives CCR and non-CCR waste materials. The non-CCR waste materials may contain waste streams from municipal, industrial, commercial, and other special waste stream sources. All waste streams accepted at this facility are in accordance with OCGA Solid Waste Management Rule 391-3-4.

The facility is currently permitted to receive CCR under two separate scenarios. The first sets a near or short term CCR to non-CCR waste ratio (by weight) of 1 to 3.3 that was set to expire in April 2018. The second scenario governs the CCR limits beyond April 2018 (long term limits) and sets the CCR to non-CCR waste ratio (by weight) at 1 to 10. The combination of these two scenarios during calendar year 2018 allows the facility to receive an estimated total of 400,435 tons of CCR with an estimated daily maximum of 1,150 tons and 385 tons for the short term and long term period, respectively.

These limits are defined in Section 1 of the current Operational Narrative shown on Sheet 26 of the Design and Operation (D&O) Plans. The CCR to non-CCR waste ratio limits were established by verifying that the facility's design is capable of withstanding the additional loads presented by the higher density CCR material. The basis of the design provided in the May 19, 2017 CCR Management Minor Modification was an overall waste mass density of 73 lb/CF (1,971 lb/CY). This density takes into account the elevated waste mass density with the introduction of the permitted upper limit of CCR into the waste stream.

The CCR material received at this facility between January 1, 2018 and April 30, 2018 had a total recorded weight of 56,672 tons. During this same period, the facility received 444,472 tons of non-CCR waste which translates into a CCR to non-CCR waste ratio (by weight) of 1 to 7.84.

The CCR material received at this facility between May 1, 2018 and December 31, 2018 had a total recorded weight of 343,271 tons. During this same period, the facility received 721,211 tons of non-CCR waste which translates into an overall CCR to non-CCR waste ratio (by weight) of 1 to 2.10.

As noted above, the facility is currently permitted to receive CCR tonnages during two distinct time periods. The first is from 2017 through April 2018 while the second covers the remainder of 2018 and beyond. The short term period, ending April 2018, was included in the original permit to cover a GA Power clean-up project the facility was actively involved with when the original permit was issued. The second or long term period was established as an estimate to cover CCR tonnages to be received from the Keystone Terminal in the second half of 2018. This allows for a combined annual CCR tonnage equal to 400,435. Unfortunately, the GA Power clean-up project was delayed due to weather in the latter half of 2017 and into 2018. This resulted in lower than expected CCR tonnages for the short term period of 2018 and higher than expected tonnages for the remainder of 2018. As a result of these delays, the tonnage delineation shown in Section 1 of the Operational Narrative on the currently approved D&O plan became inverted. It should be noted that the total CCR tonnage for 2018 is reported to be 399,943 tons which corresponds to a total non-CCR annual tonnage equal to 1,165,683. These tonnages correlate to an aggregated CCR to non-CCR ratio of 1 to 2.91. It is worth noting that the estimated allowable aggregated CCR tonnages for 2018 is 400,435 with a corresponding non-CCR tonnage of 1,004,350. This equates to an estimated allowable yearly CCR to non-CCR ratio of 1 to 2.51.

The maximum amount of CCR received on any given day between January 1, 2018 and April 30, 2018 was 3,000 tons while the maximum amount of CCR received on any given day between May 1, 2018 and December 31, 2018 was also 3,000 tons. This exceeds the estimated max daily weight in tons for CCR shown in Section 1 of the Operational Narrative. It is worth noting that the daily amounts of CCR are based on estimates of the average anticipated amounts received on any given operational day and does not take into account the possibility of a peak day event. Additionally, these isolated occurrences did not cause the facility to exceed their allowable annual tonnages for CCR and therefore has no impact on its current design.

The overall annual ratios of CCR to non-CCR waste is below the allowable annual tonnages for the entire reporting period of January 1, 2018 through December 31, 2018. Therefore, the overall waste mass density of 73 lb/CF was not impacted by either the single day exceedances or the overall annual tonnages received and no adjustments to the design components related to stability, leachate collection or base grade settlement are necessary.

As described above, weather delays did not allow the timing of the CCR disposal operations to occur during the periods delineated in the currently approved D&O plan. Therefore, a minor

modification request is included with this report to adjust the actual timelines associated with CCR disposal operations.

CCR Source:

The only CCR material received at the facility was sourced from Southern Company (Brunswick) and the Keystone Terminal that are identified in Section 3 of the facility's Operational Narrative on Sheet 26 of the current Design and Operation Plan. The CCR interned at the landfill during 2018 is from the same two sources whose material was used as the basis of design for the original CCR Management Permit and its 'as received' physical condition has remained generally consistent throughout the disposal process. Additionally, no new CCR waste streams were accepted by the facility during this reporting period and CCR material is not used in its solidification process.

CCR Characterization and Compatibility:

Section 3 of the Operational Narrative on Sheet 26 requires all CCR waste streams entering the facility be tested for compatibility using the Toxicity Characteristic Leaching Procedure (TCLP) 8 RCRA Metals by SW-846 Method 1311 and a Paint Filter Test by SW-845 Method 9095.

As noted above, the material source and general physical characteristics have remained consistent since the CCR Management permit's initial issue date and the customer has not notified the facility of any significant process changes. Therefore, additional testing to verify characterization and compatibility have not been required.

The analytical laboratory results of the GA Power and Keystone CCR material upon which the CCR Management design is based are provided in Appendix A for reference.

CCR Placement, Compaction and Cover

The facility is permitted to operate a working face with a maximum area of 40,000 square feet. The maximum area of the working face and its management was conducted in accordance with Section 2 of the Operational Narrative on Sheet 26. This facility is also allowed to place CCR in 'block' filled fashion (CCR only layers) or it is allowed to co-mingle CCR and non-CCR wastes.

During the 2018 calendar year, CCR material was placed in layers or 'block filled' in Phase 3. This operational condition was considered in original CCR Management Plan design calculations related to landfill mass stability. The analysis considered a 'block' filled area at the interface of Phase 3 and 4 (see Appendix B) to evaluate its potential impact on the overall base liner and global waste mass stability (see Figures 1.2A and 1.2B in Appendix B). It was found to have no impact as the critical failure planes for both cases were determined to occur at the western edge of Phase 4.

As required, in Section 5 of the Operational Narrative on Sheet 26 of the Design and Operation Plan, a test pad area was established to determine placement and compaction requirements necessary to obtain a minimum compaction of 90% standard proctor. This is only required for areas in which only CCR will be placed. Due to the consistent physical nature of the CCR material and sourcing, the original test pad results have been used to guide placement and compaction efforts to date. The results of the original test pad are contained in Appendix A for reference.

Placement of CCR material that is co-mingled with non-CCR waste does not require construction of a test pad. These co-mingled materials are required to be placed in layers not exceeding five feet and compacted as required in Section 5 of the Operational Narrative on Sheet 26 of the Design and Operation Plan. No CCR and non-CCR wastes were co-mingled during this reporting period.

No leachate outbreaks were observed in layers of waste containing CCR wastes.

Additionally, no CCR was co-mingled with non-CCR waste or 'block filled' in the first eight feet of waste placed on the liner's protective cover, none of the previously placed CCR material was harvested for beneficial re-use and none of the CCR material was utilized in the facility's solidification process.

Record Keeping:

Records of all waste transported to the site along with daily logs and operational records are retained at the facility's site office building. All record keeping is in accordance with the Georgia Rules for Solid Waste Management 391-3-4-.07(3)(u).

Fugitive Dust Control:

The operators at the facility spread and compacted CCR material as it was received. If the CCR material was not spread during operating hours on the day it was received, the operator would use the on-site water truck to maintain the CCR's moisture levels. This procedure was determined to be an efficient and effective method to avoid fugitive dust generation.

The facility did not receive any complaints related to dust between January 1, 2018 and December 31, 2018 and has remained compliant with requirements established by Air Quality Rule 391-3-1-.02(2)(n)1.

Leachate Collection and Removal System:

The facility's leachate collection, removal and storage system is in good working order with no known issues related to the disposal of co-mingled CCR/non-CCR wastes or 'block' filled areas.

Stormwater Management System:

The working face(s) were managed to ensure that surface water contacting CCR and non-CCR waste was not discharged into the stormwater management system. This was accomplished by placing and compacting material away from the side slopes, using soil diversion berms near side slopes and by sloping the working face into the waste mass.

Environmental Monitoring:

The environmental monitoring program for the facility was modified during development of the CCR Management Plan to include appropriate Appendix III/IV analytical parameters in accordance with United States Environmental Protection Agency recommendations and Georgia Environmental Protection Division Regulations. The monitoring network (consisting of groundwater wells, surface water, underdrain, and leachate monitoring points) and extended parameter list, based on data collected to date, remains suitable for detection of CCR related constituents. Current data does not suggest confirmed impacts at these monitoring points as a result of handling CCR material. The facility will continue implementing the CCR monitoring program and documenting results to EPD in semi-annual monitoring reports.

Emergencies:

The facility did not experience any events or circumstances that represented an operational or environmental emergency during this reporting period.

Documentation of Notification to Local Governments:

The operation of CCR disposal activities during this reporting period have been in general compliance with the currently approved CCR management plans with the exception of the timing of receiving the CCR waste quantities. Therefore, attached to this report is a minor modification request to amend the time periods in which CCR was received.

Additionally, it should be noted that the Operational Narrative on Sheet 26A of the D&O Plan states "Local governments within Charlton County will be provided with written notification from the Owner or Operator if the CCR Management Plan is amended and approved by EPD". Therefore, within 30 days of receipt of EPD's approval of the attached minor modification, local government notifications will be issued in accordance with OCGA Solid Waste Management Rule 391-3-4-.07(5) and verification of such notice issuances will be provided to EPD.

Conclusion:

Notwithstanding the CCR waste receipt timing variations, the current CCR Management routines required by the facility's Design and Operation Plan has proven to be effective in governing the proper handling and placement of CCR material as required by OCGA's Solid Waste Management Rule 391-3-4-.07(5) and the Guidance Document for Coal Combustion Residuals (CCR) Management Plans dated December 22, 2016. Therefore, the facilities

operational protocols will remain unchanged until such time as they may need to be amended in accordance with the requirements of its CCR Management Plan.

CCR Compatibility and Characterization

IN THIS APPENDIX:

- GA Power and Keystone Terminal CCR Analytical Reports
- Test Pad Results

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

January 20, 2016

Erik Rolle
Georgia Power Company
241 Ralph McGill Blvd.
Atlanta GA 30308

TEL: (404) 506-1365
FAX: (404) 506-1499

RE: Plant McManus

Dear Erik Rolle:

Order No: 1601571

Analytical Environmental Services, Inc. received 7 samples on 1/8/2016 3:45:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/15-06/30/16.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/17.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Tyrel Heckendorf
Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1601571

Date: 1/7/16 Page 1 of ____

COMPANY: Resolute Environmental for Georgia Power Company

ADDRESS: 1001 Weatherstone Pkwy Ste 410 Woodstock GA 30188

PHONE: 404-358-8469

FAX:

SAMPLED BY: Stephen K. Wilson

SIGNATURE: Stephen K. Wilson

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	No # of Containers
1	T1	1/7/16	0920	X		SO	4
2	T2	1/7/16	0845	X		SO	4
3	T3	1/6/16	1630	X		SO	4
4	T4	1/7/16	1035	X		SO	4
5	T5	1/7/16	1115	X		SO	4
6	T6	1/7/16	1150	X		SO	4
7	T7	1/7/16	1220	X		SO	4
8							
9							
10							
11							
12							
13							
14							

ANALYSIS REQUESTED: TCLP 8 RCRA Metals; Total Sulfides; Total Sulfur; Calcium; % moisture; % solids; Total Organic Carbon; pH

PRESERVATION (See codes): I; N

REMARKS:

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Stephen K. Wilson	1/7/16 14:50	1: FedEx	3:45
2:		2:	1/8/16
3:		3: MS	1/8/16

SPECIAL INSTRUCTIONS/COMMENTS: Call Erik Rolls at Georgia Power with any questions about analyses. 404-506-1365

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT (FedEx) UPS MAIL COURIER
GREYHOUND OTHER____

PROJECT INFORMATION
PROJECT NAME: Plant McManus
PROJECT #:
SITE ADDRESS: Cedar Creek Blvd, Brunswick, GA
SEND REPORT TO: erolle@southernco.com
INVOICE TO (IF DIFFERENT FROM ABOVE): Georgia Power Company, Bin 10221 241 Ralph McGill Blvd, Atlanta GA
QUOTE #: PO#:

RECEIPT
Total # of Containers

Turnaround Time Request
- (●) Standard 5 Business Days
- ( ) 2 Business Day Rush
- ( ) Next Business Day Rush
- ( ) Same Day Rush (auth req.)
- ( ) Other ____

STATE PROGRAM (if any). ____
E-mail? (Y) N: Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR SATURDAY ARE CONSIDERED AS RECEIVED ON THE NEXT BUSINESS DAY; IF NO TAT IS MARKED ON COC AES WILL PROCEED AS STANDARD TAT.
SAMPLES ARE DISPOSED OF 30 DAYS AFTER COMPLETION OF REPORT UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Analytical Environmental Services, Inc

Date: 20-Jan-16

Client: Georgia Power Company
Project: Plant McManus
Lab ID: 1601571

Case Narrative

Sample Receiving Nonconformance:

The 4oz jar received for TOC was broken at the laboratory. TOC analysis was performed using the 4oz jar that was received for metals analysis. Erik Rolle was notified via email 1/16/2016 5:06pm.

pH Analysis by Method 9045D:

Sample for pH analysis by Method 9045D was received and analyzed outside of the holding time requirement of "immediate or 15 minutes.

TOC Soil Analysis by Method 9060A:

TOC soil values for samples 1601571-001D, -004D, -005B and -007D are "E" qualified indicating estimated values over linear calibration range. The minimum sample weight was used per standard operation procedures (SOP) and samples were reported as "E" flagged per SOP 9060A TOC soil analysis.

Analytical Environmental Services, Inc

Date: 20-Jan-16

Client:	Georgia Power Company	**Client Sample ID:**	T1
Project Name:	Plant McManus	**Collection Date:**	1/7/2016 9:20:00 AM
Lab ID:	1601571-001	**Matrix:**	Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified					**(SW9060 Modified)**				
Total Organic Carbon (TOC)	129000	E	164	500	mg/Kg-dry	218450	1	01/13/2016 14:20	JW
Total Metals by ICP INHOUSE_M					**(SW3050B)**				
Sulfur	3900	N	1.9	48	mg/Kg-dry	218201	1	01/14/2016 10:04	IO
Sulfide by SW9030B/9034					**(SW9030B)**				
Sulfide	BRL		67.4	80.2	mg/Kg-dry	218382	1	01/13/2016 08:30	PF
Residue, Total (TS) by SM2540B									
Residue, Total (TS)	49.9		0.00100	0.00100	wt%	218381	1	01/12/2016 08:30	JC
MERCURY, TCLP SW1311/7470A					**(SW7470A)**				
Mercury	BRL		0.000288	0.00400	mg/L	218356	1	01/13/2016 14:25	JR
Laboratory Hydrogen Ion (pH) SW9045D					**(SW9045D)**				
pH	4.01	H	0.01	0.01	pH Units	218319	1	01/13/2016 08:30	JS
ICP METALS, TCLP SW1311/6010C					**(SW3010A)**				
Arsenic	BRL		0.0155	0.250	mg/L	218329	1	01/13/2016 15:18	IO
Barium	0.114	J	0.00650	0.500	mg/L	218329	1	01/13/2016 15:18	IO
Cadmium	BRL		0.00150	0.0250	mg/L	218329	1	01/13/2016 15:18	IO
Chromium	BRL		0.00150	0.0500	mg/L	218329	1	01/13/2016 15:18	IO
Lead	0.318		0.0125	0.0500	mg/L	218329	1	01/13/2016 15:18	IO
Selenium	0.0182	J	0.0125	0.100	mg/L	218329	1	01/13/2016 15:18	IO
Silver	BRL		0.00300	0.0250	mg/L	218329	1	01/13/2016 15:18	IO
METALS, TOTAL SW6010C					**(SW3050B)**				
Calcium	507		1.34	96.6	mg/Kg-dry	218201	1	01/12/2016 14:33	IO
PERCENT MOISTURE D2216									
Percent Moisture	50.1		0	0	wt%	R308163	1	01/12/2016 08:30	JC

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 20-Jan-16

Client:	Georgia Power Company	**Client Sample ID:**	T2
Project Name:	Plant McManus	**Collection Date:**	1/7/2016 8:45:00 AM
Lab ID:	1601571-002	**Matrix:**	Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified					**(SW9060 Modified)**				
Total Organic Carbon (TOC)	21300		164	500	mg/Kg-dry	218450	1	01/13/2016 13:12	JW
Total Metals by ICP INHOUSE_M					**(SW3050B)**				
Sulfur	12000	N	1.2	30	mg/Kg-dry	218201	1	01/14/2016 10:07	IO
Sulfide by SW9030B/9034					**(SW9030B)**				
Sulfide	BRL		41.0	48.8	mg/Kg-dry	218382	1	01/13/2016 08:30	PF
Residue, Total (TS) by SM2540B									
Residue, Total (TS)	81.9		0.00100	0.00100	wt%	218381	1	01/12/2016 08:30	JC
MERCURY, TCLP SW1311/7470A					**(SW7470A)**				
Mercury	BRL		0.000288	0.00400	mg/L	218356	1	01/13/2016 14:30	JR
Laboratory Hydrogen Ion (pH) SW9045D					**(SW9045D)**				
pH	3.21	H	0.01	0.01	pH Units	218319	1	01/13/2016 08:30	JS
ICP METALS, TCLP SW1311/6010C					**(SW3010A)**				
Arsenic	BRL		0.0155	0.250	mg/L	218329	1	01/13/2016 15:22	IO
Barium	0.0881	J	0.00650	0.500	mg/L	218329	1	01/13/2016 15:22	IO
Cadmium	BRL		0.00150	0.0250	mg/L	218329	1	01/13/2016 15:22	IO
Chromium	BRL		0.00150	0.0500	mg/L	218329	1	01/13/2016 15:22	IO
Lead	0.247		0.0125	0.0500	mg/L	218329	1	01/13/2016 15:22	IO
Selenium	BRL		0.0125	0.100	mg/L	218329	1	01/13/2016 15:22	IO
Silver	BRL		0.00300	0.0250	mg/L	218329	1	01/13/2016 15:22	IO
METALS, TOTAL SW6010C					**(SW3050B)**				
Calcium	2530		0.833	60.0	mg/Kg-dry	218201	1	01/12/2016 14:45	IO
PERCENT MOISTURE D2216									
Percent Moisture	18.1		0	0	wt%	R308163	1	01/12/2016 08:30	JC

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 20-Jan-16

Client:	Georgia Power Company	**Client Sample ID:**	T3
Project Name:	Plant McManus	**Collection Date:**	1/6/2016 4:30:00 PM
Lab ID:	1601571-003	**Matrix:**	Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified					**(SW9060 Modified)**				
Total Organic Carbon (TOC)	10700		164	500	mg/Kg-dry	218450	1	01/14/2016 10:29	JW
Total Metals by ICP INHOUSE_M					**(SW3050B)**				
Sulfur	7200	N	1.0	26	mg/Kg-dry	218201	1	01/14/2016 10:15	IO
Sulfide by SW9030B/9034					**(SW9030B)**				
Sulfide	BRL		38.6	45.9	mg/Kg-dry	218382	1	01/13/2016 08:30	PF
Residue, Total (TS) by SM2540B									
Residue, Total (TS)	87.1		0.00100	0.00100	wt%	218381	1	01/12/2016 08:30	JC
MERCURY, TCLP SW1311/7470A					**(SW7470A)**				
Mercury	BRL		0.000288	0.00400	mg/L	218356	1	01/13/2016 14:32	JR
Laboratory Hydrogen Ion (pH) SW9045D					**(SW9045D)**				
pH	8.05	H	0.01	0.01	pH Units	218319	1	01/13/2016 08:30	JS
ICP METALS, TCLP SW1311/6010C					**(SW3010A)**				
Arsenic	BRL		0.0155	0.250	mg/L	218329	1	01/13/2016 15:25	IO
Barium	0.594		0.00650	0.500	mg/L	218329	1	01/13/2016 15:25	IO
Cadmium	BRL		0.00150	0.0250	mg/L	218329	1	01/13/2016 15:25	IO
Chromium	BRL		0.00150	0.0500	mg/L	218329	1	01/13/2016 15:25	IO
Lead	0.210		0.0125	0.0500	mg/L	218329	1	01/13/2016 15:25	IO
Selenium	0.0245	J	0.0125	0.100	mg/L	218329	1	01/13/2016 15:25	IO
Silver	BRL		0.00300	0.0250	mg/L	218329	1	01/13/2016 15:25	IO
METALS, TOTAL SW6010C					**(SW3050B)**				
Calcium	8240		0.726	52.3	mg/Kg-dry	218201	1	01/12/2016 14:49	IO
PERCENT MOISTURE D2216									
Percent Moisture	12.9		0	0	wt%	R308163	1	01/12/2016 08:30	JC

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 20-Jan-16

Client:	Georgia Power Company	**Client Sample ID:**	T4
Project Name:	Plant McManus	**Collection Date:**	1/7/2016 10:35:00 AM
Lab ID:	1601571-004	**Matrix:**	Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified					**(SW9060 Modified)**				
Total Organic Carbon (TOC)	52100	E	164	500	mg/Kg-dry	218450	1	01/14/2016 11:08	JW
Total Metals by ICP INHOUSE_M					**(SW3050B)**				
Sulfur	140	N	1.5	40	mg/Kg-dry	218201	1	01/14/2016 10:18	IO
Sulfide by SW9030B/9034					**(SW9030B)**				
Sulfide	BRL		53.6	63.8	mg/Kg-dry	218382	1	01/13/2016 08:30	PF
Residue, Total (TS) by SM2540B									
Residue, Total (TS)	62.7		0.00100	0.00100	wt%	218381	1	01/12/2016 08:30	JC
MERCURY, TCLP SW1311/7470A					**(SW7470A)**				
Mercury	BRL		0.000288	0.00400	mg/L	218356	1	01/13/2016 14:34	JR
Laboratory Hydrogen Ion (pH) SW9045D					**(SW9045D)**				
pH	7.30	H	0.01	0.01	pH Units	218319	1	01/13/2016 08:30	JS
ICP METALS, TCLP SW1311/6010C					**(SW3010A)**				
Arsenic	0.130	J	0.0155	0.250	mg/L	218329	1	01/13/2016 15:39	IO
Barium	0.959		0.00650	0.500	mg/L	218329	1	01/13/2016 15:39	IO
Cadmium	BRL		0.00150	0.0250	mg/L	218329	1	01/13/2016 15:39	IO
Chromium	0.00173	J	0.00150	0.0500	mg/L	218329	1	01/13/2016 15:39	IO
Lead	0.254		0.0125	0.0500	mg/L	218329	1	01/13/2016 15:39	IO
Selenium	0.0440	J	0.0125	0.100	mg/L	218329	1	01/13/2016 15:39	IO
Silver	BRL		0.00300	0.0250	mg/L	218329	1	01/13/2016 15:39	IO
METALS, TOTAL SW6010C					**(SW3050B)**				
Calcium	5590		1.10	79.5	mg/Kg-dry	218201	1	01/12/2016 14:53	IO
PERCENT MOISTURE D2216									
Percent Moisture	37.3		0	0	wt%	R308163	1	01/12/2016 08:30	JC

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc

Date: 20-Jan-16

Client:	Georgia Power Company	**Client Sample ID:**	T5
Project Name:	Plant McManus	**Collection Date:**	1/7/2016 11:15:00 AM
Lab ID:	1601571-005	**Matrix:**	Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified					**(SW9060 Modified)**				
Total Organic Carbon (TOC)	59500	E	164	500	mg/Kg-dry	218657	1	01/19/2016 13:14	JW
Total Metals by ICP INHOUSE_M					**(SW3050B)**				
Sulfur	140	N	1.5	38	mg/Kg-dry	218201	1	01/14/2016 10:20	IO
Sulfide by SW9030B/9034					**(SW9030B)**				
Sulfide	BRL		54.3	64.6	mg/Kg-dry	218382	1	01/13/2016 08:30	PF
Residue, Total (TS) by SM2540B									
Residue, Total (TS)	61.9		0.00100	0.00100	wt%	218381	1	01/12/2016 08:30	JC
MERCURY, TCLP SW1311/7470A					**(SW7470A)**				
Mercury	BRL		0.000288	0.00400	mg/L	218356	1	01/13/2016 14:36	JR
Laboratory Hydrogen Ion (pH) SW9045D					**(SW9045D)**				
pH	7.62	H	0.01	0.01	pH Units	218319	1	01/13/2016 08:30	JS
ICP METALS, TCLP SW1311/6010C					**(SW3010A)**				
Arsenic	0.0357	J	0.0155	0.250	mg/L	218329	1	01/13/2016 15:43	IO
Barium	0.729		0.00650	0.500	mg/L	218329	1	01/13/2016 15:43	IO
Cadmium	BRL		0.00150	0.0250	mg/L	218329	1	01/13/2016 15:43	IO
Chromium	BRL		0.00150	0.0500	mg/L	218329	1	01/13/2016 15:43	IO
Lead	0.0721		0.0125	0.0500	mg/L	218329	1	01/13/2016 15:43	IO
Selenium	0.0174	J	0.0125	0.100	mg/L	218329	1	01/13/2016 15:43	IO
Silver	BRL		0.00300	0.0250	mg/L	218329	1	01/13/2016 15:43	IO
METALS, TOTAL SW6010C					**(SW3050B)**				
Calcium	2690		1.06	76.4	mg/Kg-dry	218201	1	01/12/2016 14:58	IO
PERCENT MOISTURE D2216									
Percent Moisture	38.1		0	0	wt%	R308163	1	01/12/2016 08:30	JC

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 20-Jan-16

Client:	Georgia Power Company	**Client Sample ID:**	T6
Project Name:	Plant McManus	**Collection Date:**	1/7/2016 11:50:00 AM
Lab ID:	1601571-006	**Matrix:**	Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified					**(SW9060 Modified)**				
Total Organic Carbon (TOC)	6120		164	500	mg/Kg-dry	218450	1	01/14/2016 13:19	JW
Total Metals by ICP INHOUSE_M					**(SW3050B)**				
Sulfur	210	N	1.3	33	mg/Kg-dry	218201	1	01/14/2016 10:23	IO
Sulfide by SW9030B/9034					**(SW9030B)**				
Sulfide	BRL		44.3	52.8	mg/Kg-dry	218382	1	01/13/2016 08:30	PF
Residue, Total (TS) by SM2540B									
Residue, Total (TS)	75.8		0.00100	0.00100	wt%	218381	1	01/12/2016 08:30	JC
MERCURY, TCLP SW1311/7470A					**(SW7470A)**				
Mercury	BRL		0.000288	0.00400	mg/L	218356	1	01/13/2016 14:38	JR
Laboratory Hydrogen Ion (pH) SW9045D					**(SW9045D)**				
pH	6.75	H	0.01	0.01	pH Units	218319	1	01/13/2016 08:30	JS
ICP METALS, TCLP SW1311/6010C					**(SW3010A)**				
Arsenic	BRL		0.0155	0.250	mg/L	218329	1	01/13/2016 15:47	IO
Barium	0.157	J	0.00650	0.500	mg/L	218329	1	01/13/2016 15:47	IO
Cadmium	BRL		0.00150	0.0250	mg/L	218329	1	01/13/2016 15:47	IO
Chromium	0.00337	J	0.00150	0.0500	mg/L	218329	1	01/13/2016 15:47	IO
Lead	0.273		0.0125	0.0500	mg/L	218329	1	01/13/2016 15:47	IO
Selenium	0.0294	J	0.0125	0.100	mg/L	218329	1	01/13/2016 15:47	IO
Silver	BRL		0.00300	0.0250	mg/L	218329	1	01/13/2016 15:47	IO
METALS, TOTAL SW6010C					**(SW3050B)**				
Calcium	1170		0.904	65.1	mg/Kg-dry	218201	1	01/12/2016 15:02	IO
PERCENT MOISTURE D2216									
Percent Moisture	24.2		0	0	wt%	R308163	1	01/12/2016 08:30	JC

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc **Date:** 20-Jan-16

Client:	Georgia Power Company	**Client Sample ID:**	T7
Project Name:	Plant McManus	**Collection Date:**	1/7/2016 12:20:00 PM
Lab ID:	1601571-007	**Matrix:**	Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified					**(SW9060 Modified)**				
Total Organic Carbon (TOC)	64200	E	164	500	mg/Kg-dry	218450	1	01/14/2016 13:57	JW
Total Metals by ICP INHOUSE_M					**(SW3050B)**				
Sulfur	180	N	1.5	39	mg/Kg-dry	218201	1	01/14/2016 10:26	IO
Sulfide by SW9030B/9034					**(SW9030B)**				
Sulfide	BRL		56.4	67.1	mg/Kg-dry	218382	1	01/13/2016 08:30	PF
Residue, Total (TS) by SM2540B									
Residue, Total (TS)	59.6		0.00100	0.00100	wt%	218381	1	01/12/2016 08:30	JC
MERCURY, TCLP SW1311/7470A					**(SW7470A)**				
Mercury	BRL		0.000288	0.00400	mg/L	218356	1	01/13/2016 14:40	JR
Laboratory Hydrogen Ion (pH) SW9045D					**(SW9045D)**				
pH	7.52	H	0.01	0.01	pH Units	218319	1	01/13/2016 08:30	JS
ICP METALS, TCLP SW1311/6010C					**(SW3010A)**				
Arsenic	0.0834	J	0.0155	0.250	mg/L	218329	1	01/13/2016 15:51	IO
Barium	0.392	J	0.00650	0.500	mg/L	218329	1	01/13/2016 15:51	IO
Cadmium	BRL		0.00150	0.0250	mg/L	218329	1	01/13/2016 15:51	IO
Chromium	BRL		0.00150	0.0500	mg/L	218329	1	01/13/2016 15:51	IO
Lead	0.126		0.0125	0.0500	mg/L	218329	1	01/13/2016 15:51	IO
Selenium	BRL		0.0125	0.100	mg/L	218329	1	01/13/2016 15:51	IO
Silver	BRL		0.00300	0.0250	mg/L	218329	1	01/13/2016 15:51	IO
METALS, TOTAL SW6010C					**(SW3050B)**				
Calcium	3540		1.07	77.4	mg/Kg-dry	218201	1	01/12/2016 15:06	IO
PERCENT MOISTURE D2216									
Percent Moisture	40.4		0	0	wt%	R308163	1	01/12/2016 08:30	JC

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client GA Power Co. Work Order Number 1601571

Checklist completed by _____ 1-8-16
Signature Date

Carrier name: FedEx ✓ UPS __ Courier __ Client __ US Mail __ Other _____

Shipping container/cooler in good condition?	Yes ✓	No __	Not Present __
Custody seals intact on shipping container/cooler?	Yes __	No __	Not Present ✓
Custody seals intact on sample bottles?	Yes __	No __	Not Present __
Container/Temp Blank temperature in compliance? (0°≤6°C)*	Yes ✓	No __	

Cooler #1 3.7°C Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present?	Yes ✓	No __
Chain of custody signed when relinquished and received?	Yes ✓	No __
Chain of custody agrees with sample labels?	Yes ✓	No __
Samples in proper container/bottle?	Yes ✓	No __
Sample containers intact?	Yes ✓	No __
Sufficient sample volume for indicated test?	Yes ✓	No __
All samples received within holding time?	Yes __	No ✓
Was TAT marked on the COC?	Yes ✓	No __
Proceed with Standard TAT as per project history?	Yes __	No __ Not Applicable ✓
Water - VOA vials have zero headspace?	No VOA vials submitted ✓	Yes __ No __
Water - pH acceptable upon receipt?	Yes __	No __ Not Applicable ✓

Adjusted? _____ Checked by _____

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\\Aes_server\I\Sample Receipt\My Documents\COCs and pH Adjustment Sheet\Sample_Cooler_Recipt_Checklist_Rev1.rtf

Analytical Environmental Services, Inc

Client: Georgia Power Company
Project Name: Plant McManus
Lab Order: 1601571

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1601571-001A	T1	1/7/2016 9:20:00AM	Soil	MERCURY, TCLP Leached	01/12/2016	1/13/2016 11:50:00AM	01/13/2016
1601571-001A	T1	1/7/2016 9:20:00AM	Soil	ICP METALS, TCLP Leached	01/12/2016	1/13/2016 11:44:00AM	01/13/2016
1601571-001B	T1	1/7/2016 9:20:00AM	Soil	TOTAL METALS BY ICP		1/11/2016 1:45:00PM	01/12/2016
1601571-001B	T1	1/7/2016 9:20:00AM	Soil	Total Metals by ICP		1/11/2016 1:45:00PM	01/14/2016
1601571-001C	T1	1/7/2016 9:20:00AM	Soil	Sulfide		1/13/2016 8:30:00AM	01/13/2016
1601571-001C	T1	1/7/2016 9:20:00AM	Soil	Laboratory Hydrogen Ion (pH)		1/12/2016 8:30:00AM	01/13/2016
1601571-001C	T1	1/7/2016 9:20:00AM	Soil	PERCENT MOISTURE			01/12/2016
1601571-001C	T1	1/7/2016 9:20:00AM	Soil	Residue, Total (TS) by SM2540B		1/11/2016 2:55:00PM	01/12/2016
1601571-001D	T1	1/7/2016 9:20:00AM	Soil	Total Organic Carbon		1/11/2016 3:50:00PM	01/13/2016
1601571-002A	T2	1/7/2016 8:45:00AM	Soil	MERCURY, TCLP Leached	01/12/2016	1/13/2016 11:50:00AM	01/13/2016
1601571-002A	T2	1/7/2016 8:45:00AM	Soil	ICP METALS, TCLP Leached	01/12/2016	1/13/2016 11:44:00AM	01/13/2016
1601571-002B	T2	1/7/2016 8:45:00AM	Soil	TOTAL METALS BY ICP		1/11/2016 1:45:00PM	01/12/2016
1601571-002B	T2	1/7/2016 8:45:00AM	Soil	Total Metals by ICP		1/11/2016 1:45:00PM	01/14/2016
1601571-002C	T2	1/7/2016 8:45:00AM	Soil	Sulfide		1/13/2016 8:30:00AM	01/13/2016
1601571-002C	T2	1/7/2016 8:45:00AM	Soil	Laboratory Hydrogen Ion (pH)		1/12/2016 8:30:00AM	01/13/2016
1601571-002C	T2	1/7/2016 8:45:00AM	Soil	PERCENT MOISTURE			01/12/2016
1601571-002C	T2	1/7/2016 8:45:00AM	Soil	Residue, Total (TS) by SM2540B		1/11/2016 2:55:00PM	01/12/2016
1601571-002D	T2	1/7/2016 8:45:00AM	Soil	Total Organic Carbon		1/11/2016 3:50:00PM	01/13/2016
1601571-003A	T3	1/6/2016 4:30:00PM	Soil	MERCURY, TCLP Leached	01/12/2016	1/13/2016 11:50:00AM	01/13/2016
1601571-003A	T3	1/6/2016 4:30:00PM	Soil	ICP METALS, TCLP Leached	01/12/2016	1/13/2016 11:44:00AM	01/13/2016
1601571-003B	T3	1/6/2016 4:30:00PM	Soil	TOTAL METALS BY ICP		1/11/2016 1:45:00PM	01/12/2016
1601571-003B	T3	1/6/2016 4:30:00PM	Soil	Total Metals by ICP		1/11/2016 1:45:00PM	01/14/2016
1601571-003C	T3	1/6/2016 4:30:00PM	Soil	Sulfide		1/13/2016 8:30:00AM	01/13/2016
1601571-003C	T3	1/6/2016 4:30:00PM	Soil	Laboratory Hydrogen Ion (pH)		1/12/2016 8:30:00AM	01/13/2016
1601571-003C	T3	1/6/2016 4:30:00PM	Soil	PERCENT MOISTURE			01/12/2016
1601571-003C	T3	1/6/2016 4:30:00PM	Soil	Residue, Total (TS) by SM2540B		1/11/2016 2:55:00PM	01/12/2016
1601571-003D	T3	1/6/2016 4:30:00PM	Soil	Total Organic Carbon		1/11/2016 3:50:00PM	01/14/2016
1601571-004A	T4	1/7/2016 10:35:00AM	Soil	MERCURY, TCLP Leached	01/12/2016	1/13/2016 11:50:00AM	01/13/2016
1601571-004A	T4	1/7/2016 10:35:00AM	Soil	ICP METALS, TCLP Leached	01/12/2016	1/13/2016 11:44:00AM	01/13/2016

Analytical Environmental Services, Inc

Date: 20-Jan-16

Client: Georgia Power Company
Project Name: Plant McManus
Lab Order: 1601571

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1601571-004B	T4	1/7/2016 10:35:00AM	Soil	TOTAL METALS BY ICP		1/11/2016 1:45:00PM	01/12/2016
1601571-004B	T4	1/7/2016 10:35:00AM	Soil	Total Metals by ICP		1/11/2016 1:45:00PM	01/14/2016
1601571-004C	T4	1/7/2016 10:35:00AM	Soil	Sulfide		1/13/2016 8:30:00AM	01/13/2016
1601571-004C	T4	1/7/2016 10:35:00AM	Soil	Laboratory Hydrogen Ion (pH)		1/12/2016 8:30:00AM	01/13/2016
1601571-004C	T4	1/7/2016 10:35:00AM	Soil	PERCENT MOISTURE			01/12/2016
1601571-004C	T4	1/7/2016 10:35:00AM	Soil	Residue, Total (TS) by SM2540B		1/11/2016 2:55:00PM	01/12/2016
1601571-004D	T4	1/7/2016 10:35:00AM	Soil	Total Organic Carbon		1/11/2016 3:50:00PM	01/14/2016
1601571-005A	T5	1/7/2016 11:15:00AM	Soil	MERCURY, TCLP Leached	01/12/2016	1/13/2016 11:50:00AM	01/13/2016
1601571-005A	T5	1/7/2016 11:15:00AM	Soil	ICP METALS, TCLP Leached	01/12/2016	1/13/2016 11:44:00AM	01/13/2016
1601571-005B	T5	1/7/2016 11:15:00AM	Soil	TOTAL METALS BY ICP		1/11/2016 1:45:00PM	01/12/2016
1601571-005B	T5	1/7/2016 11:15:00AM	Soil	Total Organic Carbon		1/16/2016 2:00:26PM	01/19/2016
1601571-005B	T5	1/7/2016 11:15:00AM	Soil	Total Metals by ICP		1/11/2016 1:45:00PM	01/14/2016
1601571-005C	T5	1/7/2016 11:15:00AM	Soil	Sulfide		1/13/2016 8:30:00AM	01/13/2016
1601571-005C	T5	1/7/2016 11:15:00AM	Soil	Laboratory Hydrogen Ion (pH)		1/12/2016 8:30:00AM	01/13/2016
1601571-005C	T5	1/7/2016 11:15:00AM	Soil	PERCENT MOISTURE			01/12/2016
1601571-005C	T5	1/7/2016 11:15:00AM	Soil	Residue, Total (TS) by SM2540B		1/11/2016 2:55:00PM	01/12/2016
1601571-005D	T5	1/7/2016 11:15:00AM	Soil	Total Organic Carbon		1/11/2016 3:50:00PM	01/14/2016
1601571-006A	T6	1/7/2016 11:50:00AM	Soil	MERCURY, TCLP Leached	01/12/2016	1/13/2016 11:50:00AM	01/13/2016
1601571-006A	T6	1/7/2016 11:50:00AM	Soil	ICP METALS, TCLP Leached	01/12/2016	1/13/2016 11:44:00AM	01/13/2016
1601571-006B	T6	1/7/2016 11:50:00AM	Soil	TOTAL METALS BY ICP		1/11/2016 1:45:00PM	01/12/2016
1601571-006B	T6	1/7/2016 11:50:00AM	Soil	Total Metals by ICP		1/11/2016 1:45:00PM	01/14/2016
1601571-006C	T6	1/7/2016 11:50:00AM	Soil	Sulfide		1/13/2016 8:30:00AM	01/13/2016
1601571-006C	T6	1/7/2016 11:50:00AM	Soil	Laboratory Hydrogen Ion (pH)		1/12/2016 8:30:00AM	01/13/2016
1601571-006C	T6	1/7/2016 11:50:00AM	Soil	PERCENT MOISTURE			01/12/2016
1601571-006C	T6	1/7/2016 11:50:00AM	Soil	Residue, Total (TS) by SM2540B		1/11/2016 2:55:00PM	01/12/2016
1601571-006D	T6	1/7/2016 11:50:00AM	Soil	Total Organic Carbon		1/11/2016 3:50:00PM	01/14/2016
1601571-007A	T7	1/7/2016 12:20:00PM	Soil	MERCURY, TCLP Leached	01/12/2016	1/13/2016 11:50:00AM	01/13/2016
1601571-007A	T7	1/7/2016 12:20:00PM	Soil	ICP METALS, TCLP Leached	01/12/2016	1/13/2016 11:44:00AM	01/13/2016
1601571-007B	T7	1/7/2016 12:20:00PM	Soil	TOTAL METALS BY ICP		1/11/2016 1:45:00PM	01/12/2016

Client: Georgia Power Company
Project Name: Plant McManus
Lab Order: 1601571

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1601571-007B	T7	1/7/2016 12:20:00PM	Soil	Total Metals by ICP		1/11/2016 1:45:00PM	01/14/2016
1601571-007C	T7	1/7/2016 12:20:00PM	Soil	Sulfide		1/13/2016 8:30:00AM	01/13/2016
1601571-007C	T7	1/7/2016 12:20:00PM	Soil	Laboratory Hydrogen Ion (pH)		1/12/2016 8:30:00AM	01/13/2016
1601571-007C	T7	1/7/2016 12:20:00PM	Soil	PERCENT MOISTURE			01/12/2016
1601571-007C	T7	1/7/2016 12:20:00PM	Soil	Residue, Total (TS) by SM2540B		1/11/2016 2:55:00PM	01/12/2016
1601571-007D	T7	1/7/2016 12:20:00PM	Soil	Total Organic Carbon		1/11/2016 3:50:00PM	01/14/2016

ANALYTICAL QC SUMMARY REPORT

Client: Georgia Power Company
Project Name: Plant McManus
Workorder: 1601571

BatchID: 218201

Sample ID: MB-218201 Client ID:
SampleType: MBLK TestCode: METALS, TOTAL SW6010C
Units: mg/Kg Prep Date: 01/11/2016 Run No: 308161
BatchID: 218201 Analysis Date: 01/12/2016 Seq No: 6614305

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Calcium	1.433	50.0									J

Sample ID: MB-218201 Client ID:
SampleType: MBLK TestCode: Total Metals by ICP INHOUSE_M
Units: mg/Kg Prep Date: 01/11/2016 Run No: 308261
BatchID: 218201 Analysis Date: 01/14/2016 Seq No: 6616405

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfur	BRL	25									N

Sample ID: LCS-218201 Client ID:
SampleType: LCS TestCode: METALS, TOTAL SW6010C
Units: mg/Kg Prep Date: 01/11/2016 Run No: 308161
BatchID: 218201 Analysis Date: 01/12/2016 Seq No: 6614306

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Calcium	501.4	50.0	500.0	1.433	100.0	80	120				

Sample ID: LCS-218201 Client ID:
SampleType: LCS TestCode: Total Metals by ICP INHOUSE_M
Units: mg/Kg Prep Date: 01/11/2016 Run No: 308261
BatchID: 218201 Analysis Date: 01/14/2016 Seq No: 6616406

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfur	50.40	25	50.00		101	80	120				N

Sample ID: 1601335-001AMS Client ID:
SampleType: MS TestCode: METALS, TOTAL SW6010C
Units: mg/Kg-dry Prep Date: 01/11/2016 Run No: 308161
BatchID: 218201 Analysis Date: 01/12/2016 Seq No: 6614308

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Calcium	1115	56.3	562.9	408.1	126	75	125				S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Georgia Power Company
Project Name: Plant McManus
Workorder: 1601571

ANALYTICAL QC SUMMARY REPORT

BatchID: 218201

Sample ID: 1601335-001AMS	Client ID:				Units: mg/Kg-dry		Prep Date: 01/11/2016		Run No: 308261	
SampleType: MS	TestCode: Total Metals by ICP INHOUSE_M				BatchID: 218201		Analysis Date: 01/14/2016		Seq No: 6616408	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfur	75.57	28	56.29	13.81	110	75	125				N

Sample ID: 1601335-001AMSD	Client ID:				Units: mg/Kg-dry		Prep Date: 01/11/2016		Run No: 308161	
SampleType: MSD	TestCode: METALS, TOTAL SW6010C				BatchID: 218201		Analysis Date: 01/12/2016		Seq No: 6614309	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Calcium	888.0	56.3	562.8	408.1	85.3	75	125	1115	22.6	20	R

Sample ID: 1601335-001AMSD	Client ID:				Units: mg/Kg-dry		Prep Date: 01/11/2016		Run No: 308261	
SampleType: MSD	TestCode: Total Metals by ICP INHOUSE_M				BatchID: 218201		Analysis Date: 01/14/2016		Seq No: 6616409	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfur	75.11	28	56.28	13.81	109	75	125	75.57	0.603	30	N

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Georgia Power Company
Project Name: Plant McManus
Workorder: 1601571

ANALYTICAL QC SUMMARY REPORT

BatchID: 218319

Sample ID: LCS-218319	Client ID:	Units: pH Units	Prep Date: 01/12/2016	Run No: 308074
SampleType: LCS	TestCode: Laboratory Hydrogen Ion (pH) SW9045D	BatchID: 218319	Analysis Date: 01/13/2016	Seq No: 6612319

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.040	0.01	7.000		101	90	110				H

Sample ID: 1601571-001CDUP	Client ID: T1	Units: pH Units	Prep Date: 01/12/2016	Run No: 308074
SampleType: DUP	TestCode: Laboratory Hydrogen Ion (pH) SW9045D	BatchID: 218319	Analysis Date: 01/13/2016	Seq No: 6612331

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	4.030	0.01						4.010	0.498	10	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Georgia Power Company
Project Name: Plant McManus
Workorder: 1601571

ANALYTICAL QC SUMMARY REPORT

BatchID: 218329

Sample ID: MB-218329 Client ID:
SampleType: MBLK TestCode: ICP METALS, TCLP SW1311/6010C
Units: mg/L Prep Date: 01/12/2016 Run No: 308160
BatchID: 218329 Analysis Date: 01/12/2016 Seq No: 6614209

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	BRL	0.250									
Barium	0.02469	0.500									J
Cadmium	BRL	0.0250									
Chromium	BRL	0.0500									
Lead	BRL	0.0500									
Selenium	BRL	0.100									
Silver	BRL	0.0250									

Sample ID: LCS-218329 Client ID:
SampleType: LCS TestCode: ICP METALS, TCLP SW1311/6010C
Units: mg/L Prep Date: 01/12/2016 Run No: 308160
BatchID: 218329 Analysis Date: 01/12/2016 Seq No: 6614210

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	4.997	0.250	5.000		99.9	80	120				
Barium	4.863	0.500	5.000	0.02469	96.8	80	120				
Cadmium	4.948	0.0250	5.000		99.0	80	120				
Chromium	4.885	0.0500	5.000		97.7	80	120				
Lead	4.791	0.0500	5.000		95.8	80	120				
Selenium	4.992	0.100	5.000		99.8	80	120				
Silver	0.4918	0.0250	0.5000		98.4	80	120				

Sample ID: 1601558-001BMS Client ID:
SampleType: MS TestCode: ICP METALS, TCLP SW1311/6010C
Units: mg/L Prep Date: 01/12/2016 Run No: 308160
BatchID: 218329 Analysis Date: 01/12/2016 Seq No: 6614215

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	4.921	0.250	5.000		98.4	50	150				
Barium	4.964	0.500	5.000	0.2390	94.5	50	150				
Cadmium	4.846	0.0250	5.000		96.9	50	150				
Chromium	4.802	0.0500	5.000	0.004048	96.0	50	150				

Qualifiers:

>	Greater than Result value	<	Less than Result value
BRL	Below reporting limit	E	Estimated (value above quantitation range)
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix

B	Analyte detected in the associated method blank
H	Holding times for preparation or analysis exceeded
R	RPD outside limits due to matrix

Client: Georgia Power Company
Project Name: Plant McManus
Workorder: 1601571

ANALYTICAL QC SUMMARY REPORT

BatchID: 218329

Sample ID: 1601558-001BMS Client ID:
SampleType: MS TestCode: ICP METALS, TCLP SW1311/6010C
Units: mg/L Prep Date: 01/12/2016 Run No: 308160
BatchID: 218329 Analysis Date: 01/12/2016 Seq No: 6614215

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Lead	4.968	0.0500	5.000	0.2595	94.2	50	150				
Selenium	4.958	0.100	5.000		99.2	50	150				
Silver	0.4817	0.0250	0.5000		96.3	50	150				

Sample ID: 1601558-001BMSD Client ID:
SampleType: MSD TestCode: ICP METALS, TCLP SW1311/6010C
Units: mg/L Prep Date: 01/12/2016 Run No: 308160
BatchID: 218329 Analysis Date: 01/12/2016 Seq No: 6614216

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	4.974	0.250	5.000		99.5	50	150	4.921	1.08	30	
Barium	5.021	0.500	5.000	0.2390	95.6	50	150	4.964	1.13	30	
Cadmium	4.893	0.0250	5.000		97.9	50	150	4.846	0.974	30	
Chromium	4.853	0.0500	5.000	0.004048	97.0	50	150	4.802	1.06	30	
Lead	5.006	0.0500	5.000	0.2595	94.9	50	150	4.968	0.756	30	
Selenium	5.016	0.100	5.000		100	50	150	4.958	1.17	30	
Silver	0.4875	0.0250	0.5000		97.5	50	150	0.4817	1.20	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Georgia Power Company
Project Name: Plant McManus
Workorder: 1601571

ANALYTICAL QC SUMMARY REPORT

BatchID: 218356

Sample ID: MB-218356	Client ID:				Units: mg/L		Prep Date: 01/13/2016		Run No: 308127	
SampleType: MBLK	TestCode: MERCURY, TCLP SW1311/7470A				BatchID: 218356		Analysis Date: 01/13/2016		Seq No: 6614694	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Mercury	BRL	0.00400								

Sample ID: LCS-218356	Client ID:				Units: mg/L		Prep Date: 01/13/2016		Run No: 308127	
SampleType: LCS	TestCode: MERCURY, TCLP SW1311/7470A				BatchID: 218356		Analysis Date: 01/13/2016		Seq No: 6614695	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Mercury	0.04108	0.00400	0.0400		103	80	120			

Sample ID: 1601558-001BMS	Client ID:				Units: mg/L		Prep Date: 01/13/2016		Run No: 308127	
SampleType: MS	TestCode: MERCURY, TCLP SW1311/7470A				BatchID: 218356		Analysis Date: 01/13/2016		Seq No: 6614697	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Mercury	0.04338	0.00400	0.0400		108	80	120			

Sample ID: 1601558-001BMSD	Client ID:				Units: mg/L		Prep Date: 01/13/2016		Run No: 308127	
SampleType: MSD	TestCode: MERCURY, TCLP SW1311/7470A				BatchID: 218356		Analysis Date: 01/13/2016		Seq No: 6614698	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Mercury	0.04218	0.00400	0.0400		105	80	120	0.04338	2.79	20

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Georgia Power Company
Project Name: Plant McManus
Workorder: 1601571

ANALYTICAL QC SUMMARY REPORT

BatchID: 218381

Sample ID: MB-218381	Client ID:				Units: wt%	Prep Date: 01/11/2016		Run No: 308163		
SampleType: MBLK	TestCode: Residue, Total (TS) by SM2540B				BatchID: 218381	Analysis Date: 01/11/2016		Seq No: 6614410		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Residue, Total (TS)	BRL	0.00100								

Sample ID: 1601571-003CDUP	Client ID: T3				Units: wt%	Prep Date: 01/11/2016		Run No: 308163		
SampleType: DUP	TestCode: Residue, Total (TS) by SM2540B				BatchID: 218381	Analysis Date: 01/12/2016		Seq No: 6614490		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Residue, Total (TS)	87.12	0.00100						87.08	0.046	5

Sample ID: 1601577-001BDUP	Client ID:				Units: wt%	Prep Date: 01/11/2016		Run No: 308163		
SampleType: DUP	TestCode: Residue, Total (TS) by SM2540B				BatchID: 218381	Analysis Date: 01/12/2016		Seq No: 6614483		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Residue, Total (TS)	7.810	0.00100						7.790	0.256	5

Sample ID: 1601631-004ADUP	Client ID:				Units: wt%	Prep Date: 01/11/2016		Run No: 308163		
SampleType: DUP	TestCode: Residue, Total (TS) by SM2540B				BatchID: 218381	Analysis Date: 01/12/2016		Seq No: 6614484		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Residue, Total (TS)	14.57	0.00100						14.12	3.14	5

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Georgia Power Company
Project Name: Plant McManus
Workorder: 1601571

ANALYTICAL QC SUMMARY REPORT

BatchID: 218382

Sample ID: MB-218382	Client ID:				Units: mg/Kg	Prep Date: 01/13/2016	Run No: 308166		
SampleType: MBLK	TestCode: Sulfide by SW9030B/9034				BatchID: 218382	Analysis Date: 01/13/2016	Seq No: 6614466		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfide	BRL	40.0									

Sample ID: LCS-218382	Client ID:				Units: mg/Kg	Prep Date: 01/13/2016	Run No: 308166		
SampleType: LCS	TestCode: Sulfide by SW9030B/9034				BatchID: 218382	Analysis Date: 01/13/2016	Seq No: 6614467		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfide	1180	40.0	1180		100	40	120				

Sample ID: 1601336-001AMS	Client ID:				Units: mg/Kg	Prep Date: 01/13/2016	Run No: 308166		
SampleType: MS	TestCode: Sulfide by SW9030B/9034				BatchID: 218382	Analysis Date: 01/13/2016	Seq No: 6614481		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfide	1060	40.0	1180	226.2	70.7	68.5	117				

Sample ID: 1601336-001AMSD	Client ID:				Units: mg/Kg	Prep Date: 01/13/2016	Run No: 308166		
SampleType: MSD	TestCode: Sulfide by SW9030B/9034				BatchID: 218382	Analysis Date: 01/13/2016	Seq No: 6614482		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sulfide	1040	40.0	1180	226.2	69.0	68.5	117	1060	1.90	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Georgia Power Company
Project Name: Plant McManus
Workorder: 1601571

ANALYTICAL QC SUMMARY REPORT

BatchID: 218450

Sample ID: MB-218450	Client ID:				Units: mg/Kg-dry	Prep Date: 01/11/2016		Run No: 308287		
SampleType: MBLK	TestCode: Total Organic Carbon SW9060A Modified				BatchID: 218450	Analysis Date: 01/13/2016		Seq No: 6616872		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Total Organic Carbon (TOC)	BRL	500								

Sample ID: LCS-218450	Client ID:				Units: mg/Kg-dry	Prep Date: 01/11/2016		Run No: 308287		
SampleType: LCS	TestCode: Total Organic Carbon SW9060A Modified				BatchID: 218450	Analysis Date: 01/13/2016		Seq No: 6616873		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Total Organic Carbon (TOC)	2784	500	2610		107	70	130			

Sample ID: 1601571-002DDUP	Client ID: T2				Units: mg/Kg-dry	Prep Date: 01/11/2016		Run No: 308287		
SampleType: DUP	TestCode: Total Organic Carbon SW9060A Modified				BatchID: 218450	Analysis Date: 01/13/2016		Seq No: 6616915		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Total Organic Carbon (TOC)	24860	500						21280	15.5	50

Qualifiers:
- `>` Greater than Result value
- `<` Less than Result value
- B Analyte detected in the associated method blank
- BRL Below reporting limit
- E Estimated (value above quantitation range)
- H Holding times for preparation or analysis exceeded
- J Estimated value detected below Reporting Limit
- N Analyte not NELAC certified
- R RPD outside limits due to matrix
- Rpt Lim Reporting Limit
- S Spike Recovery outside limits due to matrix

Client: Georgia Power Company
Project Name: Plant McManus
Workorder: 1601571

ANALYTICAL QC SUMMARY REPORT

BatchID: 218657

Sample ID: MB-218657	Client ID:				Units: mg/Kg-dry	Prep Date: 01/16/2016	Run No: 308591		
SampleType: MBLK	TestCode: Total Organic Carbon SW9060A Modified				BatchID: 218657	Analysis Date: 01/19/2016	Seq No: 6623408		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Total Organic Carbon (TOC)	BRL	500									

Sample ID: LCS-218657	Client ID:				Units: mg/Kg-dry	Prep Date: 01/16/2016	Run No: 308591		
SampleType: LCS	TestCode: Total Organic Carbon SW9060A Modified				BatchID: 218657	Analysis Date: 01/19/2016	Seq No: 6623412		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Total Organic Carbon (TOC)	2374	500	2610		91.0	70	130				

Sample ID: 1601571-005BDUP	Client ID: T5				Units: mg/Kg-dry	Prep Date: 01/16/2016	Run No: 308591		
SampleType: DUP	TestCode: Total Organic Carbon SW9060A Modified				BatchID: 218657	Analysis Date: 01/19/2016	Seq No: 6623423		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Total Organic Carbon (TOC)	62030	500						59510	4.15	50	E

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Report

L7E0283

Project

Keystone Terminal

Project Number

[none]

FTS ANALYTICAL SERVICES

May 31, 2017
IntraLabs -Jacksonville
1909 Southampton Road
Jacksonville, FL 32207

Minority Women Business Enterprise
Small Disadvantaged Business Enterprise

1412 Tech Blvd
Tampa, FL 33619

Minority Women Business Enterprise
Small Disadvantaged Business Enterprise

Phone #: 813-620-2000
Website: www.ftsanalytical.com

May 31, 2017

Tommy Carr
IntraLabs -Jacksonville
1909 Southampton Road
Jacksonville, FL 32207

RE: Keystone Terminal

We are reporting the results of the analyses performed on the samples recieved on 5/19/2017 under the project name referenced above and identified as the lab Work Order L7E0283. All results being reported under this Report apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontracted lab, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reporting using all other available quality control methods.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by FTS Analytical Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise agreed upon. The samples received, and described as recorded in Work Order L7E0283 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise agreed upon. We reserve the right to return to you any unused samples, extracts, or solutions if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding standard practices, controlled/regulated substances, etc.)

We thank you for selecting FTS Analytical to serve your analytical needs. If you have any questions concerning this report, please do not hesitate to contact us at any time. We will be happy to help.

Sincerely,

/Derek Rounsley

J. Derek Rounsley For Derek Rounsley
Project Manager

FTS ANALYTICAL SERVICES

MWBE SDBE
NELAC DoD Accredited

IntraLabs -Jacksonville	Project: Keystone Terminal	
1909 Southampton Road	Project Number:	**Reported:**
Jacksonville, FL 32207	Project Manager: Tommy Carr	5/31/17 9:52

Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
L7E0283-01	AGREMAX	Solid	18-May-2017 00:00	19-May-2017 09:00

IntraLabs -Jacksonville 1909 Southampton Road Jacksonville, FL 32207	Project: Keystone Terminal Project Number: Project Manager: Tommy Carr	**Reported:** 5/31/17 9:52

Analysis Case Narrative

IntraLabs -Jacksonville 1909 Southampton Road Jacksonville, FL 32207	Project: Keystone Terminal Project Number: Project Manager: Tommy Carr	**Reported:** 5/31/17 9:52

Hits Summary

(Not Including Subcontracted Analysis)

Sample: AGREMAX

Lab ID: L7E0283-01

Analyte	Result	Qual	PQL	MDL	Units	Dil	Date Analyzed	CAS #	Method
pH	**11.4**		0.0100	0.0100	SU	1	5/25/17 15:45		EPA 9040/1311
Sulfide	**232**		20.0	10.5	mg/L	20	5/25/17 14:30	18496-25-8	SM 4500-SF00
% Solids	**67.8**		0.100	0.100	%	1	5/22/17 15:25		SM 2540G
TOC, Total Organic Carbon	**6980**	V			mg/Kg dry	1	5/30/17 11:00		EPA 9060
Sulfate	**14000**		737	124	mg/Kg dry	50	5/24/17 19:14	14808-79-8	EPA 9056A
Sulfate	**626**		25.0	4.20	mg/L	5	5/24/17 10:07	14808-79-8	EPA 9056A
Calcium	**223000**		1460	16.6	mg/Kg dry	40	5/23/17 14:56	7440-70-2	EPA 6010C
Percent Moisture	**32.2**		0.100	0.100	%	1	5/22/17 15:25		SM 2540G
Sulfur	**93.8**		4.00	0.640	mg/L	20	5/24/17 16:27	7704-34-9	EPA 6010C
Sulfur	**40800**		146	47.6	mg/Kg dry	40	5/23/17 14:56	7704-34-9	EPA 6010C

IntraLabs -Jacksonville
1909 Southampton Road
Jacksonville, FL 32207

Project: Keystone Terminal
Project Number:
Project Manager: Tommy Carr

Reported:
5/31/17 9:52

Sample Results

Client Sample ID: AGREMAX
Lab Sample ID: L7E0283-01 (Solid)

Sampled:5/18/17 0:00

Analyte	Result	Qual	PQL	MDL	Units	Dil	Date Prepared	Date Analyzed	CAS #
Anions by Method 9056									
Sulfate	**14000**		737	124	mg/Kg dry	50	5/24/17 14:00	5/24/17 19:14	14808-79-8
Percent Moisture by Method 2540G									
% Solids	**67.8**		0.100	0.100	%	1	5/19/17 14:31	5/22/17 15:25	
Percent Moisture	**32.2**		0.100	0.100	%	1	5/19/17 14:31	5/22/17 15:25	
pH S by Method 9045D									
pH	**11.4**		0.0100	0.0100	SU	1	5/25/17 13:43	5/25/17 15:45	
Sulfide 4500-S-F									
Sulfide	**232**		20.0	10.5	mg/L	20	5/25/17 13:00	5/25/17 14:30	18496-25-8
TCLP Anions by Method 9056									
Sulfate	**626**		25.0	4.20	mg/L	5	5/24/17 9:55	5/24/17 10:07	14808-79-8
TCLP Metal Analysis by Method 6010C									
Sulfur	**93.8**		4.00	0.640	mg/L	20	5/24/17 13:33	5/24/17 16:27	7704-34-9
TCLP Sulfide 4500-S-F									
Sulfide	0.525	U	1.00	0.525	mg/L	1	5/25/17 9:30	5/25/17 15:48	18496-25-8
TOC Walkley Black by Method 9060									
TOC, Total Organic Carbon	**6980**	V			mg/Kg dry	1	5/30/17 11:00	5/30/17 11:00	
Total Metal Analysis by Method 200.8									
Sulfur	**40800**		146	47.6	mg/Kg dry	40	5/23/17 11:30	5/23/17 14:56	7704-34-9
Total Metal Analysis by Method 6010C									
Calcium	**223000**		1460	16.6	mg/Kg dry	40	5/23/17 11:30	5/23/17 14:56	7440-70-2

IntraLabs -Jacksonville	Project: Keystone Terminal	
1909 Southampton Road	Project Number:	**Reported:**
Jacksonville, FL 32207	Project Manager: Tommy Carr	5/31/17 9:52

Quality Control

Total Metal Analysis by Method 200.8

Analyte	Result	Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B7E0403											
Blank (B7E0403-BLK1)					Prepared & Analyzed: 5/23/2017						
Sulfur	1.63	U	5.00	1.63	mg/Kg wet						
LCS (B7E0403-BS1)					Prepared & Analyzed: 5/23/2017						
Sulfur	119		5.00	1.63	mg/Kg wet	100		119	80-120		
LCS Dup (B7E0403-BSD1)					Prepared & Analyzed: 5/23/2017						
Sulfur	120		5.00	1.63	mg/Kg wet	100		120	80-120	1	20
Duplicate (B7E0403-DUP1)		**Source: L7E0105-02**			Prepared & Analyzed: 5/23/2017						
Sulfur	15.1		5.95	1.94	mg/Kg dry		15.8			5	30
Matrix Spike (B7E0403-MS1)		**Source: L7E0105-02**			Prepared & Analyzed: 5/23/2017						
Sulfur	145		5.78	1.88	mg/Kg dry	116	15.8	111	80-120		
Matrix Spike Dup (B7E0403-MSD1)		**Source: L7E0105-02**			Prepared & Analyzed: 5/23/2017						
Sulfur	144		5.57	1.82	mg/Kg dry	111	15.8	115	80-120	0.2	20

IntraLabs -Jacksonville	Project: Keystone Terminal	
1909 Southampton Road	Project Number:	**Reported:**
Jacksonville, FL 32207	Project Manager: Tommy Carr	5/31/17 9:52

Quality Control
(Continued)

Total Metal Analysis by Method 6010C

Analyte	Result	Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B7E0403											
Blank (B7E0403-BLK1)					Prepared & Analyzed: 5/23/2017						
Calcium	0.570	U	50.0	0.570	mg/Kg wet						
LCS (B7E0403-BS1)					Prepared & Analyzed: 5/23/2017						
Calcium	1090		50.0	0.570	mg/Kg wet	1000		109	80-120		
LCS Dup (B7E0403-BSD1)					Prepared & Analyzed: 5/23/2017						
Calcium	1090		50.0	0.570	mg/Kg wet	1000		109	80-120	0.4	20
Duplicate (B7E0403-DUP1)		**Source: L7E0105-02**			Prepared & Analyzed: 5/23/2017						
Calcium	7.33	I	59.5	0.678	mg/Kg dry		8.86			19	30
Matrix Spike (B7E0403-MS1)		**Source: L7E0105-02**			Prepared & Analyzed: 5/23/2017						
Calcium	1170		57.8	0.659	mg/Kg dry	1160	8.86	100	80-120		
Matrix Spike Dup (B7E0403-MSD1)		**Source: L7E0105-02**			Prepared & Analyzed: 5/23/2017						
Calcium	1120		55.7	0.635	mg/Kg dry	1110	8.86	100	80-120	4	20

IntraLabs -Jacksonville
1909 Southampton Road
Jacksonville, FL 32207

Project: Keystone Terminal
Project Number:
Project Manager: Tommy Carr

Reported:
5/31/17 9:52

Quality Control
(Continued)

TCLP Metal Analysis by Method 6010C

Analyte	Result	Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B7E0450											
Blank (B7E0450-BLK1)					Prepared & Analyzed: 5/24/2017						
Sulfur	0.0320	U	0.200	0.0320	mg/L						
LCS (B7E0450-BS1)					Prepared & Analyzed: 5/24/2017						
Sulfur	2.16		0.200	0.0320	mg/L	2.00		108	80-120		
LCS Dup (B7E0450-BSD1)					Prepared & Analyzed: 5/24/2017						
Sulfur	2.24		0.200	0.0320	mg/L	2.00		112	80-120	3	20
Duplicate (B7E0450-DUP1)		**Source: L7E0282-01**			Prepared & Analyzed: 5/24/2017						
Sulfur	94.1		4.00	0.640	mg/L		93.5			0.7	30
Matrix Spike (B7E0450-MS1)		**Source: L7E0282-01**			Prepared & Analyzed: 5/24/2017						
Sulfur	94.1	J	4.00	0.640	mg/L	2.00	93.5	31	80-120		
Matrix Spike Dup (B7E0450-MSD1)		**Source: L7E0282-01**			Prepared & Analyzed: 5/24/2017						
Sulfur	94.3	J	4.00	0.640	mg/L	2.00	93.5	40	80-120	0.2	20

IntraLabs -Jacksonville	Project: Keystone Terminal	
1909 Southampton Road	Project Number:	**Reported:**
Jacksonville, FL 32207	Project Manager: Tommy Carr	5/31/17 9:52

Quality Control
(Continued)

Anions by Method 9056

Analyte	Result	Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B7E0429											
Blank (B7E0429-BLK1)					Prepared & Analyzed: 5/24/2017						
Sulfate	16.8	U	100	16.8	mg/Kg wet						
LCS (B7E0429-BS1)					Prepared & Analyzed: 5/24/2017						
Sulfate	187		100	16.8	mg/Kg wet	200		94	90-110		
LCS Dup (B7E0429-BSD1)					Prepared & Analyzed: 5/24/2017						
Sulfate	187		100	16.8	mg/Kg wet	200		94	90-110	0.2	20

IntraLabs -Jacksonville	Project: Keystone Terminal	
1909 Southampton Road	Project Number:	**Reported:**
Jacksonville, FL 32207	Project Manager: Tommy Carr	5/31/17 9:52

Quality Control
(Continued)

TCLP Anions by Method 9056

Analyte	Result	Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B7E0429											
Blank (B7E0429-BLK1)						Prepared & Analyzed: 5/24/2017					
Sulfate	8.40	U	50.0	8.40	mg/L						
LCS (B7E0429-BS1)						Prepared & Analyzed: 5/24/2017					
Sulfate	187		50.0	8.40	mg/L	200		94	90-110		
LCS Dup (B7E0429-BSD1)						Prepared & Analyzed: 5/24/2017					
Sulfate	187		50.0	8.40	mg/L	200		94	90-110	0.2	20

IntraLabs -Jacksonville	Project: Keystone Terminal	
1909 Southampton Road	Project Number:	**Reported:**
Jacksonville, FL 32207	Project Manager: Tommy Carr	5/31/17 9:52

Quality Control
(Continued)

Percent Moisture by Method 2540G

Analyte	Result	Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B7E0388											
Duplicate (B7E0388-DUP1)		**Source: L7E0292-01**			Prepared: 5/19/2017 Analyzed: 5/22/2017						
% Solids	88.9		0.100	0.100	%		88.9			0.01	20
Percent Moisture	11.1		0.100	0.100	%		11.1			0.09	20

IntraLabs -Jacksonville	Project: Keystone Terminal	
1909 Southampton Road	Project Number:	**Reported:**
Jacksonville, FL 32207	Project Manager: Tommy Carr	5/31/17 9:52

Quality Control
(Continued)

TOC Walkley Black by Method 9060

Analyte	Result	Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B7E0536											
Blank (B7E0536-BLK1)					Prepared & Analyzed: 5/30/2017						
TOC, Total Organic Carbon	0.00				mg/Kg wet						
LCS (B7E0536-BS1)					Prepared & Analyzed: 5/30/2017						
TOC, Total Organic Carbon	29000				mg/Kg wet	23500		123	0-200		
LCS Dup (B7E0536-BSD1)					Prepared & Analyzed: 5/30/2017						
TOC, Total Organic Carbon	28900				mg/Kg wet	23500		123	0-200	0.3	30
Duplicate (B7E0536-DUP1)		**Source: L7E0283-01**			Prepared & Analyzed: 5/30/2017						
TOC, Total Organic Carbon	7140				mg/Kg dry		6980			2	30
Matrix Spike (B7E0536-MS1)		**Source: L7E0283-01**			Prepared & Analyzed: 5/30/2017						
TOC, Total Organic Carbon	46800				mg/Kg dry	34600	6980	115	0-200		
Matrix Spike Dup (B7E0536-MSD1)		**Source: L7E0283-01**			Prepared & Analyzed: 5/30/2017						
TOC, Total Organic Carbon	46300				mg/Kg dry	34600	6980	113	0-200	1	200

IntraLabs -Jacksonville	Project: Keystone Terminal	
1909 Southampton Road	Project Number:	**Reported:**
Jacksonville, FL 32207	Project Manager: Tommy Carr	5/31/17 9:52

Quality Control
(Continued)

Sulfide 4500-S-F

Analyte	Result	Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B7E0490											
Blank (B7E0490-BLK1)					Prepared & Analyzed: 5/25/2017						
Sulfide	10.5	U	20.0	10.5	mg/L						
LCS (B7E0490-BS1)					Prepared & Analyzed: 5/25/2017						
Sulfide	188		20.0	10.5	mg/L	205		92	80-120		
LCS Dup (B7E0490-BSD1)					Prepared & Analyzed: 5/25/2017						
Sulfide	180		20.0	10.5	mg/L	205		88	80-120	4	20
Duplicate (B7E0490-DUP1)		**Source: L7E0283-01**			Prepared & Analyzed: 5/25/2017						
Sulfide	256		20.0	10.5	mg/L		232			10	20

IntraLabs -Jacksonville	Project: Keystone Terminal	
1909 Southampton Road	Project Number:	**Reported:**
Jacksonville, FL 32207	Project Manager: Tommy Carr	5/31/17 9:52

Quality Control
(Continued)

TCLP Sulfide 4500-S-F

Analyte	Result	Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B7E0476											
Blank (B7E0476-BLK1)					Prepared & Analyzed: 5/25/2017						
Sulfide	0.525	U	1.00	0.525	mg/L						
LCS (B7E0476-BS1)					Prepared & Analyzed: 5/25/2017						
Sulfide	9.40	J	1.00	0.525	mg/L	1020		0.9	80-120		
LCS Dup (B7E0476-BSD1)					Prepared & Analyzed: 5/25/2017						
Sulfide	9.40	J	1.00	0.525	mg/L	1020		0.9	80-120	0	20
Duplicate (B7E0476-DUP1)		**Source: L7E0283-01**			Prepared & Analyzed: 5/25/2017						
Sulfide	0.525	U	1.00	0.525	mg/L		ND				20

IntraLabs -Jacksonville	Project: Keystone Terminal	
1909 Southampton Road	Project Number:	**Reported:**
Jacksonville, FL 32207	Project Manager: Tommy Carr	5/31/17 9:52

Quality Control
(Continued)

pH S by Method 9045D

Analyte	Result	Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B7E0493											
Duplicate (B7E0493-DUP1)		**Source: L7E0283-01**			Prepared & Analyzed: 5/25/2017						
pH	11.4		0.0100	0.0100	SU		11.4			0.09	20

IntraLabs -Jacksonville	Project: Keystone Terminal	
1909 Southampton Road	Project Number:	**Reported:**
Jacksonville, FL 32207	Project Manager: Tommy Carr	5/31/17 9:52

List of Certifications for FTS - Florida

Number	Description	Code	Facility	Expires
04176	LA CERTIFICATE	LANELAC	FTSA	12/31/2017
483	NC CERTIFICATE	ANC	FTSL	12/31/2017
85	KENTUKY CERTIFICATE	KENTUKY	FTSA	
E84098	FL NELAC CERTIFICATE	LFLNELAC	FTSL	06/30/2017
E87429	FL NELAC CERTIFICATE	AFLNELAC	FTSA	06/30/2017
LI0-135	DoD CERTIFICATE Renewal in Process	DOD	FTSL	11/30/2016
P330-07-00105	USDA CERTIFICATE	USDA	FTSA	

Notes and Definitions

Item	Definition
U	Compound was not detected.
Dry	Sample results reported on a dry weight basis.
I	Value estimated to be between the Laboratory Detection and Reporting Limit
J	QC Failure see Case Narrative
L	Concentration exceeds calibration range
N	Tentatively Identified Compound
Q	Hold time exceeded
V	Analyte equal to or above detection limit in the method blank
TNTC	Bacteria is present but Too Numerous To Count

RPD	Relative Percent Difference
%REC	Percent Recovery
Source	Sample that was matrix spiked or duplicated.

FTS ANALYTICAL SERVICES

WORK ORDER

L7E0283

Printed: 05/22/2017 3:25 pm

Project: Rooster Environmental - Keystone Terminal
Project Number:
Project Manager: Derek Rounsley

Status

Report To:
IntraLabs -Jacksonville
Tommy Carr
1909 Southampton Road
Jacksonville, FL 32207
Phone: 904-396-6868
Fax: 904-396-3933

Invoice To:
IntraLabs -Jacksonville
B Brinson
1909 Southampton Road
Jacksonville, FL 32207
Phone: 904-396-6868
Fax: 904-396-3933

Date Logged In: 05/19/2017 10:12 AM
Date Received: 05/19/2017 09:00 AM
Date Due: 05/31/2017 (7 day TAT)

Logged In By: Lourdes Arevalo
Received By: Lourdes Arevalo

Cooler Data
Samples Received at: **1.5°C**

1. Temperature of Coolers Checked?	Yes	5. COC properly signed?	Yes	9. Samples in proper containers?	Yes
2. Containers Properly Preserved	Yes	6. COC/Labels Agree?	Yes	10. Preservation Confirmed?	Yes
3. COC (Chain of Custody)/Labels Agree?	Yes	7. Container Labels legible and intact?	Yes	11. Containers Intact?	Yes
4. Received On Ice?	Yes	8. Sample Matrix agree with COC?	Yes	12. Sufficient Sample Amount for all analyses?	Yes

Work Order Comments:

Analysis	Due	TAT	Expires	Status	Comments
L7E0283-01 AGREMAX [Solid] Sampled 5/18/2017 12:00:00AM					
TW TOC Walkley Blk	05/30/2017	7	06/01/2017	IOS	
TW TCLP Sulfide	05/30/2017	7	05/26/2017	30-Available	
TW Sulfide 4500-S-F	05/30/2017	7	05/26/2017	30-Available	
TW pH S 9045D	05/30/2017	7	05/26/2017	30-Available	
TW 9056 Sulfate TCLP	05/30/2017	7	06/15/2017	30-Available	
TW 9056 Sulfate	05/30/2017	7	06/15/2017	30-Available	
TM 6010 Tot Sulfur	05/30/2017	7	11/14/2017	30-Available	
TM 6010 Tot Calcium	05/30/2017	7	11/14/2017	30-Available	
TM 6010 TCLP Sulfur	05/30/2017	7	11/14/2017	30-Available	
AW PerMois TotSol SM2540G	05/30/2017	7	07/02/2017	35- Batched	

Project: **Rooster Environmental - Keystone Terminal**
Project Number:
Project Manager: **Derek Rounsley**

Status

PDFFileStart Work\L7E\L7E0283_COC_01.pdf PDFFileEnd

Chain of Custody Record

LTE0283

IntraLabs, Inc.
Address: 1909 Southampton Road
Jacksonville, FL 32207
Phone: (904) 396-6868 • Fax: (904) 396-3933

Page 1 of 1

DEP Form #: 62-770-900(2)
Form Title: Chain of Custody Record
Effective Date: September 23, 1997

Company: Keystone Terminal
Address:
Phone: Fax:
Sampled by (Print Name(s)) / Affiliation: Stephen G. McMahon / Roaster Environmental
Sampler(s) Signature(s): Stephen G. McMahon
Project Manager:
FDEP Facility No.:
Project Name: Keystone
Sampling CompQAP No.:
Approval Date:
REQUESTED DUE DATE: / /

Item No.	Field ID No.	Sampled Date	Sampled Time	Grab or Composit	Matrix (see codes)	Number of Containers	TCLP SULFUR	TCLP SULFIDE	TOTAL SULFUR	TOTAL SULFIDE	TOC	CALCIUM	pH	% MOISTURE	Remarks	Lab. No.
1	AGREMAX	5/18/17	11:00	G	O	1	✓	✓	✓	✓	✓	✓	✓			

Analyses Requested

Shipment Method: Total Number of Containers → 1

Preservatives (see codes)

Out: / / Via:
Returned: / / Via:

Additional Comments:

Item No.	Relinquished by / Affiliation	Date	Time	Accepted by / Affiliation	Date	Time
	Stephen G. McMahon	5/18/17	1205	[illegible]	5/18/17	1205
	[illegible] BS	5/18/17	1630	BS	5/18/17	1630
				[illegible]	5/19/17	09:00

Cooler No (s) / Temperature(s) (°C):
Sampling Kit No.:
Equipment ID No.:

MATRIX CODES: A = Air; GW = Groundwater; SE = Sediment; SO = Soil; SW = Surface Water; W = Water (Blanks); O = Other (specify)
PRESERVATIVE CODES: H = Hydrochloric acid + ice; I = Ice only; N = Nitric acid + ice; S = Sulfuric acid + ice; O = (specify)

Chain of Custody Record

LTED283

Company: Keystone Terminal

Address:

IntraLabs, Inc.
Address: 1909 Southampton Road
Jacksonville, FL 32207
Phone: (904) 396-6868 • Fax: (904) 396-3933

Page 1 of 1

DEP Form #: 62-770.900(2)

Form Title: Chain of Custody Record

Effective Date: September 23, 1997

Phone: Fax:

FDEP Facility No.:

Project Name: Keystone

Sampling CompQAP No.:

Approval Date:

REQUESTED DUE DATE

/ /

Sampled by [Print Name(s)] / Affiliation: Stephen G. McMahon

Project Manager: Roaster Environmental

Sampler(s) Signature(s): Stephen McMahon

Item No.	Field ID No.	Sampled Date	Sampled Time	Grab or Composit	Matrix (see codes)	Number of Containers	TCLP Sulfur	TCLP Sulfate	TCLP Sulfide	Total Sulfur	Total Sulfate	Total Sulfide	TOC	Calcium	pH	% moisture	Remarks	Lab. No.
1	AGREMAX	5/17/17	11:00	G	O	1	✓	✓	✓	✓				✓	✓	✓		

Analyses Requested

Shipment Method: Total Number of Containers → 1

← Preservatives (see codes)

Out: / / Via:

Returned: / / Via:

Additional Comments:

Item No.	Relinquished by / Affiliation	Date	Time	Accepted by / Affiliation	Date	Time
	Stephen McMahon	5/18/17	1205	[illegible]	5/18/17	1205
	[illegible] BS	5/18/17	1630	BS	5/18/17	1630
				[illegible]	5/19/17	09:00

Cooler No (s) / Temperature(s) (°C)	Sampling Kit No.	Equipment ID No.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

PRESERVATIVE CODES: H = Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = (specify)

A-36

MOISTURE DENSITY TEST SHEET
NUCLEAR DENSITY GAUGE METHOD
ASTM D 3017 / 2922

PROJECT NUMBER: I014.122 DATE OF TEST: 10-1-16

PROJECT TITLE: Phase 4, Stage 7A TESTED BY: DD

PROJECT LOCATION: Folkston, Georgia

TEST NUMBER		A-35	A-36	A-37				
TEST LOCATION	NORTH	See	~	~				
	EAST	Map	~	~				
TEST ELEVATION OR LIFT		~	~	~				
TEST DEPTH		12"	12"	12"				
WET DENSITY (pcf)		101.5	95.9	88.6				
MOISTURE (%)		24.0	24.4	13.1				
DRY DENSITY (pcf)		81.9	77.1	78.4				
LABORATORY PROCTOR CURVE NUMBER		A-36-3	A-36-3	A-36-3				
MAXIMUM DRY DENSITY (pcf)		84.5	84.5	84.5				
OPTIMUM MOISTURE (%)		14.6	14.6	14.6				
PERCENT COMPACTION (%)		96.9	91.2	92.7				
DIFFERENCE FROM OPTIMUM MOISTURE		+9.4	+9.8	-1.5				
DENSITY RESULT PASS/FAIL (P/F)		~	~	~		~		
MOISTURE RESULT PASS/FAIL (P/F)		~	~	~		~		

SPECIFICATIONS: DAILY STANDARD COUNT:

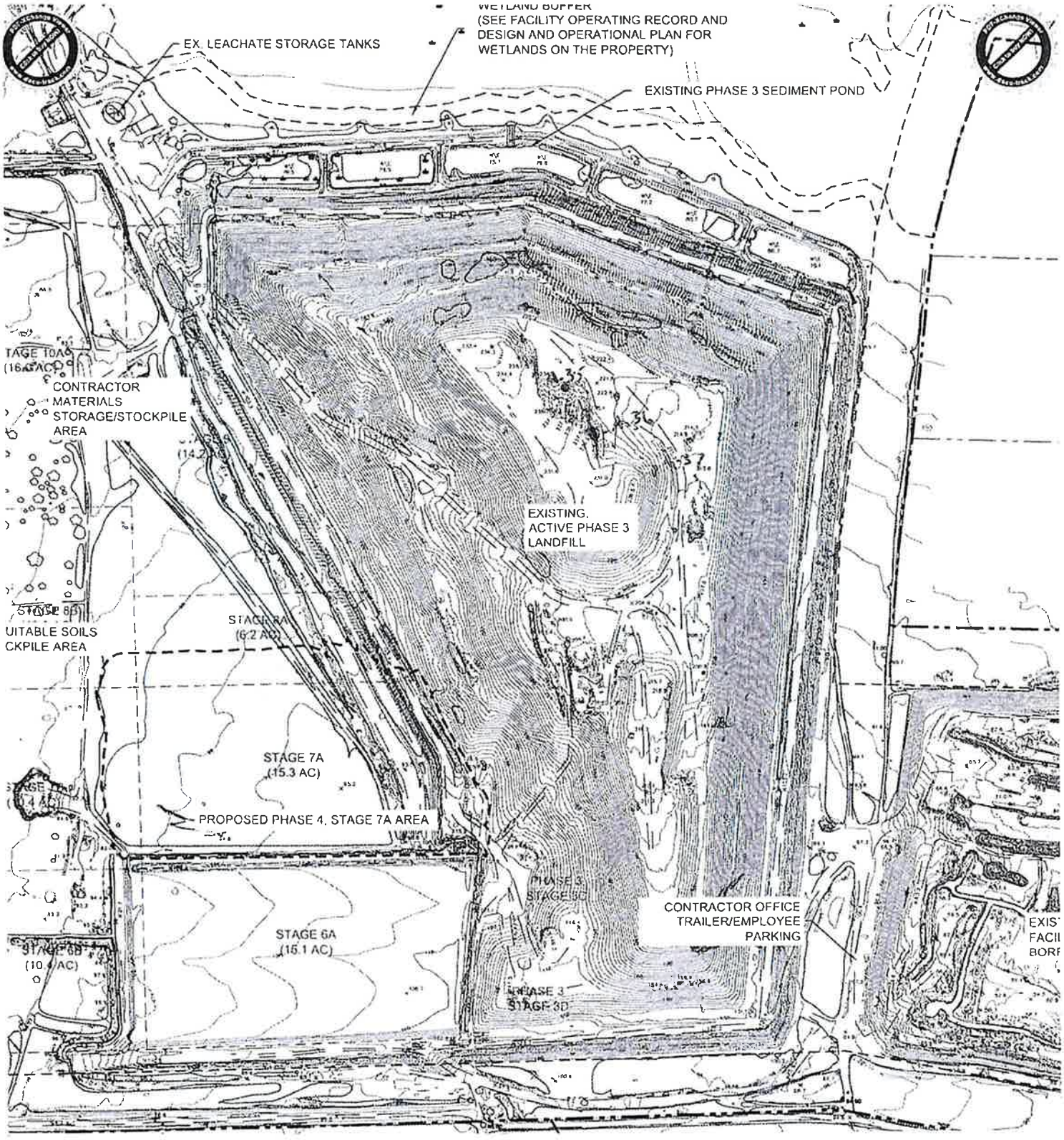
% STANDARD / MODIFIED PROCTOR: 90% DENSITYCOUNT: _____

% OF OPTIMUM MOISTURE CONTENT: NA MOISTURE COUNT: _____

CHECKED BY: _____ DATE: _____

ATLANTIC COAST CONSULTING, INC

Adv. 10-1-16


WETLAND BUFFER
(SEE FACILITY OPERATING RECORD AND
DESIGN AND OPERATIONAL PLAN FOR
WETLANDS ON THE PROPERTY)
EX. LEACHATE STORAGE TANKS
EXISTING PHASE 3 SEDIMENT POND
CONTRACTOR
MATERIALS
STORAGE/STOCKPILE
AREA
EXISTING,
ACTIVE PHASE 3
LANDFILL
STAGE 7A
(15.3 AC)
PROPOSED PHASE 4, STAGE 7A AREA
PHASE 3
STAGE 3C
CONTRACTOR OFFICE
TRAILER/EMPLOYEE
PARKING
STAGE 6A
(15.1 AC)
PHASE 3
STAGE 3D

ATLANTIC COAST CONSULTING, INC.

CCR Management Global and Base Liner Stability Analysis

IN THIS APPENDIX:

- Global Stability Analysis
- Base Liner Stability Analysis

ATLANTIC COAST CONSULTING, INC.

Project Number: I014-415
Project Name: Chesser Island MSWLF- CCR Management Plan
Subject: Global Slope Stability Analysis

By: ML Date: 4/7/17
Chkd: RB Date: 4/7/17

OBJECTIVE: Verify the global stability of the final configuration of the waste mass of the Chesser Island Phase 4 MSWLF with the addition of Combustible Coal Residual (CCR) material. The original stability calculations Phase 4 Major Modification, as prepared by Atlantic Coast Consulting, Inc and dated February 2009, will be analyzed with respect to failure surfaces passing through the liner system and the underlying subgrade. The stability of the waste mass was evaluated under static conditions.

METHOD: The waste mass global stability was evaluated with the circular surface search analysis under static and seismic conditions. For the purpose of this analysis, a critical slope was selected from the disposal area which represents the original cross-section evaluated (i.e. Figure 1.1A: Section A-A from the Phase 4 Major Modification D&O plans). The geometry of the landfill and subsurface soils along the analyzed cross sections are shown on Figure 1.2A. The addition of CCR to the waste mass does not impact the design of the final cover system, therefore the final cover stability is not being re-evaluated.

To identify critical failure planes, the computer program SLIDE Version 7.022 was used to perform stability calculations utilizing the Janbu and Bishop method of slices for circular surfaces. SLIDE was utilized to search through the anticipated zone of failures for each phase to identify the critical failure planes with the lowest factor of safety.

To begin the evaluation, the cross-sectional geometry and soil/waste mass was input into SLIDE and static analyses was evaluated over the landfill mass. This allows for the identification of the critical failure planes with the lowest factor of safety.

DATA: The waste parameters used for the calculations were taken from a May 2000 technical paper "Municipal Solid Waste Slope Failure. I: Waste and Foundation Soil Properties", by Eid, Stark, Evans, and Sherry. The soil properties used are from onsite field test as well as specified soil properties for the landfill construction quality assurance plan. The geosynthetic properties are the minimum required by the construction quality assurance plan.

The following assumptions were also used in the preparation of the stability analysis:

- Fully drained conditions within the landfill due to the presence of a leachate collection system

Soil Layer Data: The following material properties were used based on experience with similar materials and the references cited above.

Co-mingled Municipal Solid Waste and CCR (10:1) (SLIDE material unit 1)
unit wt. = 73 pcf phi = 35 degrees c=500 psf

Recompacted Liner Base (SLIDE material unit 2)
unit wt. = 130 pcf phi = 20 degrees c = 500 psf

Protective Cover (SLIDE material unit 3)
unit wt. = 110 pcf phi = 20 degrees c = 500 psf

Geocomposite (SLIDE material unit 4)
unit wt. = 60 pcf phi = 15 degrees c = 0 psf

Geosynthetic Clay Liner (SLIDE material unit 5)
unit wt. = 100 pcf phi = 15 degrees c = 0 psf

Textured HDPE Geomembrane Liner (SLIDE material unit 6)
unit wt. = 100 pcf phi = 15 degrees c = 0 psf

Subgrade (SLIDE material unit 7)
unit wt. = 120 pcf phi = 18 degrees c = 500 psf

CCR Layer (SLIDE material unit 8)
unit wt. = 100 pcf phi = 33 degrees c = 120 psf

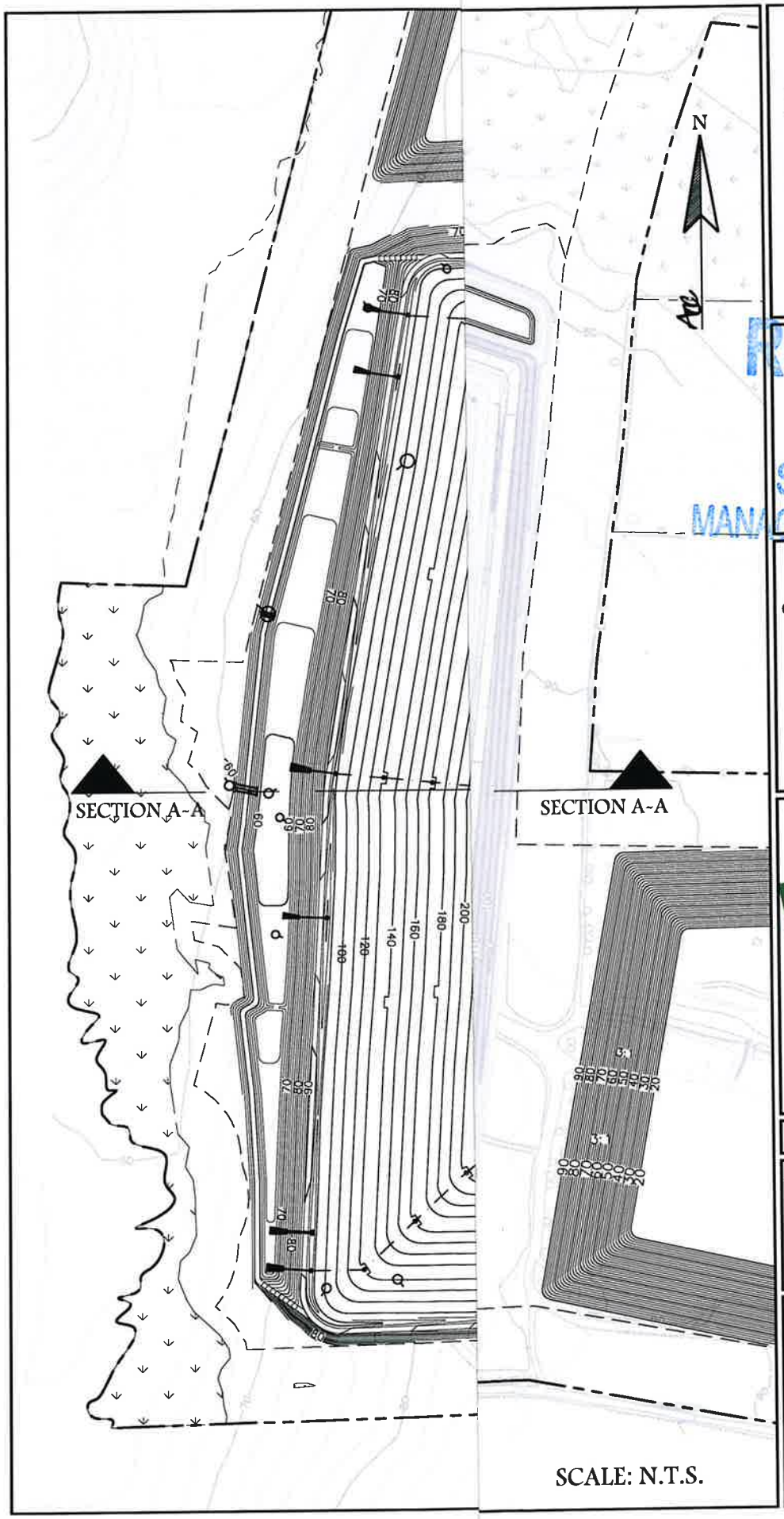
Recirculation of leachate will occur at this site. However, due to the restrictions on loading rates as discussed on the operational narrative, the above referenced MSW material properties will not be effected.

RESULTS: The SLIDE program outputs for the critical analysis show the geometry of the critical cross section evaluated for failure, the location of the critical failure surfaces and the associated factor of safety. The minimum factor of safety against failure for the evaluation scenario for each phase is as follows:

Static:
SLIDE selected critical failure planes:
Factor of Safety (Janbu Circular, static) = 1.793

The calculated factor of safety for static conditions are greater than 1.5, and are therefore considered adequate in terms of long term stability.

CONCLUSION: The analysis indicates that the proposed landfill geometry is adequately designed in consideration of the global slope stability under static and seismic conditions.



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PROJECT:

CHESSER ISLAND ROAD
MSW LANDFILL
CCR MANAGEMENT
PLAN

CHARLTON COUNTY, GA
PERMIT NO: 024-006D(SL)

WASTE MANAGEMENT

Chesser Island Road Landfill, Inc.
Hwy 121 @ Chesser Island Road
Folkston, GA 31537

Drawn by:	Checked by:
MAL	

PROJECT NUMBER:

I014-415

April 2017

FINAL GRADES
STABILITY ANALYSIS
SECTION A-A

FIGURE 1.1A

STATIC ANALYSIS

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
MSW and CCR		73	Mohr-Coulomb	500	35	None	0
Recompacter Liner Base		130	Mohr-Coulomb	500	20	None	0
Protective Cover		110	Mohr-Coulomb	500	20	None	0
Geocomposite		60	Mohr-Coulomb	0	15	None	0
GCL		100	Mohr-Coulomb	0	15	None	0
Textured HDPE Liner		100	Mohr-Coulomb	0	15	None	0
Subgrade		120	Mohr-Coulomb	500	18	None	0
CCR Layer		100	Mohr-Coulomb	120	33	None	0

Method Name	Min FS
Bishop simplified	1.984
Janbu simplified	1.793

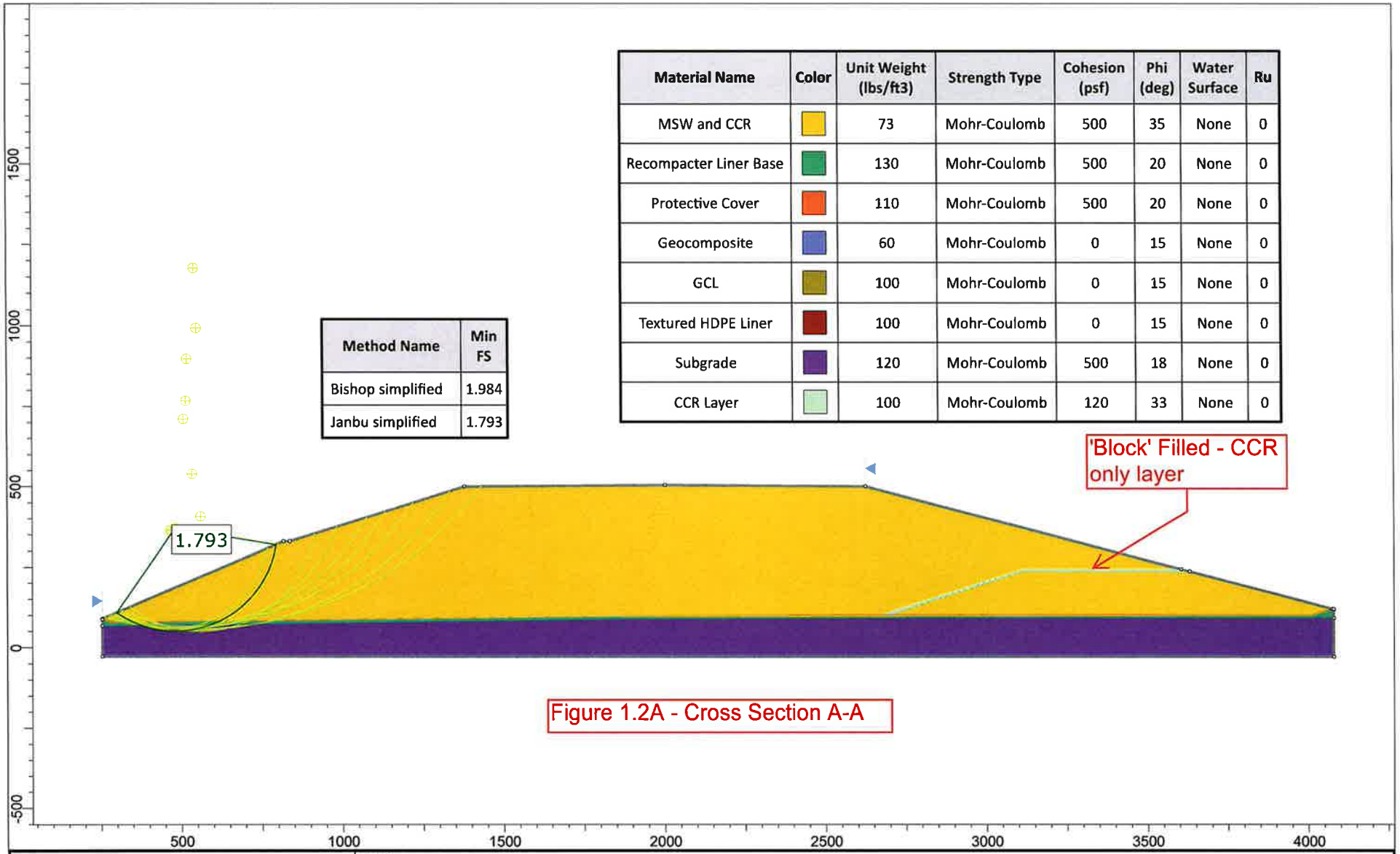


Figure 1.2A - Cross Section A-A

rocscience	Project	Chesser Island Phase 4 Expansion		
	Analysis Description	Circular - Static		
	Drawn By	Marc Liverman	Scale 1:4926	Company Atlantic Coast Consulting
	Date	4/5/17		File Name Chesser Circ Static 4 CCR.slim

SLIDEINTERPRET 7.023

Slide Analysis Information
Chesser Island Phase 4 Expansion

Project Summary

File Name:	Chesser Circ Static 4 CCR.slim
Slide Modeler Version:	7.023
Project Title:	Chesser Island Phase 4 Expansion
Analysis:	Circular - Static
Author:	Marc Liverman
Company:	Atlantic Coast Consulting
Date Created:	4/5/17

General Settings

Units of Measurement:	Imperial Units
Time Units:	seconds
Permeability Units:	feet/second
Failure Direction:	Right to Left
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type: Vertical

Analysis Methods Used

Bishop simplified
Janbu simplified

Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	50
Check malpha < 0.2:	Yes
Initial trial value of FS:	3
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	9.81
Use negative pore pressure cutoff:	Yes
Maximum negative pore pressure [psf]:	0
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	rand

Surface Options

Surface Type:	Circular
Search Method:	Slope Search
Number of Surfaces:	5000
Upper Angle:	Not Defined
Lower Angle:	Not Defined
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation [ft]:	50
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Material Properties

Property	MSW and CCR	Recompacter Liner Base	Protective Cover	Geocomposite	GCL	Textured HDPE Liner	Subgrade	CCR Layer
Color								
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	73	130	110	60	100	100	120	100
Cohesion [psf]	500	500	500	0	0	0	500	120
Friction Angle [deg]	35	20	20	15	15	15	18	33
Water Surface	None	None	None	None	None	None	None	None
Ru Value	0	0	0	0	0	0	0	0

Global Minimums

Method: bishop simplified

FS	1.983770
Center:	515.755, 767.133
Radius:	706.827
Left Slip Surface Endpoint:	279.614, 100.919
Right Slip Surface Endpoint:	1133.074, 422.865
Resisting Moment:	3.54874e+009 lb-ft
Driving Moment:	1.78889e+009 lb-ft
Total Slice Area:	114365 ft2
Surface Horizontal Width:	853.46 ft
Surface Average Height:	134.001 ft

Method: janbu simplified

FS	1.793130
Center:	480.794, 370.081
Radius:	317.754
Left Slip Surface Endpoint:	299.255, 109.291
Right Slip Surface Endpoint:	794.651, 320.473
Resisting Horizontal Force:	1.99711e+006 lb
Driving Horizontal Force:	1.11376e+006 lb
Total Slice Area:	56572.9 ft2
Surface Horizontal Width:	495.396 ft
Surface Average Height:	114.197 ft

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 4749
Number of Invalid Surfaces: 251

Error Codes:

Error Code -106 reported for 96 surfaces
Error Code -108 reported for 83 surfaces
Error Code -114 reported for 72 surfaces

Method: janbu simplified

Number of Valid Surfaces: 4585
Number of Invalid Surfaces: 415

Error Codes:

Error Code -106 reported for 96 surfaces
Error Code -108 reported for 247 surfaces
Error Code -114 reported for 72 surfaces

Error Codes

The following errors were encountered during the computation:

-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-114 = Surface with Reverse Curvature.

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.98377

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	22.4919	14069.3	-18.5553	MSW and CCR	500	35	536.282	1063.86	805.276	0	805.276	625.263	625.263
2	22.4919	41529.4	-16.6422	MSW and CCR	500	35	1010.2	2004	2147.93	0	2147.93	1845.97	1845.97
3	22.4919	67652	-14.748	MSW and CCR	500	35	1448.07	2872.63	3388.47	0	3388.47	3007.28	3007.28
4	7.11618	26901.6	-13.5086	Protective Cover	500	20	989.172	1962.29	4017.63	0	4017.63	3779.99	3779.99
5	0.810193	3244.82	-13.1783	Geocomposite	0	15	558.598	1108.13	4135.59	0	4135.59	4004.79	4004.79
6	0.814298	3294.26	-13.1107	GCL	0	15	564.153	1119.15	4176.72	0	4176.72	4045.32	4045.32
7	0.408707	1667.11	-13.0598	Textured HDPE Liner	0	15	568.745	1128.26	4210.71	0	4210.71	4078.78	4078.78
8	0.820568	3374.61	-13.0086	GCL	0	15	573.348	1137.39	4244.8	0	4244.8	4112.34	4112.34
9	21.2387	101285	-12.0941	Recompacter Liner Base	500	20	1173.06	2327.08	5019.88	0	5019.88	4768.52	4768.52
10	21.2387	127281	-10.3387	Recompacter Liner Base	500	20	1398.31	2773.93	6247.55	0	6247.55	5992.46	5992.46
11	20.8795	148319	-8.60771	Subgrade	500	18	1451.46	2879.37	7322.94	0	7322.94	7103.23	7103.23
12	20.8795	169269	-6.89933	Subgrade	500	18	1611.77	3197.38	8301.68	0	8301.68	8106.65	8106.65
13	20.8795	188638	-5.1971	Subgrade	500	18	1757.97	3487.4	9194.27	0	9194.27	9034.38	9034.38
14	20.8795	206442	-3.49946	Subgrade	500	18	1890.39	3750.1	10002.8	0	10002.8	9887.18	9887.18
15	20.8795	222691	-1.8049	Subgrade	500	18	2009.31	3986	10728.8	0	10728.8	10665.5	10665.5
16	20.8795	237392	-0.111914	Subgrade	500	18	2114.94	4195.56	11373.8	0	11373.8	11369.7	11369.7
17	20.8795	250547	1.58097	Subgrade	500	18	2207.49	4379.16	11938.8	0	11938.8	11999.7	11999.7
18	20.8795	262153	3.27524	Subgrade	500	18	2287.1	4537.08	12424.9	0	12424.9	12555.7	12555.7
19	20.8795	272206	4.97239	Subgrade	500	18	2353.87	4669.54	12832.6	0	12832.6	13037.3	13037.3
20	20.8795	280695	6.67393	Subgrade	500	18	2407.88	4776.68	13162.3	0	13162.3	13444	13444
21	20.8795	287606	8.3814	Subgrade	500	18	2449.15	4858.56	13414.2	0	13414.2	13775.1	13775.1
22	20.8795	292920	10.0964	Subgrade	500	18	2477.7	4915.19	13588.5	0	13588.5	14029.7	14029.7
23	20.9044	296540	11.8217	Recompacter Liner Base	500	20	2749.3	5453.97	13610.9	0	13610.9	14186.4	14186.4
24	20.9044	297660	13.5589	Recompacter Liner Base	500	20	2743.34	5442.16	13578.5	0	13578.5	14240.1	14240.1
25	0.815486	11617.8	14.4646	GCL	0	15	1859.59	3689	13767.6	0	13767.6	14247.3	14247.3
26	0.406166	5787.86	14.5158	Textured HDPE Liner	0	15	1859.81	3689.44	13769.2	0	13769.2	14250.7	14250.7
27	0.809216	11534	14.5667	GCL	0	15	1860.02	3689.85	13770.7	0	13770.7	14254.1	14254.1
28	0.805112	11482.2	14.6343	Geocomposite	0	15	1860.81	3691.41	13776.5	0	13776.5	14262.4	14262.4
29	7.07044	100935	14.9646	Protective Cover	500	20	2737.21	5429.99	13545	0	13545	14276.7	14276.7
30	20.5366	295441	16.1277	MSW and CCR	500	35	4836.94	9595.37	12989.5	0	12989.5	14388.2	14388.2
31	20.5366	299151	17.8688	MSW and CCR	500	35	4843.33	9608.06	13007.6	0	13007.6	14569.1	14569.1
32	20.5366	301823	19.6271	MSW and CCR	500	35	4832.22	9586.02	12976.2	0	12976.2	14699.4	14699.4
33	20.5366	303424	21.4049	MSW and CCR	500	35	4803.46	9528.95	12894.7	0	12894.7	14777.6	14777.6
34	20.5366	303914	23.2046	MSW and CCR	500	35	4756.81	9436.41	12762.5	0	12762.5	14801.7	14801.7
35	20.5366	302250	25.0289	MSW and CCR	500	35	4677.21	9278.5	12537	0	12537	14720.9	14720.9
36	20.5366	290533	26.8808	MSW and CCR	500	35	4450.44	8828.64	11894.5	0	11894.5	14150.5	14150.5
37	20.5366	282295	28.7636	MSW and CCR	500	35	4276.57	8483.73	11401.9	0	11401.9	13749.5	13749.5
38	20.5366	274368	30.681	MSW and CCR	500	35	4108.57	8150.46	10926	0	10926	13363.6	13363.6
39	20.5366	265033	32.6373	MSW and CCR	500	35	3921.98	7780.3	10397.3	0	10397.3	12909.2	12909.2
40	20.5366	254196	34.6375	MSW and CCR	500	35	3716.2	7372.08	9814.33	0	9814.33	12381.6	12381.6
41	20.5366	241749	36.6872	MSW and CCR	500	35	3490.53	6924.4	9175	0	9175	11775.5	11775.5
42	20.5366	227563	38.7932	MSW and CCR	500	35	3244.17	6435.68	8477.01	0	8477.01	11084.8	11084.8
43	20.5366	211481	40.9636	MSW and CCR	500	35	2976.19	5904.07	7717.81	0	7717.81	10301.7	10301.7
44	20.5366	193314	43.2079	MSW and CCR	500	35	2685.52	5327.46	6894.34	0	6894.34	9416.91	9416.91
45	20.5366	172825	45.5384	MSW and CCR	500	35	2370.96	4703.43	6003.13	0	6003.13	8419.07	8419.07
46	20.5366	149717	47.9702	MSW and CCR	500	35	2031.08	4029.2	5040.22	0	5040.22	7293.6	7293.6
47	20.5366	123605	50.5228	MSW and CCR	500	35	1664.33	3301.65	4001.17	0	4001.17	6021.8	6021.8
48	20.5366	93978.1	53.2225	MSW and CCR	500	35	1268.96	2517.32	2881.03	0	2881.03	4578.67	4578.67
49	20.5366	60127.2	56.1056	MSW and CCR	500	35	843.152	1672.62	1674.68	0	1674.68	2929.68	2929.68
50	20.5366	21021.1	59.2253	MSW and CCR	500	35	385.308	764.362	377.548	0	377.548	1024.56	1024.56

Global Minimum Query (janbu simplified) - Safety Factor: 1.79313

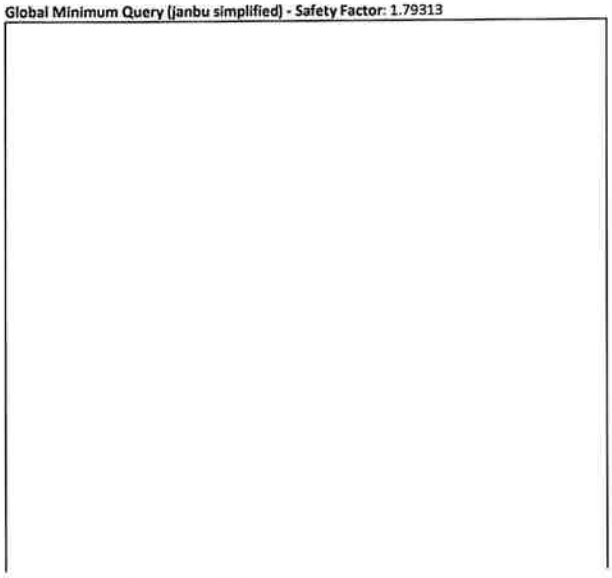
Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	12.5422	6246.01	-33.4864	MSW and CCR	500	35	638.162	1144.31	920.163	0	920.163	497.991	497.991
2	12.5422	18364.2	-30.8137	MSW and CCR	500	35	1108.86	1988.33	2125.56	0	2125.56	1464.18	1464.18
3	12.5422	29764.5	-28.2136	MSW and CCR	500	35	1525.04	2734.59	3191.32	0	3191.32	2373.13	2373.13
4	12.5422	40500.5	-25.6755	MSW and CCR	500	35	1895.66	3399.17	4140.44	0	4140.44	3229.12	3229.12
5	3.92472	14924.2	-24.0333	Protective Cover	500	20	1155.26	2071.54	4317.76	0	4317.76	3802.6	3802.6
6	0.444801	1767.45	-23.6021	Geocomposite	0	15	635.252	1139.09	4251.12	0	4251.12	3973.56	3973.56
7	0.44661	1787.79	-23.5144	GCL	0	15	639.775	1147.2	4281.39	0	4281.39	4003.01	4003.01
8	0.223989	902.261	-23.4485	Textured HDPE Liner	0	15	643.645	1154.14	4307.33	0	4307.33	4028.15	4028.15
9	0.449358	1821.39	-23.3824	GCL	0	15	647.527	1161.1	4333.28	0	4333.28	4053.31	4053.31
10	11.2166	51000.5	-22.2456	Recompacter Liner Base	500	20	1310.58	2350.04	5082.94	0	5082.94	4546.88	4546.88
11	11.2166	61340.4	-20.0762	Recompacter Liner Base	500	20	1500.18	2690.01	6017	0	6017	5468.73	5468.73
12	11.9269	75540.5	-17.8696	Subgrade	500	18	1515.02	2716.62	6822.06	0	6822.06	6333.61	6333.61
13	11.9269	85190.3	-15.623	Subgrade	500	18	1657.08	2971.36	7606.06	0	7606.06	7142.68	7142.68
14	11.9269	94121.7	-13.401	Subgrade	500	18	1785.91	3202.36	8317.02	0	8317.02	7891.53	7891.53
15	11.9269	102356	-11.1992	Subgrade	500	18	1902.15	3410.81	8958.54	0	8958.54	8581.93	8581.93
16	11.9269	109911	-9.01419	Subgrade	500	18	2006.37	3597.68	9533.65	0	9533.65	9215.36	9215.36
17	11.9269	116801	-6.84229	Subgrade	500	18	2099	3763.78	10044.9	0	10044.9	9793.03	9793.03
18	11.9269	123035	-4.68025	Subgrade	500	18	2180.42	3909.78	10494.3	0	10494.3	10315.8	10315.8
19	11.9269	128621	-2.52488	Subgrade	500	18	2250.94	4036.22	10883.3	0	10883.3	10784.1	10784.1
20	11.9269	133564	-0.373079	Subgrade	500	18	2310.78	4143.52	11213.6	0	11213.6	11198.6	11198.6
21	11.9269	137866	1.77819	Subgrade	500	18	2360.13	4232.02	11485.9	0	11485.9	11559.2	11559.2
22	11.9269	141526	3.93198	Subgrade	500	18	2399.12	4301.94	11701.2	0	11701.2	11866.1	11866.1
23	11.9269	144540	6.09135	Subgrade	500	18	2427.84	4353.44	11859.7	0	11859.7	12118.8	12118.8
24	11.9269	146901	8.25946	Subgrade	500	18	2446.32	4386.57	11961.7	0	11961.7	12316.8	12316.8
25	11.9269	148601	10.4396	Subgrade	500	18	2454.55	4401.32	12007	0	12007	12459.2	12459.2
26	11.9269	149626	12.6351	Subgrade	500	18	2452.45	4397.57	11995.5	0	11995.5	12545.3	12545.3
27	11.9269	149961	14.8497	Subgrade	500	18	2439.93	4375.12	11926.4	0	11926.4	12573.3	12573.3
28	11.9269	149586	17.0872	Subgrade	500	18	2416.84	4333.7	11798.9	0	11798.9	12541.8	12541.8
29	11.9269	148475	19.352	Subgrade	500	18	2382.94	4272.92	11611.8	0	11611.8	12448.8	12448.8
30	11.008	135169	21.559	Recompacter Liner Base	500	20	2565.51	4600.3	11265.5	0	11265.5	12279.1	12279.1
31	11.008	132456	23.7102	Recompacter Liner Base	500	20	2498.51	4480.16	10935.4	0	10935.4	12032.7	12032.7
32	0.444276	5282.63	24.8383	GCL	0	15	1661.85	2979.92	11121.2	0	11121.2	11890.4	11890.4
33	0.221448	2632.02	24.9045	Textured HDPE Liner	0	15	1660.83	2978.09	11114.4	0	11114.4	11885.5	11885.5
34	0.441528	5245.57	24.9704	GCL	0	15	1659.81	2976.26	11107.6	0	11107.6	11880.5	11880.5
35	0.439719	5222.89	25.0581	Geocomposite	0	15	1659	2974.81	11102.1	0	11102.1	11877.8	11877.8
36	3.87898	45919.3	25.4893	Protective Cover	500	20	2445.11	4384.4	10672.3	0	10672.3	11838	11838
37	12.5127	147126	27.1446	MSW and CCR	500	35	4057.89	7276.32	9677.57	0	9677.57	11758.1	11758.1
38	12.5127	145807	29.7114	MSW and CCR	500	35	3949.14	7081.32	9399.07	0	9399.07	11652.7	11652.7
39	12.5127	143799	32.3458	MSW and CCR	500	35	3821.45	6852.36	9072.12	0	9072.12	11492.2	11492.2
40	12.5127	141041	35.0596	MSW and CCR	500	35	3673.72	6587.46	8693.83	0	8693.83	11271.9	11271.9
41	12.5127	137460	37.867	MSW and CCR	500	35	3504.57	6284.15	8260.66	0	8260.66	10985.7	10985.7
42	12.5127	132958	40.7863	MSW and CCR	500	35	3312.27	5939.33	7768.15	0	7768.15	10625.8	10625.8
43	12.5127	127412	43.8407	MSW and CCR	500	35	3094.61	5549.03	7210.76	0	7210.76	10182.6	10182.6
44	12.5127	120655	47.0612	MSW and CCR	500	35	2848.74	5108.16	6581.15	0	6581.15	9642.6	9642.6
45	12.5127	112455	50.491	MSW and CCR	500	35	2570.87	4609.91	5869.55	0	5869.55	8987.27	8987.27
46	12.5127	102475	54.1931	MSW and CCR	500	35	2255.82	4044.97	5062.74	0	5062.74	8189.7	8189.7
47	12.5127	90184.7	58.267	MSW and CCR	500	35	1896.05	3399.87	4141.45	0	4141.45	7207.47	7207.47
48	12.5127	74653.8	62.8886	MSW and CCR	500	35	1479.89	2653.64	3075.71	0	3075.71	5966.26	5966.26
49	12.5127	53903.8	68.4357	MSW and CCR	500	35	986.42	1768.78	1812	0	1812	4307.95	4307.95
50	12.5127	20939.9	76.2623	MSW and CCR	500	35	358.963	643.667	205.178	0	205.178	1673.51	1673.51

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.98377

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	279.614	100.919	0	0	0
2	302.106	93.3693	18123.7	0	0
3	324.598	86.6462	55251.9	0	0
4	347.09	80.7254	107835	0	0
5	354.206	79.0158	121732	0	0
6	355.016	78.8261	122969	0	0
7	355.831	78.6365	124220	0	0
8	356.239	78.5417	124851	0	0
9	357.06	78.3521	126125	0	0
10	378.299	73.8012	173848	0	0
11	399.537	69.9266	227708	0	0
12	420.417	66.766	281114	0	0
13	441.296	64.2396	335690	0	0
14	462.176	62.3405	389802	0	0
15	483.055	61.0636	441985	0	0
16	503.935	60.4057	490935	0	0
17	524.814	60.3649	535492	0	0
18	545.694	60.9412	574635	0	0
19	566.573	62.136	607471	0	0
20	587.453	63.9526	633234	0	0
21	608.332	66.3957	651277	0	0
22	629.212	69.472	661072	0	0
23	650.091	73.1899	662208	0	0
24	670.996	77.5653	660041	0	0
25	691.9	82.6067	648848	0	0
26	692.715	82.8171	647467	0	0
27	693.122	82.9223	646773	0	0
28	693.931	83.1325	645380	0	0
29	694.736	83.3428	643980	0	0
30	701.806	85.2326	637706	0	0
31	722.343	91.171	659756	0	0
32	742.879	97.7917	672952	0	0
33	763.416	105.115	677008	0	0
34	783.953	113.166	671703	0	0
35	804.489	121.97	656885	0	0
36	825.026	131.559	632579	0	0
37	845.562	141.969	600016	0	0
38	866.099	153.242	559176	0	0
39	886.635	165.426	510298	0	0
40	907.172	178.579	453971	0	0
41	927.708	192.766	390938	0	0
42	948.245	208.066	322134	0	0
43	968.782	224.574	248722	0	0
44	989.318	242.403	172148	0	0
45	1009.85	261.694	94222.6	0	0
46	1030.39	282.62	17218.8	0	0
47	1050.93	305.404	-55969.7	0	0
48	1071.46	330.337	-121602	0	0
49	1092	357.811	-174735	0	0
50	1112.54	388.38	-208637	0	0
51	1133.07	422.865	0	0	0

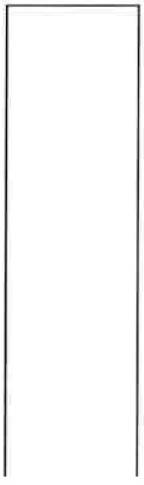
Global Minimum Query (janbu simplified) - Safety Factor: 1.79313



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	299.255	109.291	0	0	0
2	311.797	100.994	15638.7	0	0
3	324.339	93.5135	45446.8	0	0
4	336.881	86.7846	86047.9	0	0
5	349.423	80.7551	134788	0	0
6	353.348	79.0049	146879	0	0
7	353.793	78.8106	147988	0	0
8	354.24	78.6163	149106	0	0
9	354.463	78.5191	149668	0	0
10	354.913	78.3248	150801	0	0
11	366.129	73.737	188821	0	0
12	377.346	69.6376	230313	0	0
13	389.273	65.7923	274615	0	0
14	401.2	62.4571	319747	0	0
15	413.127	59.6155	364681	0	0
16	425.054	57.254	408522	0	0
17	436.981	55.362	450490	0	0
18	448.908	53.9309	489900	0	0
19	460.834	52.9544	526153	0	0
20	472.761	52.4285	558723	0	0
21	484.688	52.3508	587154	0	0
22	496.615	52.7211	611050	0	0
23	508.542	53.5409	630071	0	0
24	520.469	54.8137	643932	0	0
25	532.396	56.545	652399	0	0
26	544.323	58.7425	655289	0	0
27	556.25	61.4162	652467	0	0
28	568.177	64.5785	643852	0	0
29	580.104	68.2448	629419	0	0
30	592.031	72.4337	609199	0	0
31	603.039	76.783	588443	0	0
32	614.047	81.6175	563079	0	0
33	614.491	81.8231	561530	0	0
34	614.712	81.926	560755	0	0
35	615.154	82.1316	559204	0	0
36	615.594	82.3371	557651	0	0
37	619.473	84.1864	547400	0	0
38	631.985	90.6018	536089	0	0
39	644.498	97.7422	518389	0	0
40	657.011	105.666	494316	0	0
41	669.524	114.447	463944	0	0
42	682.036	124.177	427425	0	0
43	694.549	134.972	385009	0	0
44	707.062	146.989	337083	0	0
45	719.575	160.436	284231	0	0
46	732.087	175.61	227333	0	0
47	744.6	192.955	167746	0	0
48	757.113	213.189	107674	0	0
49	769.625	237.629	51020.2	0	0
50	782.138	269.29	5992.84	0	0
51	794.651	320.473	0	0	0

List Of Coordinates

External Boundary



X	Y
4080	120
4079.63	120.096
4076.31	120.963
3632	237.003
3605.21	244
2625	500
2002	504
1379	500
837	330
817	330
254	90
254	88.2
254	88
254	87.8
254	87.7
254	87.5
254	67.5
254	-27.6
4080	-27.6
4080	93
4080	119.5
4080	119.7
4080	119.8

Material Boundary

X	Y
254	90
290	80
1864	100
2672	101.823
2706	101.9
3632	103.384
4016	104
4076.31	120.963

Material Boundary

X	Y
2672	102
3112	244
3605.21	244

Material Boundary

X	Y
2706	101.9
3112	234
3632	234

Material Boundary

X	Y
254	88.2
290	78.2
1864	98.2
2750	100.2
4016	102.2
4079.63	120.096

Material Boundary

X	Y
254	88
290	78
1864	98
2750	100
4016	102
4080	120

Material Boundary

X	Y
254	87.8
290	77.8
1864	97.8
2750	99.8
4016	101.8
4080	119.8

Material Boundary

X	Y
254	87.7
290	77.7
1864	97.7
2750	99.7
4016	101.7
4080	119.7

Material Boundary

X	Y
254	87.5
290	77.5
1864	97.5
2750	99.5
4016	101.5
4080	119.5

Material Boundary

X	Y
254	67.5
290	68.5
1864	89
2750	93
4016	93
4080	93

Material Boundary

X	Y
2672	101.823
2672	102

Material Boundary

X	Y
3632	103.384
3632	234
3632	237.003

ATLANTIC COAST CONSULTING, INC.

Project Number: 1014-415
Project Name: Chesser Island PH 4 – CCR Management Plan
Subject: Base Liner Stability Analysis

By: MAL Date: 4/7/17
Chkd: RBB Date: 47/17

OBJECTIVE: Verify the stability of the waste mass at Chesser Island Phase 4 with respect to failure surfaces passing through the base liner with the inclusion of Combustible Coal Residual (CCR) to the waste mass. The original stability calculations for the Phase 4 Major Modification, as prepared by Atlantic Coast Consulting, Inc and dated February 2009, will be analyzed with respect to failure surfaces passing through the weakest interface of liner system. The analyzed cross section is shown in plan view on Figure 1.1B and the stability of the waste mass along the liner interface through this section was evaluated under static conditions. The objective is to find the minimum interface friction angle required for a stable base liner system within the revised co-mingled (MSW and CCR) waste mass.

METHOD: Evaluate the stability of the waste mass at the base liner system interface. The Simplified Janbu and Bishop Methods for non-circular (block) surfaces was used to evaluate failure at the liner system. The data for these failure planes are summarized below with details provided in the attached SLIDE output files.

The first step in the evaluation is to input the geometry and individual layers' physical properties into SLIDE Version 7.022 and run a static analysis on the landfill mass for the scenario described above.

The evaluation as shown was the result of an iterative process that was used to identify the minimum friction angle that would result in meeting the required design factors of safety.

GEOMETRY: The base liner system will have six possible options, as listed below, from top to bottom:

Option 1	24" of $1x10^{-2}$ cm/sec leachate collection material textured 60 mil HDPE geomembrane 24" of $1x10^{-7}$ cm/sec compacted soil
Option 2	24" of protective cover double-sided geocomposite textured 60 mil HDPE geomembrane 24" of $1x10^{-7}$ cm/sec compacted soil
Option 3	24" of $1x10^{-2}$ cm/sec leachate collection material textured 60 mil HDPE geomembrane geosynthetic clay liner (GCL) ($1x10^{-9}$ cm/sec) 24" of $1x10^{-4}$ cm/sec compacted soil

Option 4	24" of protective cover double-sided geocomposite textured 60 mil HDPE geomembrane geosynthetic clay liner (GCL) ($1x10^{-9}$ cm/sec) 24" of $1x10^{-4}$ cm/sec compacted soil
Option 5	24" of $1x10^{-2}$ cm/sec leachate collection material textured 60 mil HDPE geomembrane geosynthetic clay liner (GCL) ($1x10^{-9}$ cm/sec) textured 60 mil HDPE geomembrane geosynthetic clay liner (GCL) ($1x10^{-9}$ cm/sec)
Option 6	24" of protective cover double-sided geocomposite textured 60 mil HDPE geomembrane geosynthetic clay liner (GCL) ($1x10^{-9}$ cm/sec) textured 60 mil HDPE geomembrane geosynthetic clay liner (GCL) ($1x10^{-9}$ cm/sec)

For liner stability analysis, the liner system was modeled using the most critical interface within the lining system (i.e. the interface with the lowest interface friction angle). According to the laboratory testing data, liner options 5 and 6 exhibited the lowest friction angle at the interface of the HDPE liner/double-sided geocomposite. Therefore, this interface was utilized to analyze the liner system stability. The lowest friction angle for all options is assumed to be 15 degrees.

The critical section from the original design calculations was evaluated with the inclusion of CCR material into the waste. This section is shown on the attached plan view of the landfill (Figure 1.2B)

DATA:

The material and interface properties used in the slope stability analysis are summarized in Table 1. The waste properties for the analysis were taken from a May 2000 technical paper "Municipal Solid Waste Slope Failure. I: Waste and Foundation Soil Properties", by Eid, Stark, Evans and Sherry. Soils properties used are from onsite field test as well as specified soil properties for the landfill construction. The geosynthetic properties are artificial values used in the iterative design in order to determine the minimum requirements. Whereas the comingled MSW and CCR unit weight of 73 lb/ft^3 is based on a ratio of 10:1 (MSW:CCR) with the CCR values derived from laboratory data.

Table1. Material properties used in slope stability analyses

Material	SLIDE Material Unit ID #	Unit Weight (pcf)	Cohesion (psf)	Peak Friction Angle vs material below (deg)
Co-Mingled Municipal Solid Waste and CCR (1.7:1)	1	73	500	35
Recompacted Liner Base	2	130	500	20
Protective Cover Layer	3	110	500	20
Geocomposite	4	60	0	15
Geosynthetic Clay Liner (GCL)	5	100	0	15
Textured HDPE Geomembrane	6	100	0	15
Recompacted Liner Base	7	120	500	18
CCR Layer	8	100	120	33

The following assumptions were also used in the preparation of the stability analysis:

- Fully drained conditions within the landfill due to the presence of a leachate collection system

RESULTS: The SLIDE computer results for the analysis are attached. Figure 1.1B shows the critical cross section evaluated for failure and corresponding factors of safety for the analysis.

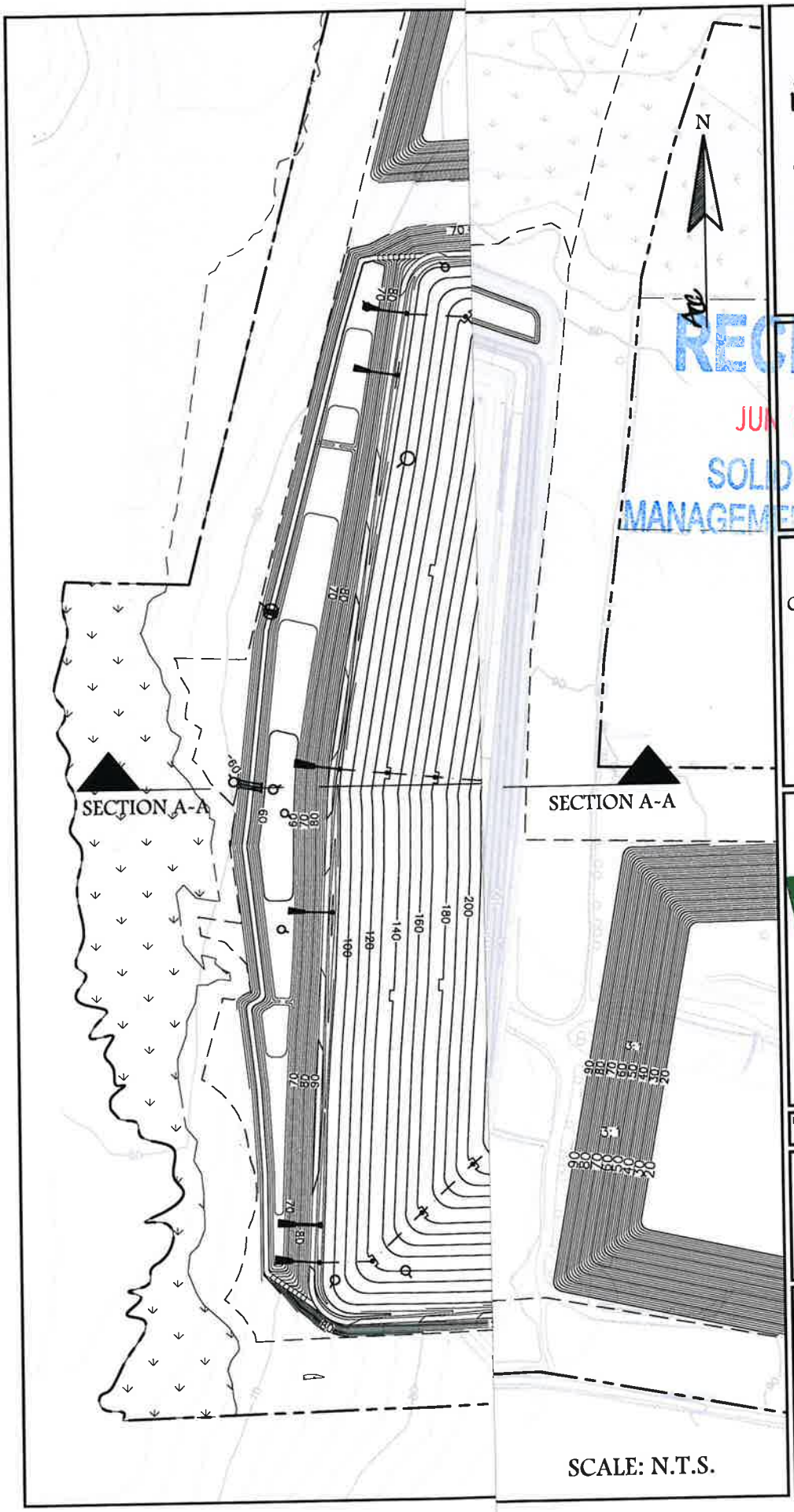
The minimum FOS against failure for the landfill expansion is as follows:

Table 2. Results

Scenario	FOS	SLIDE file
Janbu Block	1.526	Chesser Block Static 4 CCR.slim
Bishop Block	1.594	Chesser Block Static 4 CCR.slim

CONCLUSION:

The static stability analysis of the landfill mass failure at the liner interface produced a minimum calculated factor of safety of 1.526. This values is considered adequate (greater than 1.5) and demonstrate the overall stability of the landfill mass under static conditions.



ATLANTIC COAST CONSULTING, INC.
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PROJECT:

CHESSER ISLAND ROAD
MSW LANDFILL
CCR MANAGEMENT
PLAN

CHARLTON COUNTY, GA
PERMIT NO: 024-006D(SL)

WASTE MANAGEMENT

Chesser Island Road Landfill, Inc.
Hwy 121 @ Chesser Island Road
Folkston, GA 31537

Drawn by:	Checked by:
MAL	

PROJECT NUMBER:

I014-415

April 2017

FINAL GRADES
STABILITY ANALYSIS
SECTION A-A

FIGURE 1.1B

STATIC ANALYSIS

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
MSW and CCR		73	Mohr-Coulomb	500	35	None	0
Recompacter Liner Base		130	Mohr-Coulomb	500	20	None	0
Protective Cover		110	Mohr-Coulomb	500	20	None	0
Geocomposite		60	Mohr-Coulomb	0	15	None	0
GCL		100	Mohr-Coulomb	0	15	None	0
Textured HDPE Liner		100	Mohr-Coulomb	0	15	None	0
Subgrade		120	Mohr-Coulomb	500	18	None	0
CCR Layer		100	Mohr-Coulomb	120	33	None	0

Method Name	Min FS
Bishop simplified	1.594
Janbu simplified	1.526

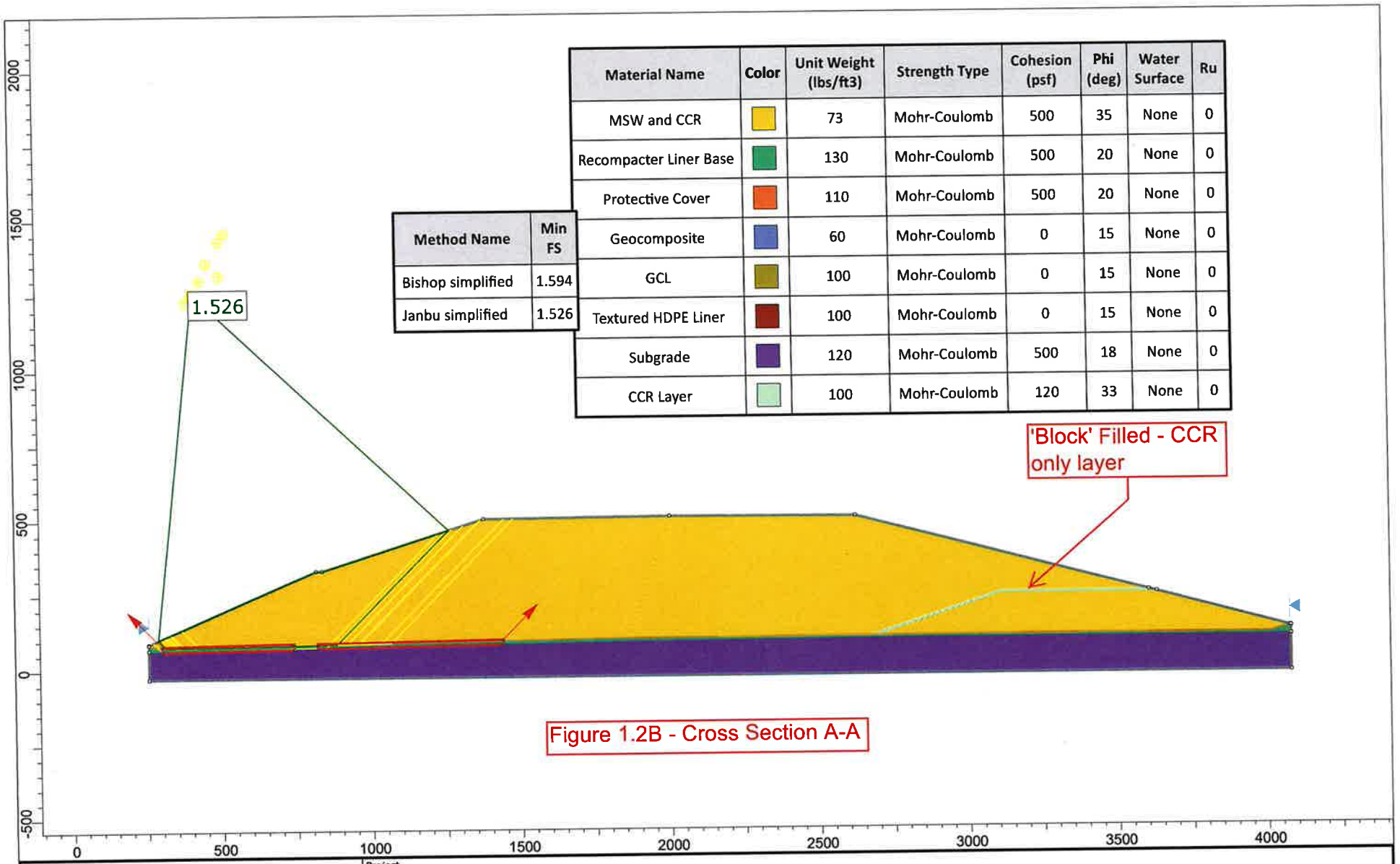


Figure 1.2B - Cross Section A-A

rocscience	Project	Chesser Island Phase 4 Expansion		
	Analysis Description	Block Sliding - Static		
	Drawn By	Marc Liverman	Scale 1:5268	Company Atlantic Coast Consulting
	Date	4/5/17		File Name Chesser Block Static 4 CCR.slim

SLIDEINTERPRET 7.023

Slide Analysis Information
Chesser Island Phase 4 Expansion

Project Summary

File Name:	Chesser Block Static 4 CCR.slim
Slide Modeler Version:	7.023
Project Title:	Chesser Island Phase 4 Expansion
Analysis:	Block Sliding - Static
Author:	Marc Liverman
Company:	Atlantic Coast Consulting
Date Created:	4/5/17

General Settings

Units of Measurement:	Imperial Units
Time Units:	seconds
Permeability Units:	feet/second
Failure Direction:	Right to Left
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type:	Vertical

Analysis Methods Used
Bishop simplified
Janbu simplified

Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	50
Check malpha < 0.2:	Yes
Initial trial value of FS:	3
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	9.81
Use negative pore pressure cutoff:	Yes
Maximum negative pore pressure [psf]:	0
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	rand

Surface Options

Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle):	135
Left Projection Angle (End Angle):	135
Right Projection Angle (Start Angle):	45
Right Projection Angle (End Angle):	45
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Material Properties

Property	MSW and CCR	Recompacter Liner Base	Protective Cover	Geocomposite	GCL	Textured HDPE Liner	Subgrade	CCR Layer
Color								
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	73	130	110	60	100	100	120	100
Cohesion [psf]	500	500	500	0	0	0	500	120
Friction Angle [deg]	35	20	20	15	15	15	18	33
Water Surface	None	None	None	None	None	None	None	None
Ru Value	0	0	0	0	0	0	0	0

Global Minimums

Method: bishop simplified

FS	1.593580
Axis Location:	415.387, 1258.276
Left Slip Surface Endpoint:	287.179, 104.144
Right Slip Surface Endpoint:	1261.768, 463.230
Resisting Moment:	5.17764e+009 lb-ft
Driving Moment:	3.24906e+009 lb-ft
Total Slice Area:	137535 ft2
Surface Horizontal Width:	974.589 ft
Surface Average Height:	141.121 ft

Method: janbu simplified

FS	1.526000
Axis Location:	415.387, 1258.276
Left Slip Surface Endpoint:	287.179, 104.144
Right Slip Surface Endpoint:	1261.768, 463.230
Resisting Horizontal Force:	3.63204e+006 lb
Driving Horizontal Force:	2.38011e+006 lb
Total Slice Area:	137535 ft2
Surface Horizontal Width:	974.589 ft
Surface Average Height:	141.121 ft

Global Minimum Coordinates

Method: bishop simplified

X	Y
287.179	104.144
313.495	77.8271
883.758	85.2199
1261.77	463.23

Method: janbu simplified

X	Y
287.179	104.144
313.495	77.8271
883.758	85.2199
1261.77	463.23

Valid / Invalid Surfaces

Method: bishop simplified

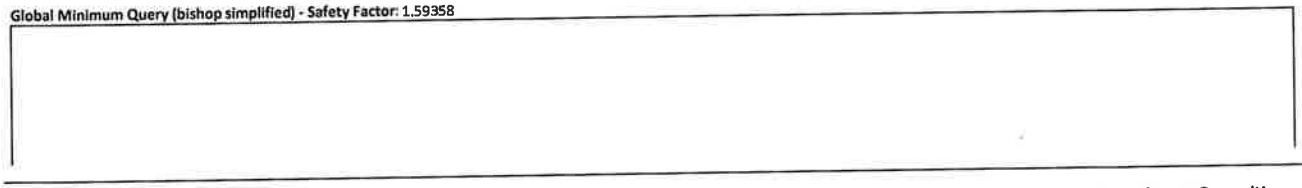
Number of Valid Surfaces: 5000
Number of Invalid Surfaces: 0

Method: janbu simplified

Number of Valid Surfaces: 5000
Number of Invalid Surfaces: 0

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.59358



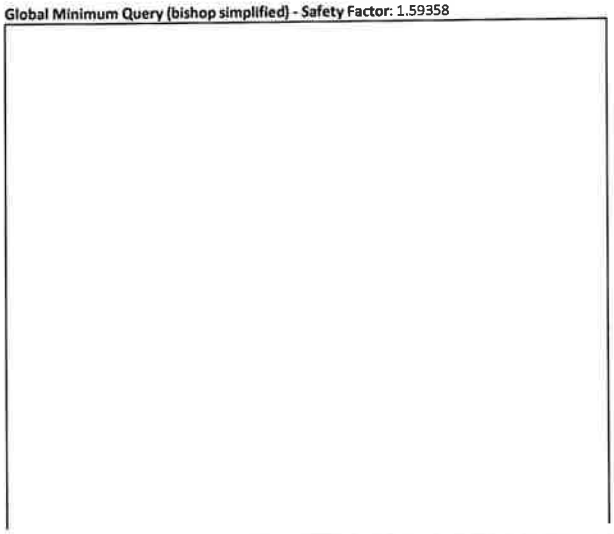
Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	23.8762	29677.6	-45	MSW and CCR	500	35	1533.63	2443.97	2776.27	0	2776.27	1242.64	1242.64
2	1.77742	4642.24	-45	Protective Cover	500	20	1179.66	1879.88	3791.19	0	3791.19	2611.53	2611.53
3	0.197491	542.429	-45	Geocomposite	0	15	555.146	884.669	3301.63	0	3301.63	2746.48	2746.48
4	0.465488	1296.94	-45	Textured HDPE Liner	0	15	563.145	897.417	3349.2	0	3349.2	2786.06	2786.06
5	21.9332	69036.8	0.742729	GCL	0	15	528.095	841.562	3140.75	0	3140.75	3147.6	3147.6
6	21.9332	83548.5	0.742729	GCL	0	15	639.102	1018.46	3800.94	0	3800.94	3809.23	3809.23
7	21.9332	98060.2	0.742729	GCL	0	15	750.11	1195.36	4461.13	0	4461.13	4470.86	4470.86
8	21.9332	112572	0.742729	GCL	0	15	861.118	1372.26	5121.31	0	5121.31	5132.47	5132.47
9	21.9332	127083	0.742729	GCL	0	15	972.119	1549.15	5781.53	0	5781.53	5794.13	5794.13
10	21.9332	141595	0.742729	GCL	0	15	1083.13	1726.05	6441.7	0	6441.7	6455.75	6455.75
11	21.9332	156107	0.742729	GCL	0	15	1194.14	1902.95	7101.88	0	7101.88	7117.36	7117.36
12	21.9332	170618	0.742729	GCL	0	15	1305.14	2079.85	7762.1	0	7762.1	7779.02	7779.02
13	21.9332	185130	0.742729	GCL	0	15	1416.14	2256.74	8422.28	0	8422.28	8440.64	8440.64
14	21.9332	199642	0.742729	GCL	0	15	1527.15	2433.64	9082.46	0	9082.46	9102.25	9102.25
15	21.9332	214153	0.742729	GCL	0	15	1638.16	2610.54	9742.68	0	9742.68	9763.92	9763.92
16	21.9332	228665	0.742729	GCL	0	15	1749.17	2787.44	10402.9	0	10402.9	10425.5	10425.5
17	21.9332	243177	0.742729	GCL	0	15	1860.17	2964.33	11063	0	11063	11087.1	11087.1
18	21.9332	257688	0.742729	GCL	0	15	1971.18	3141.23	11723.3	0	11723.3	11748.8	11748.8
19	21.9332	272200	0.742729	GCL	0	15	2082.19	3318.13	12383.4	0	12383.4	12410.4	12410.4
20	21.9332	286712	0.742729	GCL	0	15	2193.19	3495.03	13043.6	0	13043.6	13072	13072
21	21.9332	301223	0.742729	GCL	0	15	2304.2	3671.93	13703.8	0	13703.8	13733.7	13733.7
22	21.9332	315735	0.742729	GCL	0	15	2415.2	3848.82	14364	0	14364	14395.3	14395.3
23	21.9332	330247	0.742729	GCL	0	15	2526.21	4025.72	15024.2	0	15024.2	15056.9	15056.9
24	21.9332	344758	0.742729	GCL	0	15	2637.22	4202.62	15684.4	0	15684.4	15718.6	15718.6
25	21.9332	359270	0.742729	GCL	0	15	2748.23	4379.52	16344.6	0	16344.6	16380.2	16380.2
26	21.9332	373782	0.742729	GCL	0	15	2859.23	4556.41	17004.8	0	17004.8	17041.8	17041.8
27	21.9332	388279	0.742729	GCL	0	15	2970.13	4733.14	17664.3	0	17664.3	17702.8	17702.8
28	21.9332	394761	0.742729	GCL	0	15	3019.72	4812.16	17959.2	0	17959.2	17998.4	17998.4
29	21.9332	401167	0.742729	GCL	0	15	3068.71	4890.24	18250.6	0	18250.6	18290.4	18290.4
30	21.9332	411723	0.742729	GCL	0	15	3149.46	5018.92	18730.9	0	18730.9	18771.7	18771.7
31	0.328846	6247.98	45	GCL	0	15	2734.91	4358.3	16265.4	0	16265.4	19000.3	19000.3
32	0.202574	3845.52	45	Geocomposite	0	15	2732.55	4354.54	16251.4	0	16251.4	18983.9	18983.9
33	1.82317	34458.9	45	Protective Cover	500	20	3769.79	6007.46	15131.6	0	15131.6	18901.4	18901.4
34	22.0974	403675	45	MSW and CCR	500	35	5794.91	9234.66	12474.4	0	12474.4	18269.3	18269.3
35	22.0974	379210	45	MSW and CCR	500	35	5456.92	8696.04	11705.2	0	11705.2	17162.1	17162.1
36	22.0974	354745	45	MSW and CCR	500	35	5118.92	8157.41	10935.9	0	10935.9	16054.8	16054.8
37	22.0974	330280	45	MSW and CCR	500	35	4780.93	7618.79	10166.7	0	10166.7	14947.6	14947.6
38	22.0974	305814	45	MSW and CCR	500	35	4442.93	7080.17	9397.44	0	9397.44	13840.4	13840.4
39	22.0974	281349	45	MSW and CCR	500	35	4104.94	6541.55	8628.21	0	8628.21	12733.1	12733.1
40	22.0974	256884	45	MSW and CCR	500	35	3766.94	6002.92	7859	0	7859	11625.9	11625.9
41	22.0974	232419	45	MSW and CCR	500	35	3428.95	5464.3	7089.76	0	7089.76	10518.7	10518.7
42	22.0974	207954	45	MSW and CCR	500	35	3090.95	4925.68	6320.53	0	6320.53	9411.48	9411.48
43	22.0974	183489	45	MSW and CCR	500	35	2752.96	4387.06	5551.29	0	5551.29	8304.25	8304.25
44	22.0974	159023	45	MSW and CCR	500	35	2414.97	3848.44	4782.05	0	4782.05	7197.01	7197.01
45	22.0974	134558	45	MSW and CCR	500	35	2076.97	3309.81	4012.84	0	4012.84	6089.81	6089.81
46	22.0974	110093	45	MSW and CCR	500	35	1738.97	2771.19	3243.61	0	3243.61	4982.58	4982.58
47	22.0974	85628	45	MSW and CCR	500	35	1400.98	2232.57	2474.37	0	2474.37	3875.35	3875.35
48	22.0974	61162.9	45	MSW and CCR	500	35	1062.98	1693.95	1705.13	0	1705.13	2768.12	2768.12
49	22.0974	36697.7	45	MSW and CCR	500	35	724.987	1155.33	935.901	0	935.901	1660.89	1660.89
50	22.0974	12232.6	45	MSW and CCR	500	35	386.992	616.703	166.67	0	166.67	553.662	553.662

Global Minimum Query (janbu simplified) - Safety Factor: 1.526

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	23.8762	29677.6	-45	MSW and CCR	500	35	1659.41	2532.26	2902.37	0	2902.37	1242.96	1242.96
2	1.77742	4642.24	-45	Protective Cover	500	20	1248.34	1904.97	3860.12	0	3860.12	2611.78	2611.78
3	0.197491	542.429	-45	Geocomposite	0	15	584.991	892.697	3331.59	0	3331.59	2746.6	2746.6
4	0.465488	1296.94	-45	Textured HDPE Liner	0	15	593.421	905.561	3379.6	0	3379.6	2786.18	2786.18
5	21.9332	69036.8	0.742729	GCL	0	15	551.429	841.481	3140.45	0	3140.45	3147.6	3147.6
6	21.9332	83548.5	0.742729	GCL	0	15	667.339	1018.36	3800.58	0	3800.58	3809.23	3809.23
7	21.9332	98060.2	0.742729	GCL	0	15	783.25	1195.24	4460.7	0	4460.7	4470.86	4470.86
8	21.9332	112572	0.742729	GCL	0	15	899.161	1372.12	5120.85	0	5120.85	5132.51	5132.51
9	21.9332	127083	0.742729	GCL	0	15	1015.07	1549	5780.98	0	5780.98	5794.14	5794.14
10	21.9332	141595	0.742729	GCL	0	15	1130.98	1725.88	6441.07	0	6441.07	6455.73	6455.73
11	21.9332	156107	0.742729	GCL	0	15	1246.89	1902.76	7101.2	0	7101.2	7117.36	7117.36
12	21.9332	170618	0.742729	GCL	0	15	1362.8	2079.64	7761.33	0	7761.33	7779	7779
13	21.9332	185130	0.742729	GCL	0	15	1478.72	2256.53	8421.46	0	8421.46	8440.63	8440.63
14	21.9332	199642	0.742729	GCL	0	15	1594.63	2433.41	9081.59	0	9081.59	9102.26	9102.26
15	21.9332	214153	0.742729	GCL	0	15	1710.54	2610.29	9741.72	0	9741.72	9763.9	9763.9
16	21.9332	228665	0.742729	GCL	0	15	1826.45	2787.17	10401.9	0	10401.9	10425.5	10425.5
17	21.9332	243177	0.742729	GCL	0	15	1942.37	2964.05	11062	0	11062	11087.2	11087.2
18	21.9332	257688	0.742729	GCL	0	15	2058.28	3140.93	11722.1	0	11722.1	11748.8	11748.8
19	21.9332	272200	0.742729	GCL	0	15	2174.19	3317.81	12382.2	0	12382.2	12410.4	12410.4
20	21.9332	286712	0.742729	GCL	0	15	2290.1	3494.69	13042.4	0	13042.4	13072.1	13072.1
21	21.9332	301223	0.742729	GCL	0	15	2406.01	3671.57	13702.5	0	13702.5	13733.7	13733.7
22	21.9332	315735	0.742729	GCL	0	15	2521.92	3848.45	14362.6	0	14362.6	14395.3	14395.3
23	21.9332	330247	0.742729	GCL	0	15	2637.83	4025.33	15022.7	0	15022.7	15056.9	15056.9
24	21.9332	344758	0.742729	GCL	0	15	2753.74	4202.21	15682.9	0	15682.9	15718.6	15718.6
25	21.9332	359270	0.742729	GCL	0	15	2869.65	4379.09	16343	0	16343	16380.2	16380.2
26	21.9332	373782	0.742729	GCL	0	15	2985.56	4555.97	17003.1	0	17003.1	17041.8	17041.8
27	21.9332	388279	0.742729	GCL	0	15	3101.36	4732.68	17662.6	0	17662.6	17702.8	17702.8
28	21.9332	394761	0.742729	GCL	0	15	3153.14	4811.69	17957.5	0	17957.5	17998.4	17998.4
29	21.9332	401167	0.742729	GCL	0	15	3204.3	4889.76	18248.8	0	18248.8	18290.4	18290.4
30	21.9332	411723	0.742729	GCL	0	15	3288.62	5018.43	18729	0	18729	18771.7	18771.7
31	0.328846	6247.98	45	GCL	0	15	2837.85	4330.56	16161.9	0	16161.9	18999.7	18999.7
32	0.202574	3845.52	45	Geocomposite	0	15	2835.41	4326.83	16147.9	0	16147.9	18983.4	18983.4
33	1.82317	34458.9	45	Protective Cover	500	20	3904.43	5958.16	14996.2	0	14996.2	18900.6	18900.6
34	22.0974	403675	45	MSW and CCR	500	35	5970.45	9110.9	12297.6	0	12297.6	18268.1	18268.1
35	22.0974	379210	45	MSW and CCR	500	35	5622.21	8579.49	11538.7	0	11538.7	17160.9	17160.9
36	22.0974	354745	45	MSW and CCR	500	35	5273.98	8048.09	10779.8	0	10779.8	16053.8	16053.8
37	22.0974	330280	45	MSW and CCR	500	35	4925.75	7516.69	10020.9	0	10020.9	14946.6	14946.6
38	22.0974	305814	45	MSW and CCR	500	35	4577.51	6985.28	9261.96	0	9261.96	13839.5	13839.5
39	22.0974	281349	45	MSW and CCR	500	35	4229.28	6453.88	8503.02	0	8503.02	12732.3	12732.3
40	22.0974	256884	45	MSW and CCR	500	35	3881.05	5922.48	7744.09	0	7744.09	11625.1	11625.1
41	22.0974	232419	45	MSW and CCR	500	35	3532.81	5391.07	6985.19	0	6985.19	10518	10518
42	22.0974	207954	45	MSW and CCR	500	35	3184.58	4859.67	6226.25	0	6226.25	9410.84	9410.84
43	22.0974	183489	45	MSW and CCR	500	35	2836.34	4328.26	5467.32	0	5467.32	8303.66	8303.66
44	22.0974	159023	45	MSW and CCR	500	35	2488.11	3796.86	4708.42	0	4708.42	7196.53	7196.53
45	22.0974	134558	45	MSW and CCR	500	35	2139.88	3265.46	3949.48	0	3949.48	6089.37	6089.37
46	22.0974	110093	45	MSW and CCR	500	35	1791.64	2734.05	3190.56	0	3190.56	4982.2	4982.2
47	22.0974	85628	45	MSW and CCR	500	35	1443.41	2202.65	2431.64	0	2431.64	3875.05	3875.05
48	22.0974	61162.9	45	MSW and CCR	500	35	1095.18	1671.25	1672.71	0	1672.71	2767.9	2767.9
49	22.0974	36697.7	45	MSW and CCR	500	35	746.948	1139.84	913.79	0	913.79	1660.74	1660.74
50	22.0974	12232.6	45	MSW and CCR	500	35	398.715	608.439	154.866	0	154.866	553.581	553.581

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.59358



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	287.179	104.144	0	0	0
2	311.055	80.2675	102896	0	0
3	312.882	78.4901	111731	0	0
4	313.03	78.2926	112492	0	0
5	313.495	77.8271	114313	0	0
6	335.429	78.1115	125001	0	0
7	357.362	78.3958	137934	0	0
8	379.295	78.6802	153114	0	0
9	401.228	78.9645	170541	0	0
10	423.161	79.2488	190214	0	0
11	445.094	79.5332	212134	0	0
12	467.028	79.8175	236300	0	0
13	488.961	80.1018	262712	0	0
14	510.894	80.3862	291371	0	0
15	532.827	80.6705	322277	0	0
16	554.76	80.9549	355428	0	0
17	576.694	81.2392	390827	0	0
18	598.627	81.5235	428472	0	0
19	620.56	81.8079	468363	0	0
20	642.493	82.0922	510501	0	0
21	664.426	82.3765	554885	0	0
22	686.36	82.6609	601516	0	0
23	708.293	82.9452	650393	0	0
24	730.226	83.2295	701516	0	0
25	752.159	83.5139	754886	0	0
26	774.092	83.7982	810503	0	0
27	796.026	84.0826	868366	0	0
28	817.959	84.3669	928473	0	0
29	839.892	84.6512	989584	0	0
30	861.825	84.9356	1.05169e+006	0	0
31	883.758	85.2199	1.11542e+006	0	0
32	884.087	85.5488	1.11097e+006	0	0
33	884.29	85.7513	1.10823e+006	0	0
34	886.113	87.5745	1.08752e+006	0	0
35	908.21	109.672	939891	0	0
36	930.308	131.769	801795	0	0
37	952.405	153.867	673229	0	0
38	974.502	175.964	554195	0	0
39	996.6	198.061	444691	0	0
40	1018.7	220.159	344718	0	0
41	1040.79	242.256	254276	0	0
42	1062.89	264.354	173365	0	0
43	1084.99	286.451	101984	0	0
44	1107.09	308.548	40135	0	0
45	1129.18	330.646	-12183.5	0	0
46	1151.28	352.743	-54971.2	0	0
47	1173.38	374.84	-88228	0	0
48	1195.48	396.938	-111954	0	0
49	1217.57	419.035	-126149	0	0
50	1239.67	441.133	-130813	0	0
51	1261.77	463.23	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.526

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	287.179	104.144	0	0	0
2	311.055	80.2675	108917	0	0
3	312.832	78.4901	117997	0	0
4	313.03	78.2926	118771	0	0
5	313.495	77.8271	120620	0	0
6	335.429	78.1115	131822	0	0
7	357.362	78.3958	145378	0	0
8	379.295	78.6802	161288	0	0
9	401.228	78.9645	179554	0	0
10	423.161	79.2488	200173	0	0
11	445.094	79.5332	223148	0	0
12	467.028	79.8175	248477	0	0
13	488.961	80.1018	276160	0	0
14	510.894	80.3862	306198	0	0
15	532.827	80.6705	338591	0	0
16	554.76	80.9549	373338	0	0
17	576.694	81.2392	410440	0	0
18	598.627	81.5235	449896	0	0
19	620.56	81.8079	491707	0	0
20	642.493	82.0922	535873	0	0
21	664.426	82.3765	582393	0	0
22	686.36	82.6609	631268	0	0
23	708.293	82.9452	682497	0	0
24	730.226	83.2295	736081	0	0
25	752.159	83.5139	792019	0	0
26	774.092	83.7982	850312	0	0
27	796.026	84.0826	910960	0	0
28	817.959	84.3669	973959	0	0
29	839.892	84.6512	1.03801e+006	0	0
30	861.825	84.9356	1.1031e+006	0	0
31	883.758	85.2199	1.16991e+006	0	0
32	884.087	85.5488	1.16552e+006	0	0
33	884.29	85.7513	1.16283e+006	0	0
34	886.113	87.5745	1.1426e+006	0	0
35	908.21	109.672	1.00279e+006	0	0
36	930.308	131.769	872048	0	0
37	952.405	153.867	750383	0	0
38	974.502	175.964	637793	0	0
39	996.6	198.061	534278	0	0
40	1018.7	220.159	439838	0	0
41	1040.79	242.256	354474	0	0
42	1062.89	264.354	278184	0	0
43	1084.99	286.451	210971	0	0
44	1107.09	308.548	152832	0	0
45	1129.18	330.646	103769	0	0
46	1151.28	352.743	63780.6	0	0
47	1173.38	374.84	32867.9	0	0
48	1195.48	396.938	11030.4	0	0
49	1217.57	419.035	-1731.88	0	0
50	1239.67	441.133	-5418.85	0	0
51	1261.77	463.23	0	0	0

List Of Coordinates

Block Search Window

X	Y
298.341	82.664
298.341	65.121
741.304	70.01
741.304	88.348

Block Search Window

X	Y
819.038	73.452
1440.94	81.326
1440.94	97.1057
819.038	88.886

External Boundary

X	Y
4080	120
4079.63	120.096
4076.31	120.963
3632	237.003
3605.21	244
2625	500
2002	504
1379	500
837	330
817	330
254	90
254	88.2
254	88
254	87.8
254	87.7
254	87.5
254	67.5
254	-27.6
4080	-27.6
4080	93
4080	119.5
4080	119.7
4080	119.8

Material Boundary

X	Y
254	90
290	80
1864	100
2672	101.823
2706	101.9
3632	103.384
4016	104
4076.31	120.963

Material Boundary

X	Y
2672	102
3112	244
3605.21	244

Material Boundary

X	Y
2706	101.9
3112	234
3632	234

Material Boundary

X	Y
254	88.2
290	78.2
1864	98.2
2750	100.2
4016	102.2
4079.63	120.096

Material Boundary

X	Y
254	88
290	78
1864	98
2750	100
4016	102
4080	120

Material Boundary

X	Y
254	87.8
290	77.8
1864	97.8
2750	99.8
4016	101.8
4080	119.8

Material Boundary

X	Y
254	87.7
290	77.7
1864	97.7
2750	99.7
4016	101.7
4080	119.7

Material Boundary

X	Y
254	87.5
290	77.5
1864	97.5
2750	99.5
4016	101.5
4080	119.5

Material Boundary

X	Y
254	67.5
290	68.5
1864	89
2750	93
4016	93
4080	93

Material Boundary

X	Y
2672	101.823
2672	102

Material Boundary

X	Y
3632	103.384
3632	234
3632	237.003

OPERATIONAL PROCEDURES

1. PHASE 4 VOLUME CALCULATIONS:

PHASE 4 GROSS WASTE VOLUME	54,285,614 CY
PROTECTIVE COVER VOLUME	507,232 CY
FINAL COVER VOLUME	1,144,297 CY
DAILY AND INTERMEDIATE COVER VOLUME (15%)	7,914,206 CY
PHASE 4 NET WASTE VOLUME	44,719,879 CY

NEAR TERM CCR TONNAGES (2017 THROUGH DECEMBER 2018)

ESTIMATED MAXIMUM MSW TO CCR RATIO BY WEIGHT:
ESTIMATED CCR TONNAGES – 1,535 TN/DAY
400,435 TN/YR

ESTIMATED MSW TONNAGES – 3,850 TN/DAY
1,004,350 TN/YR

LONG TERM CCR TONNAGES (BEYOND DECEMBER 2018)

ESTIMATED MAXIMUM MSW TO CCR RATIO BY WEIGHT:
ESTIMATED CCR TONNAGES – 385 TN/DAY
100,435 TN/YR

ESTIMATED MSW TONNAGES – 3,850 TN/DAY
1,004,350 TN/YR

AREA OF SITE: TOTAL PROPERTY ±700.9 ACRES
PHASE 4 WASTE MANAGEMENT BOUNDARY ±154.54 ACRES

ESTIMATED PHASE LIFE ASSUMING 3,200 TONS PER DAY, 0.7 TONS/C.Y., AND 310 OPERATING DAYS PER YEAR: 31.6 YEARS

2. CONTROLLED UNLOADING OF WASTE: UNLOADING OF WASTE WILL BE RESTRICTED TO A WORKING FACE LIMITED TO A MAXIMUM OF 200 FEET WIDE BY 200 FEET LONG OR 40,000 SQUARE FEET. MSW AND CCR MAY BE CO-MINGLED AT THE SAME WORKING FACE OR CCR MAY BE PLACED IN INDIVIDUAL LIFTS. CCR LIFTS WILL BE PLACED AND COMPACTED IN ACCORDANCE WITH SECTION 5 OF THIS PLAN. A SPOTTER WILL DIRECT TRUCK TRAFFIC TO AND FROM THE WORKING FACE AND WILL SUPERVISE ALL UNLOADING ACTIVITIES. SCAVENGING WILL BE PROHIBITED.

ONLY HYDRATED CCR MATERIAL WILL BE ACCEPTED AT THE SITE.

OPERATORS WILL BE TRAINED TO IDENTIFY CONDITIONS THAT MAY IMPACT CCR COMPACTION AND WILL OBSERVE INCOMING CCR FOR EXCESS MOISTURE CONTENT.

IN THE EVENT THAT CCR WASTE LOADS ARE BROUGHT TO THE FACILITY CONTAINING EXCESS MOISTURE, THE WASTE MATERIAL WILL BE SPREAD IN A STAGING AREA OVER INTERMEDIATE COVER AND ALLOWED TO DRY PRIOR TO INCORPORATION INTO THE WASTE MASS.

3. CCR WASTE CHARACTERIZATION AND COMPATIBILITY: BULK SAMPLES OF CCR FROM EACH SOURCE WILL BE OBTAINED FOR CHARACTERIZATION AND COMPATIBILITY. SOUTHERN COMPANY AND KEYSTONE ARE THE FACILITY'S ONLY SOURCE OF CCR. ADDITIONAL SOURCES SHALL BE PERMITTED THROUGH EPD PRIOR TO ACCEPTAN'CE. MSW AND CCR RATIOS THAT EXCEED THOSE DEFINED IN SECTION 1 OF THIS PLAN SHALL BE PERMITTED THROUGH EPD PRIOR TO ACCEPTING INCREASED RATIOS.

SAMPLES FOR COMPATIBILITY WILL BE TESTED FOR TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) 8 RCRA METALS BY SW-846 METHOD 1311 AND A PAINT FILTER TEST BY SW-845 METHOD 9095.

4. CCR WASTE ACCEPTANCE PROTOCOL: CCR IS DEFINED BY THE US ENVIRONMENTAL PROTECTION AGENCY AS A SOLID WASTE TO BE REGULATED UNDER A SUBTITLE D (EO 12866 CCR 2050-AE81). CCR WASTE MATERIAL ACCEPTED FOR DISPOSAL AT THIS FACILITY WILL NOT REQUIRE NON-HAZARDOUS CERTIFICATION. ROUTINE RECORD KEEPING PROCEDURES AS SPECIFIED UNDER SECTION **22** OF THIS PLAN WILL BE FOLLOWED.

5. SPREADING AND COMPACTION:

MSW ONLY WASTES WILL BE SPREAD AND COMPACTED IN UNIFORM LAYERS NOT TO EXCEED FIVE FEET IN DEPTH. OPTIMUM DENSITY WILL BE ACHIEVED BY MAKING THREE TO FIVE PASSES OVER THE WASTE WITH THE COMPACTOR. WORKING FACES IN ALL WASTE DISPOSAL AREAS SHALL HAVE A SLOPE NO STEEPER THAN 2H:1V.

MSW AND CCR CO-MINGLED WASTES WILL BE SPREAD AND COMPACTED IN UNIFORM LAYERS NOT TO EXCEED FIVE FEET IN DEPTH. OPTIMUM DENSITY WILL BE ACHIEVED BY MAKING THREE TO FIVE PASSES OVER THE WASTE WITH THE COMPACTOR. WORKING FACES IN ALL WASTE DISPOSAL AREAS SHALL HAVE A SLOPE NO STEEPER THAN 2H:1V.

CCR ONLY LIFTS WILL BE SPREAD IN UNIFORM LAYERS. DENSIFICATION OF THE CCR ONLY LAYER WILL BE ACHIEVED BY MAKING AN APPROPRIATE NUMBER OF PASSES WITH COMPACTION EQUIPMENT TO ACHIEVE AN ESTIMATED DENSITY OF 90% STANDARD PROCTOR. THE NUMBER OF PASSES AND LAYER THICKNESS WILL BE DETERMINED BY CONDUCTING A COMPACTION TEST PAD ADJACENT TO THE PLANNED CCR ONLY WASTE LIFT AREA. ONLY ONE TEST PAD WILL BE REQUIRED FOR EACH DIFFERENT CCR SOURCE. A REPORT CONTAINING RESULTS FROM THE CONSTRUCTION OF THE TEST PAD SHALL BE PLACED IN CHESSER'S OPERATING RECORD AND MADE AVAILABLE FOR EPD REVIEW. IN THE EVENT OF CHANGES IN A SOURCE'S CCR CHARACTERISTICS (E.G. COLOR, TEXTURE, MOISTURE CONTENT), ADDITIONAL CCR TEST PADS WILL BE CONSTRUCTED AND TESTED IN ORDER TO CONFIRM COMPACTION REQUIREMENTS.

6. DAILY COVER:

A. EXCEPT AS PROVIDED IN PARAGRAPH (B) OF THIS SECTION THE PERMITTEE MUST COVER ALL EXPOSED MUNICIPAL SOLID WASTE AND MSW CO-MINGLED WITH CCR OR CCR LAYERS WITH A MINIMUM OF SIX INCHES OF EARTHEN MATERIAL AT THE END OF EACH OPERATING DAY OR AT MORE FREQUENT INTERVALS IF NECESSARY TO CONTROL DISEASE VECTORS, FIRES, ODORS, BLOWING LITTER AND SCAVENGING. CCR ONLY LAYERS WILL HAVE A SMOOTH SURFACE PRIOR TO APPLICATION OF DAILY COVER. DAILY COVER MAY BE STRIPPED AS WASTE IS PLACED ON THE NEXT LIFT ABOVE.

B. ALTERNATIVE MATERIALS SUCH AS HIGH DENSITY WOVEN POLYETHYLENE COATED FABRIC TARPS MAY BE USED IN PLACE OF EARTHEN MATERIAL. AIRSPACE SAVER DAILY COVER, ENSTARE ALTERNATE DAILY COVER, ENGINEERED TEXTILE PRODUCTS LANDFILL COVERS, TARP-O-MATIC OR EQUALS MAY BE USED. THE TARP WILL BE MANUALLY OR MECHANICALLY PLACED OVER THE EXPOSED SOLID WASTE AND SECURED AT THE END OF EACH OPERATING DAY. AT THE BEGINNING OF EACH OPERATING DAY THE TARP WILL BE REMOVED BEFORE WASTE DISPOSAL IS CONTINUED.

C. HYDRATED ASH MAY BE USED AS AN ALTERNATE DAILY COVER CONTINGENT UPON THE FOLLOWING CONDITIONS:

1. HYDRATED ASH NOT STAGED FOR DEPLOYMENT WITHIN 24 HOURS WILL BE STOCKPILED ON THE LANDFILL AND CONTAINED BY EARTHEN BERMS AND TARPS.
2. HYDRATED ASH WILL NOT BE USED AS A COMPONENT OF THE INTERMEDIATE COVER.
3. THE HYDRATED ASH WILL NOT BE USED OR STORED OUTSIDE THE LANDFILL LINER.
4. THE ASH WILL BE KEPT HYDRATED TO PREVENT DISPERSAL BY THE WIND.

D. REMEDIATED SOIL NOT EXCEEDING 100 (ppm) TPH AND 20 (ppm) TOTAL BTEX MAY BE USED AS DAILY COVER.

7. INTERMEDIATE COVER:
7A. A UNIFORM LAYER OF COMPACTED CLEAN EARTH NOT LESS THAN ONE (1) FOOT IN DEPTH WILL BE PLACED OVER EACH PORTION OF ANY INTERMEDIATE MSW OR CO-MINGLED MSW AND CCR OR CCR ONLY LIFT FOLLOWING COMPLETION OF THAT LIFT. A 50/50 MIXTURE OF SOIL/MULCH MAY BE USED AS AN ALTERNATE INTERMEDIATE COVER. THIS COVER MAY BE STRIPPED AS WASTE IS PLACED IN THE NEXT LIFT ABOVE. INTERMEDIATE COVER SHALL BE STOCKPILED IN SEGREGATED AREAS SO AS NOT TO INTERFERE WITH OPERATIONS. INTERMEDIATE COVER SHALL BE PLACED ON ALL DISPOSAL AREAS TO REMAIN OPEN MORE THAN A WEEK. THE COMPOSITION OF INTERMEDIATE COVER SHALL MEET THE FOLLOWING STANDARDS:

A. SAME CRITERIA FOR DAILY COVER; PLUS

B. BE CAPABLE OF SUPPORTING THE GERMINATION AND PROPAGATION OF VEGETATIVE COVER.

7B. ALTERNATIVE BMP/INTERMEDIATE COVER: IN LIEU OF INTERMEDIATE COVER, DISPOSAL AREAS THAT REMAIN OPEN MORE THAN A WEEK MAY RECIEVE ALTERNATIVE BMP/INTERMEDIATE COVER AS DETAILED IN THE D&O PLANS. ALTERNATIVE BMP/INTERMEDIATE COVER WILL CONSIST OF A UNIFORM LAYER OF COMPACTED FILL NOT LESS THAN TWELVE (12) INCHES IN DEPTH OVERLAIN BY AN EXPOSED 30, 40, OR 50 MIL HDPE LINER.

8. FINAL COVER: TOPSOIL, 50/50 MIXTURE OF SOIL/MULCH, CLAYEY SOILS AND GENERAL FILL MAY BE STOCKPILED ON-SITE IN SEGREGATED AREAS; SO AS NOT TO INTERFERE WITH OPERATIONS. PRIOR TO STOCKPILING, THIS MATERIAL SHALL BE TESTED FOR CONFORMANCE WITH THE D&O PLANS. WHEN THE WASTE FILL PROGRESSION REACHES FINAL GRADE, THE FINAL COVER WILL BE INSTALLED AS DETAILED IN THE D&O PLANS. ALL FINAL COVER COMPONENTS WILL BE CONSTRUCTED IN ACCORDANCE WITH THE CQA PLAN. A 50/50 MIXTURE OF SOIL/MULCH MAY BE USED IN THE UPPER SIX-INCHES OF THE FINAL COVER SOILS.

9. FIRE PROTECTION: THE DISPOSAL FACILITY SHALL BE DESIGNED AND OPERATED TO PREVENT AND MINIMIZE THE POTENTIAL FOR FIRE OR EXPLOSION.

A MINIMUM SUPPLY OF ONE DAY OF COVER MATERIAL WILL BE MAINTAINED WITHIN 200 FEET OF THE WORKING FACE AND WILL BE USED FOR FIRE PROTECTION.

IN CASE OF FIRE, SOIL SHALL BE IMMEDIATELY DUMPED ONTO BURNING AREA. A WATER TRUCK MAY ALSO BE USED IF AVAILABLE TO ASSIST IN EXTINGUISHING THE FIRE.

SMOKING WILL BE PROHIBITED IN THE LANDFILL AREA. THE LOCAL FIRE DEPARTMENT SHALL BE NOTIFIED IF A FIRE BREAKS OUT.

10. SUPERVISION: THE DISPOSAL FACILITY WILL BE UNDER THE SUPERVISION OF AN EXPERIENCED FULL-TIME EMPLOYEE WHO WILL BE ON-SITE AT ALL TIMES DURING ITS OPERATION. THE SUPERVISOR'S EXPERIENCE MUST INCLUDE TRAINING IN THE OPERATION OF LANDFILLS AND THE IMPLEMENTATION OF DESIGN AND OPERATIONAL PLANS. THE SUPERVISOR SHALL BE CERTIFIED IN ACCORDANCE WITH O.C.G.A. 12-8-24.1 AND THE RULES OF SOLID WASTE MANAGEMENT. AN APPROVED SET OF DESIGN AND OPERATION PLANS SHALL BE KEPT ON-SITE DURING OPERATION HOURS.

THE SUPERVISOR AND FACILITY EMPLOYEES WILL RECIEVE REGULAR EDUACATIONAL TRAINING THAT WILL ALLOW THEM TO DETECT SAFETY EMERGENCIES AND RESPOND IN A TIMELY MANNER.

11. CONTINUITY OF OPERATION: ALL-WEATHER ACCESS ROADS WILL BE PROVIDED TO THE WORKING FACE OF THE DISPOSAL OPERATION. ALL AREAS OF THE SITE ARE SUITABLE FOR WET WEATHER OPERATIONS. BACK-UP OR RENTAL EQUIPMENT WILL BE USED IN THE EVENT OF EQUIPMENT BREAKDOWN.

21. SILTATION AND EROSION CONTROL: CLEARING AND GRADING ACTIVITIES WILL BE LIMITED TO THE CURRENT WASTE CELL AREAS, BORROW AREAS, STOCKPILE AREAS, AND SITE FACILITY AREAS. SILT FENCE AND OTHER EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ALL CONSTRUCTION ACTIVITIES. DISTURBED AREAS ALONG ROADSIDE AND ON CONSTRUCTED SOIL FILL SLOPES SHALL BE SEEDED AND MULCHED IMMEDIATELY AS WORK PROGRESSES TO ESTABLISH PERMANENT VEGETATION. THE ROAD SURFACE SHALL BE STABILIZED WITH SIX INCHES OF LIMEROCK.

SOIL STOCKPILE AND INTERMEDIATE COVER AREAS TO BE EXPOSED FOR LONGER THAN THREE MONTHS SHOULD BE MULCHED AND SEEDED WITH TEMPORARY VEGETATION. SILT FENCE SHALL BE PLACED AROUND ALL STOCKPILE AREAS. PERMANENT VEGETATION OVER WASTE FILL AREAS SHALL BE ESTABLISHED AS FINAL COVER IS PLACED. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED WEEKLY AND IMMEDIATELY AFTER SIGNIFICANT RAIN EVENTS. SILT WILL BE REMOVED FROM SILT FENCE WHEN SILT ACCUMULATION REACHES A DEPTH OF ONE HALF THE HEIGHT OF THE SILT FENCE FABRIC. ACCUMULATED SILT WILL BE REMOVED AND PLACED IN DESIGNATED STOCKPILE AREAS. PERMANENT RECORD SHALL BE KEPT OF ALL SEDIMENT POND CLEANING OPERATIONS.

SILT REMOVAL FROM SEDIMENT PONDS:
SILT WILL BE REMOVED FROM SEDIMENT PONDS AS REQUIRED TO MAINTAIN THE DESIGN CAPACITY OF THE STORMWATER MANAGEMENT SYSTEM.

ALL RECORDS SHALL BE FILED AND MAINTAINED AT THE LANDFILL OFFICE. REPAIRS TO ALL DEVICES SHALL BE MADE AS NECESSARY TO MAINTAIN THEIR EFFECTIVENESS IN SILT CONTROL. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL CONFORM TO THE FOLLOWING O.C.G.A. 12-7-6 BEST MANAGEMENT PRACTICES FOR CONSERVATION AND ENGINEERING PRACTICES:

A. STRIPPING OF VEGETATION, REGRADING, AND OTHER DEVELOPMENT ACTIVITIES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO MINIMIZE EROSION;

B. CUT AND FILL OPERATIONS MUST BE KEPT TO A MINIMUM;

C. DEVELOPMENT PLANS MUST CONFORM TO TOPOGRAPHY AND SOIL TYPE, SO AS TO CREATE THE LOWEST PRACTICABLE EROSION POTENTIAL;

D. WHENEVER FEASIBLE, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED, AND SUPPLEMENTED;

E. THE DISTURBED AREA AND THE DURATION OF EXPOSURE TO EROSIVE ELEMENTS SHALL BE KEPT TO A PRACTICABLE MINIMUM;

F. DISTURBED SOIL SHALL BE STABILIZED AS QUICKLY AS PRACTICABLE;

G. TEMPORARY VEGETATION OR MULCHING SHALL BE EMPLOYED TO PROTECT EXPOSED CRITICAL AREAS DURING DEVELOPMENT;

H. PERMANENT VEGETATION AND STRUCTURAL EROSION CONTROL MEASURES MUST BE INSTALLED AS SOON AS PRACTICABLE;

I. TO THE EXTENT NECESSARY, SEDIMENT IN RUN-OFF WATER MUST BE TRAPPED BY THE USE OF DEBRIS BASINS, SEDIMENT BASINS, SILT TRAPS, OR SIMILAR MEASURES UNTIL THE DISTURBED AREA IS STABILIZED. A DISTURBED AREA IS STABILIZED WHEN IT IS BROUGHT TO A CONDITION OF CONTINUOUS COMPLIANCE WITH REQUIREMENTS.

J. ADEQUATE PROVISIONS SUCH AS BERMS OR DIVERSION DITCHES MUST BE PROVIDED TO MINIMIZE DAMAGE FROM SURFACE WATER TO THE CUT FACE OF EXCAVATIONS OR THE SLOPING SURFACES OF FILLS.

K. CUTS AND FILLS MAY NOT ENDANGER ADJOINING PROPERTY;

L. FILLS MAY NOT ENCROACH UPON NATURAL WATER COURSES OR CONSTRUCTED CHANNELS IN A MANNER SO AS TO ADVERSELY AFFECT OTHER PROPERTY OWNERS;

M. GRADING EQUIPMENT MUST CROSS FLOWING STREAMS BY THE MEANS OF BRIDGES OR CULVERTS, EXCEPT WHEN SUCH METHODS ARE NOT FEASIBLE; PROVIDED, IN ANY CASE, THAT SUCH CROSSINGS MUST BE KEPT TO A MINIMUM;

N. LAND-DISTURBING ACTIVITY PLANS FOR EROSION AND SEDIMENTATION CONTROL SHALL INCLUDE PROVISIONS FOR TREATMENT OR CONTROL OF ANY SOURCE OF SEDIMENTS AND ADEQUATE SEDIMENTATION CONTROL FACILITIES TO RETAIN SEDIMENTS ON SITE OR PRECLUDE SEDIMENTATION OF ADJACENT STREAMS;

O. LAND-DISTURBING ACTIVITIES SHALL NOT BE CONDUCTED WITHIN 25 FEET OF THE BANKS OF ANY STATE WATERS, AS MEASURED FROM THE POINT WHERE VEGETATION HAS BEEN WRESTED BY NORMAL STREAM FLOW OR WAVE ACTION, EXCEPT WHERE THE DIRECTOR DETERMINES TO ALLOW A VARIANCE THAT IS AT LEAST AS PROTECTIVE OF NATURAL RESOURCES AND THE ENVIRONMENT, WHERE OTHERWISE ALLOWED BY THE DIRECTOR PURSUANT TO CODE SECTION 12-2-8, OR WHERE A DRAINAGE STRUCTURE OR A ROADWAY DRAINAGE STRUCTURE MUST BE CONSTRUCTED, PROVIDED THAT ADEQUATE EROSION CONTROL MEASURES ARE INCORPORATED IN THE PROJECT PLANS AND SPECIFICATIONS AND ARE IMPLEMENTED; PROVIDED, HOWEVER, THAT BUFFERS OF AT LEAST 25 FEET ESTABLISHED PURSUANT TO PART 6 OF ARTICLE 5 OF CHAPTER 5 OF THIS TITLE SHALL REMAIN IN FORCE UNLESS A VARIANCE IS GRANTED BY THE DIRECTOR AS PROVIDED IN THIS PARAGRAPH; AND

P. LAND-DISTURBING ACTIVITIES SHALL NOT BE CONDUCTED WITHIN 100 HORIZONTAL FEET, AS MEASURED FROM THE POINT WHERE VEGETATION HAS BEEN WRESTED BY NORMAL STREAM FLOW OR WAVE ACTION, OF THE BANKS OF ANY STATE WATERS CLASSIFIED AS "TROUT STREAMS" PURSUANT TO ARTICLE 2 OF CHAPTER 5 OF THIS TITLE UNLESS A VARIANCE FOR SUCH ACTIVITY IS GRANTED BY THE DIRECTOR EXCEPT WHERE A ROADWAY DRAINAGE STRUCTURE MUST BE CONSTRUCTED, PROVIDED THAT ADEQUATE EROSION CONTROL MEASURES ARE I NCORPORATED IN THE PROJECT PLANS AND SPECIFICATIONS AND ARE IMPLEMENTED.

13. VEGETATIVE PLAN: NO AREA ON THE SITE WILL BE STRIPPED OF ITS NATURAL VEGETATION UNTIL SUCH TIME AS IT IS READY FOR USE. ANY AREA TO BE LEFT EXPOSED AND INACTIVE FOR MORE THAN 3 MONTHS SHALL BE GRASSED. VEGETATION OF THE FINAL COVER SHALL TAKE PLACE WITHIN TWO WEEKS AFTER IT IS PLACED. INTERMEDIATE COVER SHALL BE GRASSED WITH TEMPORARY VEGETATION IF IT WILL BE EXPOSED FOR MORE THAN THREE MONTHS. AN ALTERNATIVE BMP/INTERMEDIATE COVER, AS DEFINED IN SECTION 7B OF THIS SHEET, MAY BE SUBSTITUTED FOR TEMPORARY VEGETATION.

ALL SEEDED AREAS MUST BE STABILIZED IN ACCORDANCE WITH THE GEORGIA EROSION AND SEDIMENT CONTROL MANUAL.

A. [Ds1] STABILIZATION (TYPICAL)

FOR AREAS REQUIRING STABILIZATION WHEN NO VEGETATION IS AVAILABLE, USE MULCHING UNTIL THE SEASON FOR PLANTING THE REQUIRED VEGETATION IS REACHED. MULCHING WILL BE ACCOMPLISHED BY ONE OR MORE OF THE FOLLOWING METHODS:
(1) DRY STRAW OR HAY SHALL BE SPREAD AT THE RATE OF 2 1/2 TONS PER ACRE. THE MULCH SHALL BE ANCHORED IN THE SOIL WITH A DISK HARROW,
(2) MECHANICALLY APPLIED CLAY AND ASPHALT EMULSION,
(3) STRAW AND FIBER MESH ROLL PLACED AND ANCHORED WITH STAPLES.

B. [Ds2] TEMPORARY VEGETATION (TYPICAL)

FOR AREAS REQUIRING TEMPORARY COVER, THE FOLLOWING FAST-GROWING GRASSES CAN BE USED:

TYPE	SEEDING RATE (LBS/ACRE)	PLANTING DATES	YEAR FERTILIZER RATE (LBS/ACRE)	TYPE FERTILIZER (N-P-K)
BROWNTOP MILLET	45	3/15 – 7/31	30-40	8-8-8
RYEGRASS	45	8/1 – 3/15	40-50	8-8-8

C. [Ds3] PERMANENT VEGETATION (TYPICAL)

PENSACOLA BAHIA GRASS WILL BE PLANTED ACCORDING TO THE FOLLOWING SCHEDULE:

(TEMPORARY GRASS AT 10 LBS/ACRE AND MULCH SHALL BE MIXED WITH THE FIRST APPLICATION OF PERMANENT GRASS.)

TYPE	SEEDING RATE (LBS/ACRE)	PLANTING DATES	YEARS TO APPLY	N FERT. RATE (LBS/ACRE)	P_2O_5 FERT. RATE (LBS/ACRE)	K_2O FERT. RATE (LBS/ACRE)	N – TOP DRESSING RATE (LBS/ACRE)
PENSACOLA BAHIA GRASS	40-60	10/1-6/15	FIRST	60-90	120-180	120-180	50-100
			SECOND	48	96	96	50-100

14. SURVEY CONTROL: SURVEY CONTROL WILL BE PROVIDED AS INDICATED ON THE APPROVED DESIGN AND OPERATIONAL PLAN. SURVEY CONTROL WILL BE ACCOMPLISHED THROUGH THE USE OF PERMANENT BENCHMARKS. WHERE NECESSARY FOR CONSTRUCTION OR OPERATIONAL PURPOSES, VERTICAL AND HORIZONTAL SURVEY CONTROL WILL BE ESTABLISHED AND MAINTAINED TO DELINEATE WASTE FILL BOUNDARIES, STRUCTURES, AND PROPERTY BOUNDARIES.

15. LEACHATE COLLECTION AND TREATMENT: A LINER AND LEACHATE COLLECTION SYSTEM WILL BE INSTALLED AS SHOWN ON THE APPROVED DESIGN AND OPERATION PLAN. THIS COLLECTION SYSTEM SHALL BE PROPERLY MAINTAINED THROUGHOUT THE OPERATION OF THE DISPOSAL FACILITY.

LEACHATE WILL BE CONVEYED TO ABOVE-GROUND STORAGE TANKS PRIOR TO DISPOSAL. LEACHATE COLLECTED IN THE TANKS SHALL EITHER BE RECIRCULATED BACK INTO THE LANDFILL, SOLIDIFIED AND DISPOSED OF IN THE LANDFILL OR HAULED TO A WASTEWATER TREATMENT PLANT.

PRETREATMENT FACILITIES WILL BE CONSTRUCTED IF NECESSARY TO MEET PERMIT LIMITATIONS ESTABLISHED BY THE TREATMENT FACILITY AND/OR EPD.

LEACHATE MAY BE RECIRCULATED BACK INTO THE LANDFILL ONCE SUFFICIENT SOLID WASTE HAS BEEN DEPOSITED IN A CELL UNDER THE FOLLOWING CONDITIONS:

A. THE CELL MUST HAVE AT LEAST A 15-FOOT LIFT OF SOLID WASTE.

B. LEACHATE MAY NOT BE DISCHARGED WITHIN 100-FEET OF ANY UNLINED AREA.

C. LEACHATE MAY BE DISCHARGED BY DIRECT DISCHARGE FROM A TANKER TRUCK INTO THE WORKING FACE OR DISCHARGED DIRECTLY INTO THE WASTE THROUGH A PIPING DISTRIBUTION SYSTEM.

D. RECIRCULATION MUST BE AT A CONTROLLED RATE TO AVOID PONDING ON THE WORKING FACE.

E. A BERM MUST BE CONSTRUCTED NEAR THE WORKING FACE TO PREVENT RUNOFF FROM THE RECIRCULATED LEACHATE.

LEACHATE COLLECTION AND TREATMENT (CONTINUED):

F. AREAS WHERE LEACHATE IS RECIRCULATED INTO THE WORKING FACE MUST BE COVERED WITH DAILY "SOIL" COVER TO AID IN ABSORPTION AND TO CONTROL ODORS.

UPON COMMENCEMENT OF LEACHATE GENERATION BY THE FACILITY, THE OPERATOR SHALL SAMPLE AND ANALYZE THE FOLLOWING:

A. ON A WEEKLY BASIS, THE VOLUME OF LEACHATE GENERATED AND DISPOSED OF OFF SITE BY THE LANDFILL.

B. ON A SEMI-ANNUAL BASIS, THE CHEMICAL COMPOSITION OF LEACHATE INCLUDING TOTAL ALKALINITY, SPECIFIC CONDUCTANCE, CHLORIDES, SULFATES, TOTAL DISSOLVED SOLIDS, CHEMICAL OXYGEN DEMAND, METALS AND VOLATILE ORGANIC ANALYSIS. FOR THE SEMI-ANNUAL ANALYSIS, THE LEACHATE SAMPLE SHOULD BE COLLECTED FROM THE LEACHATE STORAGE TANK AND SHOULD BE REPRESENTATIVE OF THE AVERAGE MIXED INFLUENT LEACHATE QUALITY.

C. ON AN ANNUAL BASIS FOR APPENDIX 1 CONSTITUENTS.

16. SITE EQUIPMENT: LANDFILL EQUIPMENT WILL BE PROVIDED AS NECESSARY TO ADEQUATELY MAINTAIN THE FACILITY'S DAY TO DAY OPERATIONS. THE MINIMUM EQUIPMENT ANTICIPATED FOR THESE OPERATIONS IS LISTED BELOW:

TYPE	QUANTITY
LANDFILL COMPACTOR	1
BULLDOZER	1

17. BACK-UP EQUIPMENT: BACK-UP EQUIPMENT WILL BE OBTAINED FROM A LOCAL DEALER, AS NECESSARY TO MAINTAIN CONTINUITY OF OPERATIONS.

18. DIRECTIONAL AND INFORMATIONAL SIGNS: DIRECTIONAL SIGNS WILL BE PLACED ON ROADS NEAR THE DISPOSAL FACILITY. AN INFORMATIONAL SIGN WILL BE PLACED AT THE ENTRANCE TO THE DISPOSAL SITE INDICATING THE DAYS AND HOURS OF OPERATION AND TIPPING FEES.

19. AFTER HOURS DUMPING: NO WASTE WILL BE ACCEPTED ON-SITE AFTER OPERATIONAL HOURS UNLESS AN EMERGENCY SITUATION ARISES. EMERGENCY SITUATIONS ARE TO BE DETERMINED BY THE LANDFILL SITE MANAGER WITH APPROVAL FROM THE GEORGIA REGIONAL OFFICE OF THE EPD. ALL AFTER HOURS DUMPING SHALL BE REPORTED TO THE EPD.

20. LITTER CONTROL: THE SITE WILL BE INSPECTED DAILY AND LITTER COLLECTED. THE APPLICATION OF DAILY COVER WILL ALSO MINIMIZE LITTER. NO WASTE WILL REMAIN UNCOVERED OVERNIGHT. SCATTERING OF WASTE BY WIND SHALL BE CONTROLLED BY FENCING OR OTHER BARRIERS.

21. DUST CONTROL: THE ENTRANCE AND PERIMETER ROADS WILL BE PAVED OR GRAVELED TO MINIMIZE DUST. JEA EZBASE MAY BE USED ON ROADWAYS WITHIN THE LINER LIMITS. A WATER TRUCK WILL BE UTILIZED TO SPRAY ACCESS ROADS AND CO-MINGLED MSW AND CCR AND CCR LAYERED DISPOSAL AREAS AS NECESSARY TO CONTROL FUGITIVE DUST EMISSIONS. FUGITIVE DUST FROM CCR DISPOSAL AREAS WILL BE MINIMIZED IN ACCORDANCE WITH AIR QUALITY RULE 391-3-1-.02(2)(n)1 AND WILL NOT EXCEED THE LIMITS DEFINED THEREIN.

FUGITIVE CCR DUST COMPLAINTS FROM CITIZENS WILL BE LOGGED VIA WASTE MANAGEMENT'S 1-800 CITIZEN COMMENT SYSTEM AND BE PLACED IN THE FACILITY'S RECORDS AND MADE AVAILABLE FOR INSPECTION BY EPD.

THE OWNER WILL PREPARE AND SUBMIT TO EPD AN ANNUAL FUGITIVE DUST CONTROL REPORT. THE REPORT WILL BE DUE EVERY 12 MONTHS SUBSEQUENT TO APPROVAL OF THE ORIGINAL CCR MANAGEMENT PLAN. THE REPORT WILL INCLUDE THE FOLLOWING:
A. DESCRIPTION OF ACTIONS TAKEN TO CONTROL FUGITIVE DUST
B. RECORD OF ALL CITIZEN COMPLAINTS
C. A SUMMARY OF CORRECTIVE ACTIONS TAKEN AND RECOMMENDATIONS TO IMPROVE FUGITIVE DUST CONTROL MEASURES (IF APPLICABLE).

22. OPERATIONAL RECORDS/DAILY LOGS: RECORDS WILL BE KEPT OF ALL WASTE TRANSPORTED TO THE SITE BY WEIGHT. COMPLETE DAILY LOGS AND OPERATIONAL RECORDS WILL BE RETAINED IN THE ON SITE OFFICE BUILDING AND SHALL BE MADE AVAILABLE TO EPD UPON REQUEST. ALL RECORD KEEPING SHALL BE IN ACCORDANCE WITH RULE 391-3-4-.07(u).

23. ON-SITE FIRST AID: FIRST AID SUPPLIES WILL BE LOCATED IN THE OFFICE ON-SITE.

24. SITE COMMUNICATIONS: THE OFFICE WILL BE EQUIPPED WITH A TELEPHONE.

25. EMPLOYEE FACILITIES: AN OFFICE TO BE LOCATED ON-SITE WILL BE EQUIPPED WITH ELECTRICITY AND RESTROOM FACILITIES.

26. ON-SITE SOLID WASTE MATERIALS RECOVERY OPERATIONS:

AN AREA HAS BEEN DESIGNATED FOR THE STORAGE OF RECOVERED RECYCLABLE MATERIALS.

1. NO ON-SITE RECOVERED MATERIALS PROCESSING ACTIVITIES SHALL OCCUR WITHOUT PRIOR APPROVAL FROM THE ENVIRONMENTAL PROTECTION DIVISION.

2. ANY DESIGNATED STORAGE AREA FOR RECOVERED MATERIALS MUST BE MAINTAINED IN A NEAT AND ORDERLY MANNER. STORED MATERIALS MUST BE REMOVED FROM THE SITE EVERY 90 DAYS. MATERIALS STORED MORE THAN 90 DAYS SHALL BE DISPOSED IN THE LANDFILL.

3. SCAVENGING SHALL NOT BE ALLOWED IN THE RECOVERED MATERIAL PROCESSING AREA.

4. THE FOLLOWING RECOVERED MATERIALS MAY BE STORED: WHITE GOODS & TIRES.

27. WASTE REQUIRING SPECIAL HANDLING: ALL INFECTIOUS AND ASBESTOS WASTES MUST BE LABELED AND HANDLED IN ACCORDANCE WITH ALL GEORGIA EPD REGULATIONS IN ORDER TO BE ACCEPTED.

ASBESTOS DISPOSAL

1. ASBESTOS CONTAINING WASTE SHALL BE SEALED IN LEAK-PROOF CONTAINERS LABELED WITH: "CAUTION – CONTAINS ASBESTOS FIBERS – AVOID OPENING OR BREAKING CONTAINER – BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH."

2. ASBESTOS CONTAINING WASTE SHALL BE DISPOSED OF IN SUCH A MANNER AS NOT TO DESTROY THE INTEGRITY OF THE ASBESTOS CONTAINING MATERIALS CONTAINERS PRIOR TO THE PLACEMENT OF COVER MATERIAL. THIS WASTE SHALL BE COMPLETELY COVERED IMMEDIATELY AFTER DEPOSITION WITH A MINIMUM OF SIX(6) INCHES OF NON-ASBESTOS MATERIAL.

3. PERSONNEL DISPOSING OF ASBESTOS CONTAINING MATERIAL WILL BE TRAINED FOR THE HAZARDS OF THIS MATERIAL AS WELL AS ITS DISPOSAL.

4. THE LOCATION OF ASBESTOS SHALL BE RECORDED AND PLACED IN THE OPERATING RECORD.

BIOMEDICAL WASTE DISPOSAL

1. BIOMEDICAL WASTE FROM GENERATORS OF LESS THAN 100 POUNDS PER MONTH SHALL BE PROPERLY DISPOSED OF AT THE LANDFILL. DISPOSAL OF UNTREATED BIOMEDICAL WASTE FROM GENERATORS OF MORE THAN 100 POUNDS PER MONTH IS PROHIBITED AT THE LANDFILL.

2. TREATED BIOMEDICAL WASTE MAY BE COMBINED AND HANDLED WITH REGULAR SOLID WASTE.

28. ZONING: ALL CHARLTON COUNTY REQUIREMENTS FOR A SOLID WASTE DISPOSAL FACILITY SHALL APPLY.

29. PROHIBITED WASTE: NO LIQUID WASTE, EITHER BULK OR CONTAINERIZED SHALL BE PLACED IN THE LANDFILL UNLESS THE CONTAINER HAS ONE GALLON CAPACITY OR LESS. ALSO, NO LEAD ACID BATTERIES, RADIOACTIVE WASTE, OR REGULATED QUANTITIES OF HAZARDOUS WASTE MAY BE ACCEPTED. THESE PROHIBITED WASTE SHALL BE LISTED ON THE INFORMATIONAL SIGN. THE SCALEHOUSE ATTENDANT AND THE EQUIPMENT OPERATORS SHOULD BE TRAINED TO IDENTIFY AND EXCLUDE THESE WASTES. AT A MINIMUM, LANDFILL PERSONNEL MUST BE TRAINED TO RECOGNIZE REGULATED WASTES IN ACCORDANCE WITH GEORGIA EPD AND FEDERAL REGULATIONS. RANDOM INSPECTION OF INCOMING LOADS SHALL BE PERFORMED AT THE SCALEHOUSE BY TRAINED PERSONNEL. THE EPD SHALL BE NOTIFIED IF REGULATED HAZARDOUS WASTE OR PCB WASTE IS DISCOVERED AT THE FACILITY.

30. PROHIBITED ACTS: THE LANDFILL SHALL BE OPERATED AND MAINTAINED TO PREVENT OPEN BURNING, SCAVENGING, AND THE OPEN DUMPING OF WASTES.

31. SITE ACCEPTABILITY LIMITATIONS PHASE 4:

1. THE AREA CONSIDERED FOR SUITABILITY INCLUDES ONLY THAT 230.79-ACRE PARCEL SHOWN ON FIGURE 1-2b OF THE AQUATERRA ENGINEERING, LLC, SITE ACCEPTABILITY REPORT, DATED APRIL 10, 2007. THE SURVEY WAS SIGNED AND SEALED BY THE REGISTERED LAND SURVEYOR THAT PREPARED IT ON JANUARY 16, 2008.
2. A LINER AND LEACHATE COLLECTION SYSTEM SHALL BE CONSTRUCTED UNDER ALL AREAS PROPOSED FOR WASTE DISPOSAL. THE BOTTOM OF THE LINER SYSTEM SHALL BE CONSTRUCTED AT LEAST 5-FEET ABOVE THE SEASONAL HIGH WATER TABLE. BECAUSE THE WATER TABLE AT THE SITE WILL LIKELY OCCUR NEAR THE GROUND SURFACE FOR EXTENDED PERIODS OF TIME, THE BOTTOM OF THE LINER SYSTEM SHALL BE CONSTRUCTED AT LEAST 5-FEET ABOVE THE NATURAL GROUND SURFACE. A "CAPILLARY BREAK" SHALL BE INSTALLED BETWEEN THE SEASONAL HIGH WATER TABLE AND THE SOIL BUFFER, TO PREVENT WATER FROM WICKING UP INTO THE DRY SOIL BUFFER.

THE PROJECT ENGINEER SHALL MAKE PERIODIC QUALITY CONTROL INSPECTIONS WHILE THE LINER SYSTEM AND UNDERDRAIN SYSTEM ARE UNDER CONSTRUCTION, AND MUST CERTIFY THE PROPER INSTALLATION OF THE SYSTEMS.

3. A MINIMUM 500-FOOT BUFFER SHALL BE MAINTAINED BETWEEN THE WASTE DISPOSAL AREA AND ANY ADJACENT RESIDENCES AND/OR ANY WATER SUPPLY WELLS.
4. A MINIMUM 200-FOOT UNDISTURBED BUFFER SHALL BE MAINTAINED BETWEEN THE WASTE DISPOSAL AREA AND THE PROPERTY LINE OF THE 230.79-ACRE PARCEL SHOWN ON FIGURE 1-2b.
5. A MINIMUM 150-FOOT UNDISTURBED BUFFER SHALL BE MAINTAINED BETWEEN THE WASTE DISPOSAL AREA AND ALL STREAMS SHOWN ON FIGURE 1-2b.
6. A MINIMUM 50-FOOT UNDISTURBED BUFFER SHALL BE MAINTAINED BETWEEN THE WASTE DISPOSAL AREA AND ALL STREAMS SHOWN ON FIGURE 1-2b UNLESS OTHERWISE PERMITTED BY THE UNITED STATES ARMY CORPS OF ENGINEERS. THE JURISDICTIONAL WETLAND AREAS MUST BE DELINEATED ON THE DESIGN AND OPERATION PLAN.

GEORGIA
Environmental Protection Division
Solid Waste Management Program
MINOR MODIFICATION APPROVAL
SOLID WASTE PERMIT NO. 024-006D(SL)
APPROVED BY: [signature] DATE: 6/19/2019

RECEIVED
JUN 13 2019
SOLID WASTE MANAGEMENT PROGRAM

ATLANTIC COAST CONSULTING, INC.
630 Colonial Park Drive
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Roswell, GA 30075
o 770.594.5998
f 770.594.5967
www.atlcc.net

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 030071 MARC A. LIVERMAN
6/7/19
06930
LEVEL II CERTIFICATION

PROJECT:
CHESSER ISLAND ROAD MSW LANDFILL MINOR MODIFICATION PHASE 4 EXPANSION
CHARLTON COUNTY, GA
PERMIT NO: 024-006D(SL)

WASTE MANAGEMENT
Chesser Island Road Landfill, Inc.
Hwy 121 @ Chesser Island Road
Folkston, GA 31537

REVISIONS

INITIAL GAEPD SUBMITTAL	03/13/09
REVISED PER EPD COMMENTS	10/23/09
REVISED PER EPD COMMENTS	12/16/09
1-MINOR MODIFICATION	04/27/15
2-CCR MANAGEMENT	04/20/17
3-ADD CCR SOURCE	05/17/17
4-CCR CHARACTERISTICS	05/19/17
5-Intermediate Cover	05/19/17
6-BMP/INT. COVER MIN. MOD	09/24/18
7-CCR TONNAGES	06/07/19

Drawn by: CW
Checked by:

PROJECT NUMBER:
1014-101
March 2009

OPERATIONAL PROCEDURES

SHEET 26 OF 30