COMPLIANCE STATUS REPORT

Roswell Cleaners
1013 Alpharetta Street
Roswell, Fulton County, Georgia 30075
HSI #10883

Prepared For:

Mr. Richard E. Bowen
811 Serramonte Drive
Marietta, Georgia 30068

MAY 2016

AEC Project Number REB-2415

Atlanta Environmental Consultants
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Peter T. Kallay, P.E. 05/30/16

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LIST OF ACRONYMS

ACL	Advanced Chemistry Labs
AEC	Atlanta Environmental Consultants, LLC
BRL	Below laboratory method reporting limit
bls	Below land surface
CESQG	[RCRA] Conditionally Exempt Small Quantity Generator
CSM	Conceptual Site Model
CSR	Compliance Status Report
DCE	Dichloroethene, aka dichloroethylene
cis-DCE	cis-Dichloroethene
trans-DCE	trans-Dichloroethene
EPD	[Georgia] Environmental Protection Division
ESA	Environmental Site Assessment
FTS	FTS Analytical Services
GAEPD	Georgia Environmental Protection Division
GC/MS	Gas chromatography/mass spectrometry
HSI	[Georgia] Hazardous Site Inventory
HSRA	Hazardous Site Response Act
MCL	[USEPA Drinking Water] Maximum contaminant level
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MNA	Monitored natural attenuation
msl	mean sea level
MW	Monitoring well
NC	[GAEPD HSRA] Soil Notification Concentration
OVA	Organic vapor analyzer
PID	Photo-ionization detector
QA/QC	Quality Assurance and Quality Control
PCE	Tetrachloroethene, aka tetrachloroethylene and perchloroethylene
PPCAP	Prospective Purchaser Corrective Action Plan
PPE	Personal protective equipment
RAGS	*Risk Assessment Guidance for Superfund*
RCRA	Resource Conservation and Recovery Act
RRS	Risk Reduction Standard
SASR	Semi-Annual Status Report
SIC	Standard Industrial Classification
SVOC	Semivolatile organic compound
TCE	Trichloroethene, aka trichloroethylene
TPH	Total petroleum hydrocarbons
µg/L	Micrograms per liter
µg/kg	Micrograms per kilogram
USGS	United States Geologic Survey
VC	Vinyl chloride
VOC	Volatile organic compound
VRP	Georgia EPD Voluntary Remediation Program

QUALIFIED GROUND-WATER SCIENTIST CERTIFICATION

I certify that I am a qualified ground-water scientist who has received a baccalaureate or post-graduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this Compliance Status Report, prepared for Richard E. Bowen for the property a 1013 Alpharetta Street, Roswell, Georgia, was prepared by myself or by a subordinate working under my direction.

Signature and Date

05/30/16

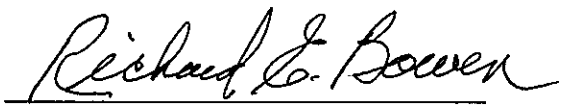
Peter T. Kallay, P.E., Georgia Reg. No. PE024002
Name, Title and Registration Number

CERTIFICATION OF COMPLIANCE WITH RISK REDUCTION STANDARDS

I certify under penalty of law that this report and all attachments were prepared under my direction in accordance with a system designed to insure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Based on my review of the findings of this report with respect to the risk reduction standards of the Rules for Hazardous Site Response, Rule 391-3-19-07, I have determined that this site does not currently meet Risk Reduction Standards for groundwater and does not currently meet Risk Reduction Standards for soil.

Tax Parcel ID 12-1902-0412-061-6



Mr. Richard E. Bowen
811 Serramonte Drive
Marietta, Georgia 30068
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EXECUTIVE SUMMARY

This Compliance Status Report (CSR) has been prepared for the property located at 1013 Alpharetta Street, Roswell, Fulton County, Georgia. The Site is comprised of one tax parcel, Tax Parcel ID number 12-1902-0412-061-6. The subject property encompasses 0.6565 acre, of which approximately 4,880 square feet is primarily the commercial building onsite. The site contains one building designed for, and historically used as, a dry cleaners.

The building currently occupied by Roswell Cleaners, 1013 Alpharetta Street, Roswell, Fulton County, Georgia 30075, is located in a building constructed in 1966, according to records of the Fulton County Tax Assessor. Records indicate that the building has been used as a dry cleaners for 50 years, originally named Roswell Sunshine Center, then Sunshine Center, then Sunshine Cleaners (or Roswell Sunshine Cleaners), then Roswell Cleaners, then Roswell Cleaners & Coin Laundry, and currently Roswell Cleaners. The building is currently occupied by Roswell Cleaners. The former coin laundry operation has been decommissioned. The building was constructed as a commercial facility, specifically designed to be used for a dry cleaners. Other tenants, all dry cleaners, were previously located at the facility. The site is currently owned by Richard E. Bowen.

Chemicals of Interest

Volatile Organic Compounds (VOC), in particular, PCE and its biogedradation products, are the primary chemicals of interest. Based on numerous sampling events onsite, chemicals of interest onsite are:

Soils	**Groundwater**
tetrachloroethene (PCE)	tetrachloroethene (PCE)
trichloroethene (TCE)	trichloroethene (TCE)
cis-dichloroethene (cis-DCE)	cis-dichloroethene (cis-DCE)
trans-dichloroethene (trans-DCE)	trans-dichloroethene (trans-DCE)
	vinyl chloride (VC)

History of Investigations

Atlanta Environmental Consultants (AEC) conducted a Phase II Environmental Site Assessment (ESA) field activities at the site on March 19, 2007. Following identification of PCE and TCE in soils, and PCE, TCE and VC in groundwater, a Release Notification Form was completed and submitted to the Georgia Department of Natural Resources Environmental Protection Division (EPD). The Georgia EPD was notified by letter from Richard A. Wingate, Esq., Decker, Hallman, Barber & Briggs. The Georgia EPD notified Mr. Bowen by letter dated December 21, 2007 that the site has been listed on Georgia's Hazardous Site Inventory (HSI) as HSI # 10883. Richard E. Bowen was accepted into the Georgia EPD Voluntary Remediation Program (VRP) by letter dated April 21, 2011. Regularly scheduled Semi-Annual Status Reports (SASR) and Conceptual Site Model (CSM) reports were submitted to the Georgia EPD under the VRP. The VRP milestone schedule is completed by submittal of this Compliance Status Report to the Georgia EPD.

- Richard E. Bowen has purchased the Lindsay Property at 66 Norcross Street and has placed an environmental lien on the property stating that groundwater cannot be used.
- The current property owner of the property at 1013 Alpharetta Street, Richard E. Bowen, is willing to enter into a Uniform Environmental Covenant (UEC) if the property ownership is transferred.

1.0 INTRODUCTION

This Compliance Status Report (CSR) for the property located at 1013 Alpharetta Street, Roswell, Fulton County, Georgia was prepared by Atlanta Environmental Consultants (AEC) for submittal to the Georgia Environmental Protection Division (GAEPD) in accordance with the Milestone Schedule approved by the Georgia EPD in accordance with acceptance of Richard E. Bowen into the Voluntary Remediation Program (VRP) by letter dated April 21, 2011. This section provides a description of the property, a summary of the property history, investigation activities, and the organization of this CSR. Previous reports and data relied on in preparing this CSR are provided in the Appendices.

1.1 Site Location and Description

The Site is located at 1013 Alpharetta Street, Roswell, Fulton County, Georgia, and is currently developed with a commercial building housing Roswell Cleaners. The property is located on an out parcel associated with the Roswell Village Shopping Center. A Site Location Map is presented as Figure 1, a site plan is in Figure 2, an aerial view of the site is included as Figure 3 and a site area plan is presented in Figure 4.

The subject property size is approximately 0.6565 acre (tax parcel ID 12-1902-0412-061-6), of which approximately 4,880 square feet is a commercial building housing Roswell Cleaners. No other buildings are located onsite.

1.2 Site History

Historical information reviewed indicates that the site and site area were developed for agricultural uses since at least 1938. Between the 1930s and the 1960s, single family residences were developed onsite and/or in the site area. In 1966, the property was developed with the current concrete block slab-on-grade building designed for use as a dry cleaners, based on available records of the Fulton County Tax Assessor.

The building was specifically designed for use as a commercial dry cleaning facility. Other tenants, all dry cleaners, were previously located at the facility. The property was owned by E. R. McFarland and W. M. McFarland prior to ownership by Richard E. Bowen. The building onsite has always been occupied by dry cleaners, and is a dry cleaners to the present date. One dry cleaning machine is located onsite, which is generally used a few times a day.

1.3 Organization of the Compliance Status Report

This CSR is organized to address the items specified in the Rules of the Georgia Department of Natural Resources (DNR) Environmental Protection Division (Rules), Chapter 391-3-19, Hazardous Site Response, Section 391-3-19-.06(3) titled Compliance Status Report, Completion of a Compliance Status Report in the rules of the Voluntary Remediation Program. The organization is as follows:

- Section 1.0 Introduction
- Section 2.0 Source Description
- Section 3.0 Previous Investigations
- Section 4.0 Evaluation of Soil Contamination
- Section 5.0 Evaluation of Groundwater Contamination
- Section 6.0 Evaluation of Soil Vapor Intrusion Potential
- Section 7.0 Receptors Survey
- Section 8.0 Site Description
- Section 9.0 Risk Reduction Standards
- Section 10.0 Responsible Parties
- Section 11.0 References

1.4 Previous Investigations

A Phase II Environmental Site Assessment report dated April 2007 indicated the presence of concentrations of PCE, trichloroethene (TCE), cis-dichloroethene (cis-DCE) in soils and the presence of PCE, TCE, cis-DCE and vinyl chloride (VC) in groundwater (Appendix I). Following detection of these compounds, an Initial Release Notification Form, as specified in Georgia's Hazardous Site Response Act (HSRA), was completed and submitted to the Georgia Environmental Protection Division (EPD); (Appendix II). Subsequently, a more thorough assessment was completed, application was made for, and the site was accepted into, the Voluntary Remediation Program (VRP). A milestone schedule was developed and Semiannual Status Reports (SASR) and Conceptual Site Model (CSM) reports were submitted to the Georgia EPD on a regular schedule in accordance with the VRP.

1.5 Chemicals of Interest

Volatile Organic Compounds (VOC), in particular, PCE and its biogedradation products, are the primary chemicals of interest. Based on numerous sampling events onsite, chemicals of interest onsite are:

Soils	Groundwater
tetrachloroethene (PCE)	tetrachloroethene (PCE)
trichloroethene (TCE)	trichloroethene (TCE)
cis-dichloroethene (cis-DCE)	cis-dichloroethene (cis-DCE)
trans-dichloroethene (trans-DCE)	trans-dichloroethene (trans-DCE)
	vinyl chloride (VC)

1.6 Site Status

This site was placed on the Georgia Hazardous Site Inventory (HSI) on December 21, 2007 as Site Number 10883.

The Roswell Cleaners site was accepted into the Georgia EPD Voluntary Remediation Program (VRP) by a letter from the Georgia EPD dated April 21, 2011. This CSR constitutes the last item scheduled to be submitted under the approved VRP Milestone schedule.

Roswell Cleaners is identified as a Resources Conservation and Recovery Act - Conditionally Exempt Small Quantity Generator (RCRA-CESQG) #GAD981216906, is listed on the Georgia Hazardous Site Inventory as HSI # 10883, and as a dry cleaner site (Appendix II).

2.0 SOURCE DESCRIPTION

This section provides a description, to the extent known to AEC, of each known source as described in Section 391-3-10-,06(3)(b)(1) of the applicable rules.

The following potential sources were identified.

Roswell Cleaners

The only known source onsite is the Roswell Cleaners dry cleaners facility and dry cleaning businesses previously operated under other business names at this location. This facility has one dry cleaning machine located inside the building near the front of the store. The facility has operated continuously for 50 years under various business names. It has always had one dry cleaning machine, which has reportedly always been located at the same place inside the building. Areas in which potential releases may have occurred include the dry cleaning machine, drum loading and unloading, drum storage, used filter storage and disposal, and cleaning and mop water disposal. The principle concentration area of PCE onsite is located just outside the back door of Roswell Cleaners. During the first 20 years of operation (1966 to 1986), little to no regulation of disposal of PCE existed. Some spent PCE may have been discarded out the back door before the 1980s, when no rules or regulations prohibiting this practice existed. The area behind the back door was reportedly unpaved during those years. Most dry cleaners did not start shipping waste (spent) PCE offsite as hazardous waste until 1986 (State Coalition for Remediation of Drycleaners 2007).

NAPA Auto Parts Machine Shop

A NAPA Auto Parts store with a machine shop was formerly located adjacent and immediately up-gradient of the Subject Property. Automotive machine shops most frequently use PCE to clean used auto parts. It is not known whether any releases occurred or not.

However, likely areas where releases may have potentially occurred include the parts cleaning tank, drum loading and unloading areas, used PCE storage, and associated areas.

Auto Body Plus

A former auto body shop, Auto Body Plus, was formerly located, in part, immediately adjacent and upgradient of the Subject Property. Drums of PCE have been observed onsite, and some drips, leaks or spills appeared to have occurred around the drums of PCE.

Other Former Businesses

Other businesses and other entities that have formerly been located upgradient of the Subject Property include Genuine Parts Co., Auto Body Plus, Tallant Pete Motors, Wright, Joe E, Big E Motors, Wright's Garage Limited, Genuine Parts Company, Benson Chevrolet Company, Capri XL Houseboats, Simmons Engineering Company, Marietta Poultry Equipment and the Roswell City Fire Department. These were mostly historical businesses; the Roswell City Fire Department is currently located up-gradient. Little or no specific information is available regarding cleaning chemical use, handling, disposal practices, etc. PCE and/or TCE may or may not have been used by any of these businesses. If used, PCE and/or TCE may or may not have been released to the environment. Most of these businesses closed many years or decades ago. During earlier years, release reporting was not required, and was generally not done. No known listing of releases or a chronology of releases, if any, is available.

3.0 PREVIOUS INVESTIGATIONS

A number of previous environmental investigations have been conducted by Atlanta Environmental Consultants at this site.

Phase II Environmental Assessment

AEC conducted a Phase II Environmental Site Assessment (ESA) on March 19, 2007. Following completion of the Phase II ESA, AEC identified the area behind the building housing the dry cleaners for further investigation, as well as down-gradient areas. A copy of the report is provided in Appendix I. This limited assessment concluded that the most significant source area in both soils and groundwater was at the rear of the building in the area of B-2. B-2 was located immediately adjacent to the current monitor well MW-4.

HSRA Notification at Site Investigation

Subsequent to the findings of the Phase II ESA, AEC completed a draft Hazardous Site Response Act (HSRA) Notification and forwarded it to Richard Wingate, with Decker, Hallman, Barber & Briggs, for final review and submittal to the Georgia EPD.

Permanent monitoring wells MW-1, MW-2, MW-3 and MW-4 were installed and sampled following Georgia EPD listing on the HSI. Investigation concluded that the source area was in the area of MW-4 at the rear of the building.

Semi-Annual Status Reports (SASR) and Conceptual Site Model (CSM) Reports

Richard Bowen applied for, and was accepted into, Georgia's Voluntary Remediation Program (VRP). A milestone schedule was specified for regular completion and submittal of SASR and CSM reports. Findings during the 5 years the site was in the VRP included:

- The most significant source area with regard to groundwater was located at the rear of the building in monitoring well MW-4. The most significant source area with regard to soils is in the general area of MW-4 and soil boring B-7.
- Depth to bedrock is 70 feet
- Groundwater samples collected at the down-gradient well, MW-3, have indicated dissolved concentrations in groundwater that are non-detectable or below applicable standards for several years up to the present.
- No significant concentrations of any organic compounds were identified under the slab by the dry cleaning machine.
- Groundwater concentrations continue to decrease over time.
- Shallow soils (fill) have high clay content. Concentrations of PCE and associated compounds can most effectively be removed by excavation and offsite treatment/disposal.
- Soils with concentrations exceeding applicable standards appear to be too close to the building for safe excavation; it is impracticable to safely remove soils without potentially compromising the building's foundation.
- It is recommended that Monitored Natural Attenuation (MNA) be the selected remedy for groundwater.
- It is recommended that excavation and offsite treatment/disposal be the recommended remedy for soils; however, this is recommended to be completed only after the building reaches end-of-life, or is removed for any other reason.

Soils

Soils exhibit significant concentrations of up to 193 mg/kg PCE in B-7, and 84.2 mg/kg, 5.29 mg/kg TCE, 2.37 mg/kg cis-DCE and 0.841 mg/kg trans-DCE, in soils located above the water table in the area of MW-4. Highest concentration was detected at the 15-foot depth. No significant soil concentrations were identified in other areas of the site Table 1)

Groundwater

Groundwater exhibited the highest concentrations in B-2 (located by monitoring well MW-4), 2.26 milligrams per liter (mg/l) PCE and 0.234 mg/l TCE in 2007; and in MW-4, 2.01 mg/l PCE, 0.156 mg/l TCE, 0.177 mg/l cis-DCE and 0.004 mg/l trans-DCE in 2008. The highest groundwater concentrations in the most recent groundwater sampling event on February 25, 2016 were 0.043 mg/l PCE, 0.50 mg/l TCE, and 0.130 mg/l cis-DCE (Table 3; Figure 6). An anomalous concentration of 0.020 VC was identified in August 2015 after a year of unusually heavy rainfall. VC has not been detected in any well since 2015. Little or no significant groundwater concentrations were identified in other areas of the site, particularly in recent years. An anomalous concentration of TCE, 0.026 mg/l, was identified in MW-2 in February 2016, after no detectable TCE had appeared in MW-3 in

three years, and then only at 0.0055 mg/l. Water table elevation on February 25, 2016, the date of groundwater sampling, was the highest ever recorded onsite (Table 3, Figure 7). It is the professional opinion of Peter Kallay, P.E., that this is an anomalous concentration most likely resulting from the highest water table elevation ever recorded at MW-2 in 9 years.

Surface Water

No surface water samples were collected and analyzed as part of this investigation. Since the down-gradient well, MW-3 has exhibited either no detectable concentrations or concentrations below applicable standards for several years, no potential surface water impacts are suspected.

4.0 EVALUATION OF SOIL CONTAMINATION

On March 19, 2007, August 25 to 27, 2008, April 16, 2012, March 14, 2013, and October 11, 2013, Peter T. Kallay, with Atlanta Environmental Consultants, conducted field investigation work at the Roswell Cleaners facility. Soil sampling locations were identified with the intent to identify areas and depths at which significant soil concentrations were potentially present and to delineate and estimate the size and extent of the release. Additional soil investigations were conducted from time to time to improve delineation of soil concentrations. The general investigational approach consisted of:

- Installation of soil borings using hollow-stem augers and collection of split spoon samples every five feet. Describe soils and enter on field boring logs.
- Collection of soil samples from split spoons on dates that soil investigation activities were conducted. Separate soil samples were collected for field screening and for laboratory analysis. Samples were submitted to a qualified analytical laboratory, and were analyzed by EPA Method 8260B, a combination gas chromatography/mass spectrometry (GC/MS) method.
- Calculation of several types of Risk Reduction Standards (RRS) that may be potentially applicable to soil concentrations that exceeded laboratory method detection limits onsite were completed.

4.1 Areas Investigated

Areas investigated started with areas believed to be most likely areas of potential contamination. As the investigation proceeded, areas investigated were extended to other potential areas of contamination, areas down-gradient of potential sources, and completion of delineation needs. Soil analytical results are presented in Table 1. Soil sampling locations are presented in Figure 5.

4.2 General Approach

Atlanta Environmental Consultants conducted a Phase II ESA on March 19, 2007 utilizing three soil borings in the general area in which Richard Bowen, owner of the property since 1978, stated that soil contamination was most likely; areas were identified for further investigation. During August 25 to 27, 2008, AEC conducted further investigation,

including the area believed to have the highest concentrations, delineation locations, a down-gradient location and an up-gradient location.

After these investigations were completed, the Voluntary Remediation Program (VRP) was enacted in Georgia. AEC, in coordination with Richard Wingate of Hallman and Wingate, submitted an application to the VRP. The Roswell Cleaners site was accepted into the VRP on April 21, 2011. Eight Semi-Annual Status Reports (SASR) and updated Conceptual Site Model (CSM) reports were prepared and submitted to the Georgia EPD from 2012 through 2015 in accordance with the milestone schedule submitted with the VRP application. During site investigation under the VRP, Peter Kallay and Richard Wingate held a number of meetings with representatives of the Georgia EPD in order to coordinate investigation strategies.

4.3 Analytical Parameters Selected and Rationale for Selection

The only known potentially likely source onsite identified was PCE and possibly TCE, from use as a dry cleaning fluid. PCE and/or TCE may have been used for spot cleaning onsite, and for parts cleaning in an automotive machine shop formerly located up-gradient of the site, a NAPA Auto Parts machine shop. Minor amounts of acetone and possibly other compounds, e.g., 1,2,4 trimethylbenzene and 1,3,5-trimethylbenzene, may have resulted from minor amounts of compounds used for spot cleaning clothing. Other fluids (e.g., benzene, toluene, ethylbenzene, total xylenes (BTEX) and naphthalenes) detected during soil investigation most likely resulted from minor drips and spills of automotive fluids from automobiles and delivery trucks traversing and parking onsite. These compounds all appeared to be in minor amounts normal for a historical dry cleaners and/or automotive fluids normal for a parking lot. Concentrations, other than PCE and its biodegradation products, were present in only minor quantities, and did not constitute reportable releases. The analytical parameters (chemicals of interest) selected for further investigation onsite were PCE and its degradation products that were identified in any soil samples above laboratory detection limits and above Notification Concentrations (NC), namely PCE, TCE, cis-DCE and trans-DCE.

4.4 Sampling and Analytical Procedures

Sampling procedures were conducted in accordance with the USEPA Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (November 2001) and/or Field Branches Quality System and Technical Procedures (August 2014). Soil borings were advanced using a hollow stem auger drilling rig with split spoon sampling every five feet during site investigations. Split spoon soil samples were collected every 5 feet; samples for field screening and laboratory analysis were timely collected and placed into the appropriate containers, zip-lock bags for field screening and laboratory-supplied pre-cleaned sample jars for laboratory analysis. Each soil sample was field screened for volatile organic compounds (VOC) vapors using either a MiniRAE 2000 photo-ionization detector (PID) or a MiniRAE 3000 PID. Results were recorded in the field. Soil samples from split spoons were also described and the descriptions were entered on field boring logs.

On March 19, 2007, soil samples at the 1-ft, 2-ft, 5-ft and 15 ft depths were collected for analysis by EPA Methods 8260B and 8270C in all 3 soil borings (B-1, B-2 and B-3). On March 3, 2013, soil samples at 1-ft or 2-ft, 10-ft and 15-ft were collected for analysis from all soil borings onsite (B-4B, B-6, B-7, B-8, B-9 and B-10). On October 10, 2013, soil samples at 5-ft, 15-ft and 70-ft were collected for analysis in B-DW. On other dates soil investigation was conducted, soil samples from the depth exhibiting the highest PID readings were selected for laboratory analysis by EPA Method 8260B. EPA Method 8260B was selected, as it accurately detects and quantifies all of the selected analytical parameters over a wide dynamic range.

Samples were collected for analysis by a sampler wearing clean disposable nitrile sampling gloves that were changed between each sample collected. Appropriate sampling and preservation techniques were followed, to ensure quality control, facilitate uniform operation, and to ensure legal chain-of-custody documentation. Samples collected for analysis were placed in laboratory supplied containers containing the appropriate preservative according to the applicable EPA Method.

Upon completion of soil (and groundwater) sampling activities, the soil borings were properly abandoned in accordance with GAEPD rules and regulations. The soil samples (and groundwater samples) were placed on ice and delivered under appropriate chain-of-custody documentation to Advanced Chemistry Labs, Inc. (ACL) in Atlanta, Georgia.

All drilling and sampling equipment was decontaminated between boreholes using standard procedures consisting of steam cleaning using heated potable water (drilling equipment) and/or Alconox rinsing with potable water and allowing the equipment to air dry (sampling equipment).

4.5 Soil Contamination Evaluation

Table 1 summarizes soil analytical results from all soil sampling events conducted onsite. Figure 5 depicts soil sampling locations and a summary of selected analytical parameters.

The 2007 Phase II ESA included the installation and sampling of three soil borings (B-1, B-2 and B-3) using a hollow-stem auger drill rig with split spoon sampling every 5 feet. One soil boring and temporary monitoring well location (and subsequently, in 2008, a permanent monitoring well) was installed at the location outside the back door stated by Mr. Bowen to be the likely area of highest concentration, B-2/TMW-2. One location appeared to be potentially down-gradient (but later was found to be cross-gradient), B-1/TMW-1. One was up-gradient, B-3/TMW-3. All three soil borings were extended to a sufficient depth (35 feet) that wet soils clearly indicated that the drill bit was below the water table. The soil sample exhibiting the highest PID reading in each boring was submitted for analysis for Volatile Organic Compounds (VOC) and Semi-Volatile Organic Compounds (SVOC) by EPA methods 8260B and 8270C.

Followup analyses of soils onsite indicated the presence of concentrations of PCE ranging from non-detectable to 193 mg/kg (Table 1). Concentrations of PCE in MW-1 ranged from non-detectable to 0.009 mg/kg. The non-detectable concentrations identified at the 2-foot,

the 5-foot and the 15-foot depths in MW-1, are considered to represent background concentrations. The 0.009 mg/kg concentration at the 1-foot depth most likely represents minor concentrations entering shallow soils as a result of one or more of the mechanisms described above. PCE concentrations in soils at various depth are mapped in Figures 11A through 11D. The only constituents not meeting Type 1 RRS are PCE and TCE. PCE and TCE do not meet Type 1, 2, 3, or 4 RRS at four locations (B-2, MW-4, B-4B, and B-7).

Soil samples were generally collected at the 1-foot, 2 foot, 5-foot and 15 foot depths. The 25-foot deep sample was not collected in most borings, as it generally was below the water table in most boring locations. The highest PCE concentration in soil identified, 193.0 mg/kg, was at the 15-foot depth in B-7. Soil concentrations onsite are shown in Table 1 and on Figure 11.

PCE breakdown products in soils were detected only at MW-4. The highest concentration of breakdown products was at the 15-foot deep sample. TCE was detected in MW-4 ranging from 0.023 mg/kg at 1 foot bgs to 5.29 mg/kg at 15 ft bgs. Cis-DCE was detected in MW-4 ranging from ND at 1 ft bgs to 2.37 bgs. Trans-DCE was detected in MW-4 at 15 ft bgs only at 0.841 mg/kg. Vinyl chloride was detected only at the 15-foot depth at B-1 at 0.16 mg/kg.

4.6 Soil Removal Activities

After completion of evaluation of soil analytical results, it was concluded that soil samples B-2, MW-4, B-4B, and B-7 exceeded Georgia EPD HSRA Type 1, 2, 3 or 4 Risk Reduction Standards (RRS) in soils 10 to 15 feet deep. Removal and offsite treatment or disposal in accordance with Georgia EPD rules is recommended. No soil removal activities have been completed; no soils were excavated and removed (other than minor amounts required to complete soil borings) because the area exhibiting exceedances of applicable soil standards is, in large part, too close to the building to safely remove without risking compromising of the building foundation's structural support. Therefore, it is impracticable to remove soils at this time. It is recommended that after the building reaches the end of its useful life, and/or is removed for any reason (e.g., other types of development, structures or land uses are desired, etc.), excavation and offsite disposal of contaminated soils near and/or under the rear of the building be conducted for soils that exceed then-applicable standards.

5.0 EVALUATION OF GROUNDWATER CONTAMINATION

Groundwater investigation at the Roswell Cleaners site has been conducted since 2007 and included semi-annual sampling in recent years. After initial investigation using temporary monitoring wells in 2007, permanent monitoring wells were installed in 2008. Semi-annual sampling has been conducted since 2012 under the VRP. Groundwater investigation included the following tasks:

1) Boring logs were completed during soil boring activities to identify areas with significant concentrations of target compounds, water-bearing zones, likely high permeability zones, likely low permeability zones and depth to bedrock.

2) Monitoring well (MW) tops of casings (TOC) were surveyed using an assumed onsite elevation to develop data on relative elevations of MW TOCs.
3) Depth to groundwater was measured during each groundwater monitoring event, and relative elevations of groundwater in each monitoring well were computed.
4) Groundwater samples were collected from each monitoring well during each groundwater monitoring event and analyzed for VOCs by EPA Method 8260B.

5.1 Areas investigated

Areas investigated focused on areas believed to be most likely areas of potential contamination. As investigation proceeded, areas investigated were extended to other potential areas of contamination, areas down-gradient and up-gradient of identified sources, and to address delineation requirements. Groundwater analytical results are presented in Table 3. Groundwater sampling locations are presented in Figure 6.

5.2 General Approach

Atlanta Environmental Consultants conducted a Phase II ESA on March 19, 2007 utilizing three temporary monitoring wells in the general area in which Richard Bowen stated soil contamination was most likely; areas were identified for further investigation. During August 25 to 27, 2008, AEC conducted further investigation, including the area believed to have the highest concentrations, more widely spaced delineation locations and an up-gradient location.

After these investigations were completed, the Voluntary Remediation Program (VRP) was enacted in Georgia. AEC, in coordination with Richard Wingate of Hallman and Wingate, submitted an application to the VRP. The Roswell Cleaners site was accepted into the VRP on April 21, 2011. Eight Semi-Annual Status Reports (SASR) and updated Conceptual Site Model (CSM) reports were prepared and submitted to the Georgia EPD from 2012 through 2015 pursuant to a milestone schedule submitted with the VRP application. During site investigation under the VRP, Peter Kallay and Richard Wingate held a number of meetings with the representatives of the Georgia EPD in order to coordinate investigation strategies and appropriately address GAEPD requirements.

5.3 Analytical Parameters Selected and Rationale for Selection

The only known potentially likely source onsite and immediately upgradient was PCE and possibly TCE, from use as a dry cleaning fluid. TCE may have been used for spot cleaning onsite and parts cleaning in a former automotive machine shop upgradient. Minor amounts of acetone and automotive fluids, e.g., benzene, toluene, ethylbenzene, total xylenes and naphthalenes, were detected during groundwater investigation. The deep well exhibited the presence of minor concentrations of compounds associated with public water supply treatment (e.g., chloroform). These compounds most likely resulted from sources unrelated to dry cleaning. Concentrations were minor and did not appear to rise to the level of reportable releases. For groundwater, chemicals of interest included PCE and its degradation products that were identified in any groundwater samples above laboratory

detection limits and/or at significant concentrations exceeding applicable standards, namely PCE, TCE, cis-DCE, trans-DCE and vinyl chloride (VC).

5.4 Methods of Characterizing Geology and Hydrogeology

5.4.1 Subsurface Geology

Soil borings were advanced using a hollow stem auger drilling rig with split spoon sampling every five feet during site investigations. Split spoon soil samples were collected every 5 feet. The soils in the split spoons were characterized, described, and the data was entered on field soil boring logs. Depth to auger refusal was recorded, where applicable. Geological references, including geologic maps and literature, were reviewed and compared to soil descriptions observed and recorded on boring logs.

5.4.2 Groundwater Gradients, Flow Rates, and Flow Directions

The direction of groundwater movement beneath the site was determined by AEC using groundwater elevations in the groundwater monitoring wells onsite. An experienced environmental engineer surveyed the locations and relative elevations of all well tops of casings. Depths to groundwater were measured in the six existing groundwater monitoring wells using an electronic water level indicator on dates that depth to groundwater were measured (Table 3). The relative groundwater elevations were then calculated. Table 3 summarizes groundwater elevations onsite.

The groundwater gradient and flow direction beneath site were determined using a potentiometric surface water table map prepared using relative groundwater elevations. Figure 7 shows the most current (2016) groundwater flow gradient and direction. Groundwater gradients and flow directions were calculated on various dates and compared; groundwater gradient direction has been remarkably consistent, not varying by more than a few degrees over 8 years of groundwater monitoring.

5.5 Groundwater and Surface Water Sampling Locations

The 2007 Phase II ESA included the installation and sampling of three soil borings (B-1, B-2 and B-3) and three temporary monitoring wells (TMW-1, TMW-2 and TMW-3) using a hollow-stem auger drill rig with split spoon sampling every 5 feet. One soil boring and temporary monitoring well location (and subsequently, in 2008, a permanent monitoring well) was installed at the location outside the back door stated by Mr. Bowen to be the likely area of highest concentration, B-2/TMW-2. One location appeared to be potentially down-gradient (but later was found to be cross-gradient), B-1/TMW-1. One was up-gradient, B-3/TMW-3. All three soil borings were extended to a sufficient depth (35 feet) that wet soils clearly indicated that the drill bit was below the water table. A groundwater sample from each temporary well was submitted for analysis for Volatile Organic Compounds (VOC) and Semi-Volatile Organic Compounds (SVOC) by EPA methods 8260B and 8270C.

In 2008, four permanent monitoring wells, MW-1 through MW-4, were installed. MW-1 is an up-gradient well. MW-4 is located in the source area. MW-3 is a down-gradient well

and MW-2 is a cross-gradient well. MW-5 was later installed for additional horizontal definition and MW-6D was installed for vertical definition. On certain occasions, when offsite access was available, down-gradient wells were sampled to provide additional horizontal definition.

No surface water samples were collected. Because the downgradient well onsite has not had any detection meeting or exceeding applicable standards in the most recent 6 monitoring events, the data do not suggest that offsite down-gradient surface water, which is much more distant than MW-3 onsite, would contain any target VOCs from the Subject Property meeting or exceeding applicable standards or laboratory detection limits.

5.6 Groundwater Sampling Procedures

Sampling procedures were conducted in accordance to the USEPA Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (November 2001) and/or Field Branches Quality System and Technical Procedures (March 2013) for sampling events conducted since 2013. Temporary monitoring wells were developed and sampled using a new, clean wrapped bailer for each well. Development consisted of removing most of the sediment-containing water prior to beginning sample collection. Following sample collection, the temporary monitoring wells were properly abandoned, and patched with asphalt to match existing pavement.

The groundwater samples were collected in vials provided by Advanced Chemistry Labs for analysis of VOCs and SVOCs by method 8260B and 8270C. The samples were handled with standard protocol, packed on ice and delivered to the laboratory under chain-of-custody. A trip blank was submitted with each set of samples submitted to the laboratory for quality assurance.

5.7 Analytical Procedures

The groundwater samples and associated trip blanks were initially analyzed for VOCs and SVOCs by EPA Methods 8260B and 8270C. All analyses were conducted by ACL in Atlanta, Georgia. Standard Quality Assurance/Quality Control (QA/QC) procedures appropriate for EPA Methods 8260B and 8270C were conducted. After no EPA Method 8270 analytes were detected, subsequent analyses were conducted using only EPA Method 8260B. EPA Method 8260B was selected for analysis, as this method accurately detects and quantifies all of the analytical parameters of interest over a wide dynamic range.

5.8 Results of Groundwater Evaluation

5.8.1 Physiography and Drainage

According to the United States Department of Agriculture, Natural Resources Conservation Service, *Soil Survey of Fulton County, Georgia* (USDA 2008) the soils underlying the Site are described as Urban Land. Urban land consists of areas that have been altered by cutting, filling and shaping, generally to such a degree that the original native soil horizons are no longer recognizable over most of these areas. Urban development, such as schools, parking

lots, streets, commercial buildings, and residential dwellings are typically located in these areas. Older Soil Conservation Service STATSGO data describes predominant shallow native soil types as sandy clay loam, loam and fine sandy loam, and deeper soils as clay, sandy clay, gravelly loam, and sandy loam grading to weathered bedrock.

The site and site area are largely paved, and most stormwater runs off rather than infiltrates into soils where it falls. Stormwater onsite drains into one of two storm drains, one in the parking lot in front of the building, and one in the rear along the west property boundary. Stormwater entering the storm drains flows into storm sewers that convey storm water offsite to surface water.

According to the 1992 *Roswell, Georgia* United States Geological Survey (USGS) topographic map, the elevation of the Site (pre-development) is approximately 960 feet above mean sea level (msl). The topography of the site vicinity consists of rolling hills, which is typical of the Piedmont. The general topographic downslope of the Site is to the south-southeast. The site has been filled from approximately 10 feet (northern boundary) to approximately 15 feet (southern part of the site), according to boring logs prepared by AEC. Thus, the actual developed elevation is likely closer to approximately 975 feet. Cross-sections are presented in Figures 8, 9 and 10.

5.8.2 Geology and Hydrogeology

The Roswell Cleaners facility is located in the Powers Ferry Formation in the Sandy Springs Group in the Northern Piedmont physiographic province of Georgia. The Powers Ferry Formation consists of undifferentiated biotite-quartz-plagioclase gneiss (metagraywacke), mica schist and amphibolite; a mappable mica schist unit; and a banded iron formation (McConnell and Abrams 1984).

Relatively undisturbed split spoon soil samples from the soil borings installed onsite indicated the presence of foliated thin layers of weathered rock characteristic of gneisses and schists, with varying quantities of mica. It was concluded that actual site observations were consistent with geologic descriptions of the outcropping geologic formation at the site described in the literature; therefore, the geologic description in the literature appeared to be consistent with description of site geology in the literature at depths at which drilling was conducted. Bedrock was identified at 70 feet deep at boring location MW-6D.

A potentiometric contour map was prepared for the Site utilizing the groundwater elevation measurements collected from the Site monitoring wells. Figure 7 presents a potentiometric map. Based on the measured groundwater elevations, the groundwater flow direction in the shallow zone was computed to be towards the east-southeast. Groundwater flow direction has remained remarkably consistent over the years AEC has been monitoring this site.

5.8.3 Groundwater Quality

In the Phase II ESA, on March 19, 2007, groundwater samples were collected and analyzed at ACL. The sample at TMW-2, close to the present location of MW-4, indicated the presence of 2.26 milligrams per liter (mg/l) PCE, 0.234 mg/l TCE and 0.016 mg/l cis-DCE

(Table 2). Vinyl chloride (VC) was detected in TMW-1, close to the present location of MW-2, at 0.003 mg/l.

In the first groundwater sampling event from permanent monitoring wells, on August 27, 2008, the highest groundwater concentrations detected onsite were 2.01 mg/l PCE, 0.156 mg/l TCE, 0.315 cis-DCE and 0.036 mg/l trans-DCE, all in MW-4, and 0.003 mg/l VC in MW-2. In the most recent groundwater sampling event on February 25, 2016 concentrations detected were 0.043 mg/l PCE, 0.050 mg/l TCE, and 0.13 cis-DCE, all in MW-4. No trans-DCE or VC was detected in any monitoring well. These concentrations represent a 98% decrease in PCE concentrations and a 68% decrease in TCE concentrations over 8 years. The only detection in MW-3, the down-gradient well, was 0.012 mg/l cis DCE; no other compound was detected laboratory detection limits. No applicable groundwater standards have been exceeded in MW-3 during the most recent 6 sampling events. The most recent groundwater laboratory analytical report is presented in Appendix C. Table 2 presents all groundwater analytical results from 2007 through the present. Figure 12 shows current PCE concentrations in groundwater.

A concentration of 0.026 mg/L PCE was detected in MW-2, although no PCE has been detected in MW-2 in four years, and then only 0.0055 mg/l TCE was detected; the results are considered anomalous, and may have occurred because the water table was at its highest elevation ever recorded onsite on the date of the most recent sampling event. The extremely elevated water table is considered temporary and considered to be unlikely to remain that high. For these reasons, it is the professional opinion of Mr. Kallay that this result is anomalous, and does not accurately reflect normal groundwater concentrations in this area of the site. It is recommended that this location be re-sampled during the next scheduled groundwater sampling event.

5.8.4 Surface Water Quality

No surface water samples were collected. Because the downgradient well onsite has not had any detection meeting or exceeding applicable standards in the most recent 6 monitoring events, the data do not suggest that offsite down-gradient surface water, much more distant from the source area than MW-3 onsite, would contain any target VOCs from the Subject Property meeting or exceeding applicable standards or laboratory detection limits.

6.0 EVALUATION OF SOIL VAPOR INTRUSION POTENTIIAL

The entire building containing Roswell Cleaners is constructed on a one-foot thick reinforced concrete slab, and is, thus, of slab-on-grade construction. Evaluation of potential vapor intrusion focused on the potential source area around the dry cleaning machine. A boring was drilled through the concrete floor and approximately 6 inches into the soil below the slab using a hammer drill, in order to collect a sub-slab soil vapor sample at a location on the down-gradient side of the dry cleaning machine. The sub-slab vapor sample was collected on March 16, 2013 in a laboratory-cleaned and supplied SUMMA Canister shipped from EMSL Analytical, Inc. in Cinnaminson, New Jersey. The laboratory-provided sampling tube was threaded through the borehole into the air space below the concrete slab. The annular space around the tubing was

loosely filled with CETCO Super Gel-X extra high yield drilling fluid, supplied as bagged bentonite in a dry powder form. The bentonite-filled annular space was hydrated with clean tap water until the bentonite powder was fully saturated and had a gel-like consistency with no visible void spaces. Then, the regulator was attached to the canister, the valve was opened and sampling began. The SUMMA canister was delivered with -27" Hg pressure (e.g., a vacuum). Sample collection methodology followed laboratory instructions. Sample collection time lasted 17 minutes, during which time sub-slab soil gas was drawn into the canister by vacuum in the canister. Canister pressure was -6"Hg upon completion of sampling. The canister and regulator were repackaged in the packaging provided by the laboratory and shipped to EMSL Analytical, Inc. in Cinnaminson, New Jersey via Fedex. The sample was analyzed by EPA Method TO-15, including Total Volatile Organic Compounds (TVOC).

Sub-slab soil vapor sample analysis detected PCE in vapor phase at 39 parts per billion by volume (ppbv) or 450 micrograms per cubic meter (ug/m3) and trichloroethene (TCE) at 4.9 ppbv or 26 ug/m3 (Table 4).

Soil concentrations of PCE and TCE may be present in liquid and/or vapor phases that are generally in equilibrium with each other, for substances that are normally liquids at typical subsurface temperatures. Soil sample analytical results, combined with the soil vapor analysis results, appeared to provide a consistent concentration interpretation of shallow soil concentrations of PCE under and surrounding the building slab (Figure 11A).

Modeling of vapor intrusion was conducted using the Johnson and Ettinger Vapor Intrusion Model. The Johnson and Ettinger Vapor Intrusion model was run for both PCE and TCE. Results of vapor intrusion modeling indicated Best Estimate Target Concentrations of PCE in soil gas of 14010 ug/m3 or 2067 ppbv and groundwater concentration of 76.69 ug/L; for TCE, Best Estimate Target Concentrations in soil gas of 356.8 ug/m3 or 66.44 ppbv and groundwater concentration of 3.36 ug/L (Appendix F). The detected sub-slab concentrations of PCE and TCE suggest that vapor intrusion is not a significant issue at this site at this time. Groundwater concentrations of PCE did not exceed the Best Estimate Target Concentration of groundwater concentration of PCE in any well during the most recent groundwater sampling event. Although TCE exceeded Best Estimate Target Concentrations for TCE in groundwater at MW-4, this detection was located under asphalt pavement outside the footprint of the building.

The dry cleaners building has also been screened with a Mini-RAE 2000 and/or 3000 photo-ionization detector (PID) capable of detecting chlorinated solvents on a number of occasions, in order to further estimate vapor concentrations, locations, durations and patterns inside the building. The readings inside the building on the floor are almost uniformly zero, except for a few seconds (or one to two minutes on a very calm day) immediately after the dry cleaning machine is opened, when readings may very briefly exhibit a reading of 1 to 2 ppm on the floor before dissipating and returning to zero. All PID readings taken in the breathing zone have been zero, even just after the dry cleaning machine was opened. The PID showed a reading of 1.7 ppm in the sub-slab boring after the analytical sample was collected. PID screening suggested that the presence of PCE vapors inside the building was minimal, occurred only very briefly after the dry cleaning machine was opened (which typically occurs only a few times a day), and was non-detectable in the breathing zone.

The Roswell Cleaners facility is located inside a very-well-ventilated building specifically designed for use as a dry cleaners. The above described laboratory analysis, Johnson and Ettinger modeling and PID screening suggest that vapor intrusion is not a significant issue in the building housing Roswell Cleaners at this time.

7.0 RECEPTOR SURVEY

The site is bordered on the east by the Roswell Latin Plaza, on the south by a dental office and a currently unoccupied office building, on the north by a parking lot for the Roswell Village shopping center, and on the west by a strip plaza containing Alpharetta Street Bottle Shop, Subway and Cricket Wireless. Beyond these businesses are other businesses in the Roswell Village Shopping Center, businesses on outparcels, and additional commercial properties across Alpharetta Street.

7.1 Potential Environmental Receptors

A USGS topographic map and an Environmental Data Resources Overview map were reviewed for the presence of wetlands near the site. No wetlands identified on the National Wetland Inventory were identified within a ½ mile of the site. Those identified more than ½ mile away were all either up-gradient of the site or along Hog Wallow Creek up-gradient of where any groundwater from the site would likely potentially enter Hog Wallow Creek.

No floodplains occur within 1/4 mile of the site. Limited flood plains occur along Hog Wallow Creek, which is located between ¼ and ½ mile east of the site. No impact is expected as groundwater concentrations are negligible to well below applicable groundwater standards in groundwater before it leaves the site.

7.2 Potential Human Receptors

Exposure to human receptors, including building occupants and others that may utilize the facility, will be limited as access to site soils and groundwater is restricted by paved surfaces and buildings. The entire facility (except a landscaped area in front that is up-gradient and clean), is paved or within the footprint of the building and sidewalks. Other potential human receptors possibly include contractors, property maintenance personnel and underground utility workers. In the event underground work is required, presence of contaminants and appropriate personal protective equipment and precautions should be provided to such workers.

7.3 Water Well Survey

A water well survey was conducted. The nearest water well used for drinking water purposes was identified as located approximately 2 ½ miles away from the site. This well is located at 8945 N. Island Road. This was confirmed by the Georgia EPD. This area has had public water supplies available for many decades; essentially all businesses and residents in the area are connected to public water supplies. Public water supplies in this area are provided by the Roswell Water Resources Division.

8.0 AFFECTED PROPERTY OWNER INFORMATION

This section of the CSR provides a description of all properties which are part of the HSRA regulated Site, including the address and location of such property, its legal description, and the property owner name, address and telephone number, as required by Section 391-3-19-.02(2)(v), the "Site means that portion of the owner's contiguous property and any other owner's property affected by a release exceeding a reportable quantity."

The property consists of a single 0.6565 acre parcel that contains a single building occupied by Roswell Cleaners & Coin Laundry and is located at 1013 Alpharetta Street, Roswell, Fulton County, Georgia 30075. The Fulton County Tax Assessor's office lists the property as Parcel Number 12 190204120616 (also known as a tax parcel ID number). It is currently zoned C3-commercial.

The legal description of the parcel is as follows:

TO FIND THE TRUE POINT OF BEGINNING, COMMENCE AT A POINT ON THE NORTHERLY SIDE OF NORCROSS STREET, HAVING A 40 FOOT RIGHT-OF-WAY, SAID POINT BEING LOCATED 344.6 FEET EAST, AS MEASURED ALONG THE NORTHERLY SIDE OF NORCROSS STREET FROM THE INTERSECTION THEREOF WITH ALPHARETTA STREET, HAVING AN 80 FOOT RIGHT-OF-WAY; RUNNING THENCE NORTH 7 DEGREES 20 MINUTES EAST 192.3 FEET TO AN IRON PIN FOUND AND THE TRUE POINT OF BEGINNING; RUNNING THENCE NORTH 7 DEGREES 20 MINUTES EAST ALONG PROPERTY NOW OR FORMERLY OWNED BY J. E. WRIGHT 211.9 FEET TO AN IRON PIN FOUND; RUNNING THENCE SOUTH 88 DEGREES 51 MINUTES EAST 100.0 FEET TO AN IRON PIN FOUND; RUNNING THENCE SOUTH 0 DEGREE 29 MINUTES EAST ALONG PROPERTY NOW OR FORMERLY OWNED BY JOSEPH E. MANSELL 220 FEET TO AN IRON PIN SET; RUNNING THENCE NORTH 84 DEGREES 49 MINUTES WEST ALONG PROPERTY NOW OR FORMERLY OWNED BY CARTER S. ROSE, JR. and LEO M. MACK, JR., 129.8 FEET TO AN IRON PIN FOUND AND THE POINT OF BEGINNING ACCORDING TO SURVEY FOR RICHARD E. BOWEN BY BATES-LONG & ASSOCIATES, R.L.S., DATED JUNE 27, 1978.

Street Address:	1013 Alpharetta Street Roswell, Georgia 30075
Owner:	Richard E. Bowen 811 Serramonte Drive Marietta, Georgia 30068

9.0 RISK REDUCTION STANDARDS

This section presents a summary of the Risk Reduction Standards (RRS) applicable to the Site and are summarized in the tables discussed below. The HSRA Type 1 through Type 4 RRSs for groundwater constituents and the Type 1 through Type 4 RRSs for soil constituents were compared to analytical data from the Site investigations.

9.1 Soil Risk Reduction Standard

The Site's soils were first evaluated using Type 1. The Type 1 RRSs are the most stringent standards that provide criteria that pose no significant risk on the basis of standardized exposure assumptions for residential properties. Type 2 standards provide for regulated substance concentrations that pose no significant risk on the basis of site-specific exposure standards and define risk levels for the residential use scenario. Type 3 standards provide for regulated substance concentrations that pose no significant risk on the basis of standardized exposure assumptions and define risk levels for the non-residential use scenario. The activities being conducted on the Site satisfy the definition for non-residential property defined in Rule 391-3-19-.02(2)(i). The Type 3 RRSs were calculated utilizing the RAGS, Part B equations. Type 4 RRS are the same as Type 3 RRS, as different site-specific exposure standards were not used.

Thirteen constituents were detected in soils at the site. Exposure factor values and chemical-specific toxicity values used in the calculations are detailed in **Appendix G**. The only constituents not meeting Type 1 RRS are PCE and TCE. PCE and TCE do not meet Type 1, 2, 3, or 4 RRS at three locations (MW-4, B-4B, and B-7).

Tables G-8, G-11, and G-15 summarize the calculated Type 1, 2, 3 and 4 Soil RRS for the Site, and indicate that no constituents except PCE and TCE exceed the Type 1 Soil RRS for samples collected at the Site.

9.2 Groundwater Risk Reduction Standard

There are no known or potential receptors of groundwater from the Site. However, Rule 391-3-19-.07 (6) (b) states that at any point within groundwater that has been affected by a release, concentrations of regulated substances in groundwater samples shall not exceed concentrations given in Table 1 of Appendix III or, for those substances not listed, the background or reporting limit concentration. Furthermore, if two or more regulated organic compounds are present in groundwater, their sum in a single sample shall not exceed 10 mg/L if the Table 1 value for each compound is less than 5 mg/L, or, where at least one compound has a Table 1 value greater than or equal to 5 mg/L, the sum of the concentrations shall not exceed the maximum Table 1 value for a detected compound plus 10 mg/L.

Eight constituents were detected in the groundwater at this site (tetrachloroethylene; trichloroethylene; cis-1,2-dichloroethylene; trans-1,2-dichloroethylene; vinyl chloride; naphthalene; chloroform; bromodichloromethane; Table 2). Six of these constituents are listed in Table 1 of Appendix III; cis-1,2-dichloroethylene and bromodichloromethane are not listed with individual concentrations in Table 1 of Appendix III, but are listed as a group (halogens), where the total concentration must be less than 10 mg/L. The sum of constituents measured in any location does not exceed 10 mg/L.

For those regulated substances not in compliance with the Type 1 Risk Reduction Standards in groundwater (PCE, TCE, cis-DCE, and vinyl chloride), the Type 2 and 4 Risk Reduction

Standards were calculated. Note that Type 3 groundwater RRS are equivalent to Type 1 RRS.

In accordance with Rule 391-3-19-.07 (9) (c), concentrations of regulated substances in groundwater samples must not exceed, at any point within the property boundaries, the lesser of the following calculated values:

- Concentrations which are unlikely to result in any non-cancer toxic effects on human health via ingestion of, or inhalation of volatiles from, groundwater, determined using Equation 2 from USEPA's *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part B: Development of Risk-Based Preliminary Remediation Goals)* (RAGS Part B - USEPA, 1991), and site-specific exposure factors for the non-residential use scenario; or
- Concentrations for which the upper bound on the estimated cancer risk is less than 10-5 via ingestion of, and inhalation of volatiles from, groundwater, determined using Equation 1 from RAGS Part B, and site-specific exposure factors for the non-residential use scenario.

The residential and nonresidential exposure assumptions are used in the above equations to determine Type 2 and Type 4 RRS, respectively.

Exposure factor values and chemical-specific toxicity values used in the calculations are detailed in **Appendix G. Tables G-20 through G-24** summarize the Type 2 Groundwater RRSs for the Site. **Tables G-26 through G-29** summarize the Type 4 Groundwater RRSs for the Site.

The only wells that have not now or previously met Type 2 RRS for groundwater are MW-2 (vinyl chloride only), MW-4 (trichloroethylene only), and MW-6 (chloroform only). MW-6 meets the Type 4 RRS for chloroform.

The only wells that did not meet Type 4 RRS for groundwater during the last sampling round are MW-2 (vinyl chloride) and MW-4 (TCE). Both wells have meet Type 4 RRS for these constituents in previous sampling rounds.

10.0 POTENTIALLY RESPONSIBLE PARTIES

This section of the CSR provides, as required by Section 391-3-19-.06(3)(b)(6) of the Rules, the name, address and telephone numbers of any other person who may be a responsible party for the Site, and a description of the type and amount of regulated substances such party may have contributed to a release.

The following are potentially responsible parties at this Site:

William Marshall McFarland and Edwin R. McFarland, property owners, dry cleaners owners and operators from June 1966 to July 1978. Current address and contact information unknown.

Conrad Mickey Cox and William Marvin McCutchen, doing business as (dba) Cox & McCutchen, Inc., dry cleaners operators from August 1985 to November 1996. Current address and contact information unknown.

William J. Gunn, dba Personal Care Services, LLC, dry cleaners operator from November 1996 to August 2008. Current address and contact information unknown.

Richard E. Bowen, owner of real property from July 1978 until the present and operator of the dry cleaners from July 1978 to August 1985. 811 Serramonte Drive, Marietta, Georgia 30068. Telephone 770-565-1924.

11.0 REFERENCES

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FIGURES

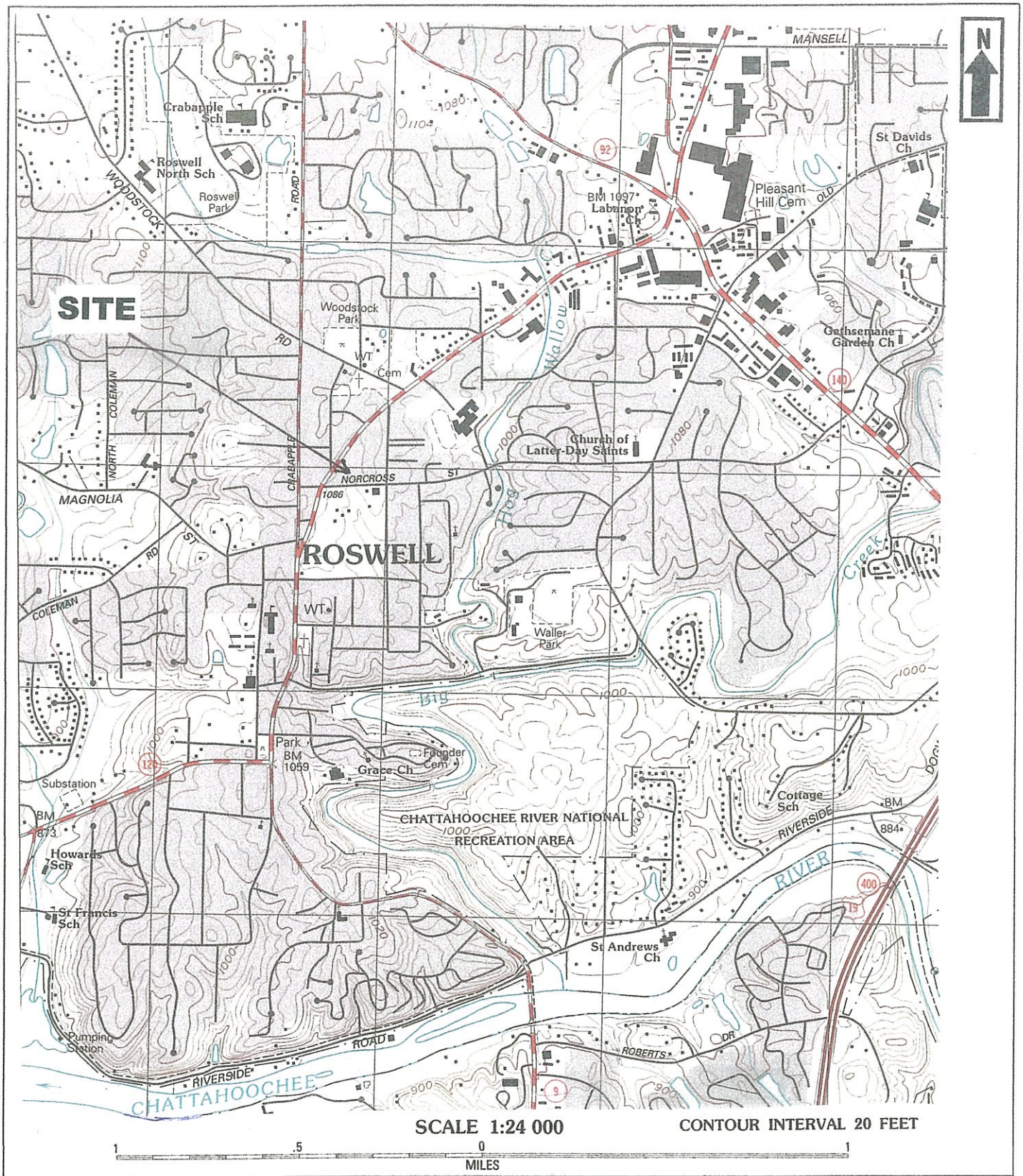


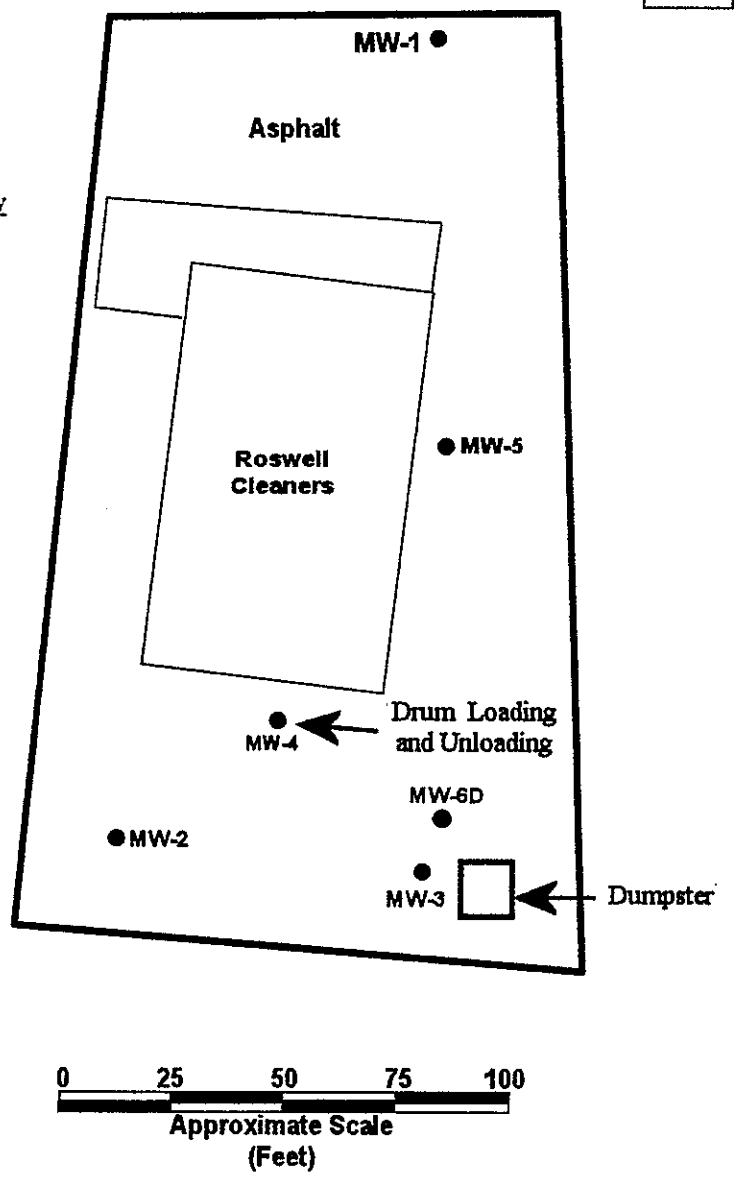
Figure 1: Site Location Map

Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Georgia 30075

aec
Atlanta Environmental Consultants

Drawn By: Terri Drabek

Checked By: Peter Kallay, P.E.



Hydraulically Upgradient Potential VOC Sources Formerly Located West-Northwest of Site

Tallant Pete Motors
Wright, Joe E
Big E Motors
Wright's Garage Ltd.
Genuine Parts Co.
NAPA Auto Parts
NAPA Auto Parts machine shop
Auto Body Plus
Benson Chevrolet Co.
Capri XL Houseboats
Simmons Engineering Co.
Marietta Poultry Equipment
Roswell City Fire Department

Figure 2: Site Plan Showing Potential Sources

Roswell Cleaners
1013 Alpharetta Street
Roswell, Fulton County, Georgia

aec
Atlanta Environmental Consultants

Drawn By: Terri Drabek

Checked By: Peter Kallay, P.E.

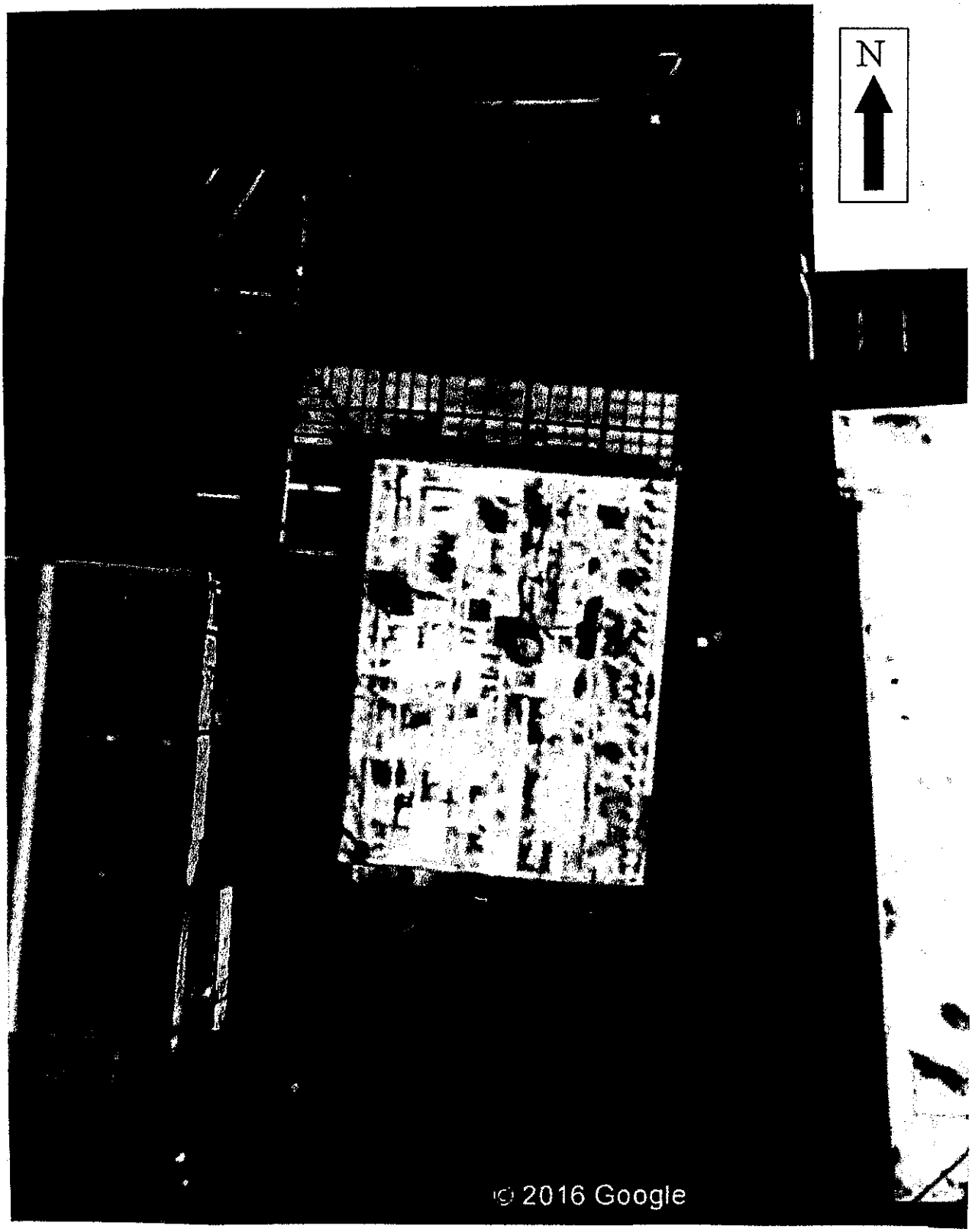


Figure 3: Site Plan – Aerial View

Roswell Cleaners
1013 Alpharetta Street
Roswell, Fulton County, Georgia

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Drawn By: Terri Drabek

Checked By: Peter Kallav, P.E.

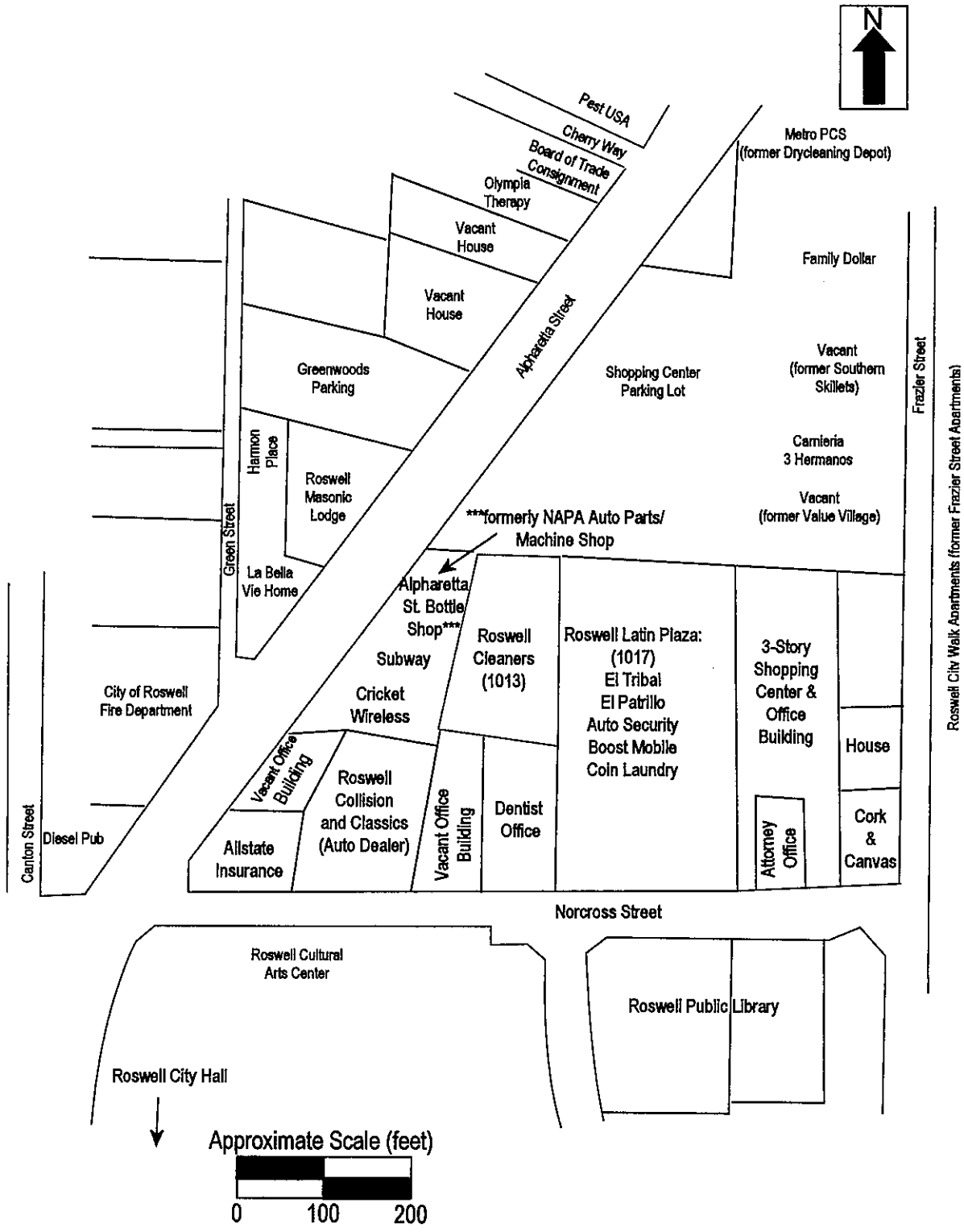

Figure 4: Site Area Plan

Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Fulton County, Georgia

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Atlanta Environmental Consultants

Drawn By: Terri Drabek

Checked By: Peter Kallay, P.E.

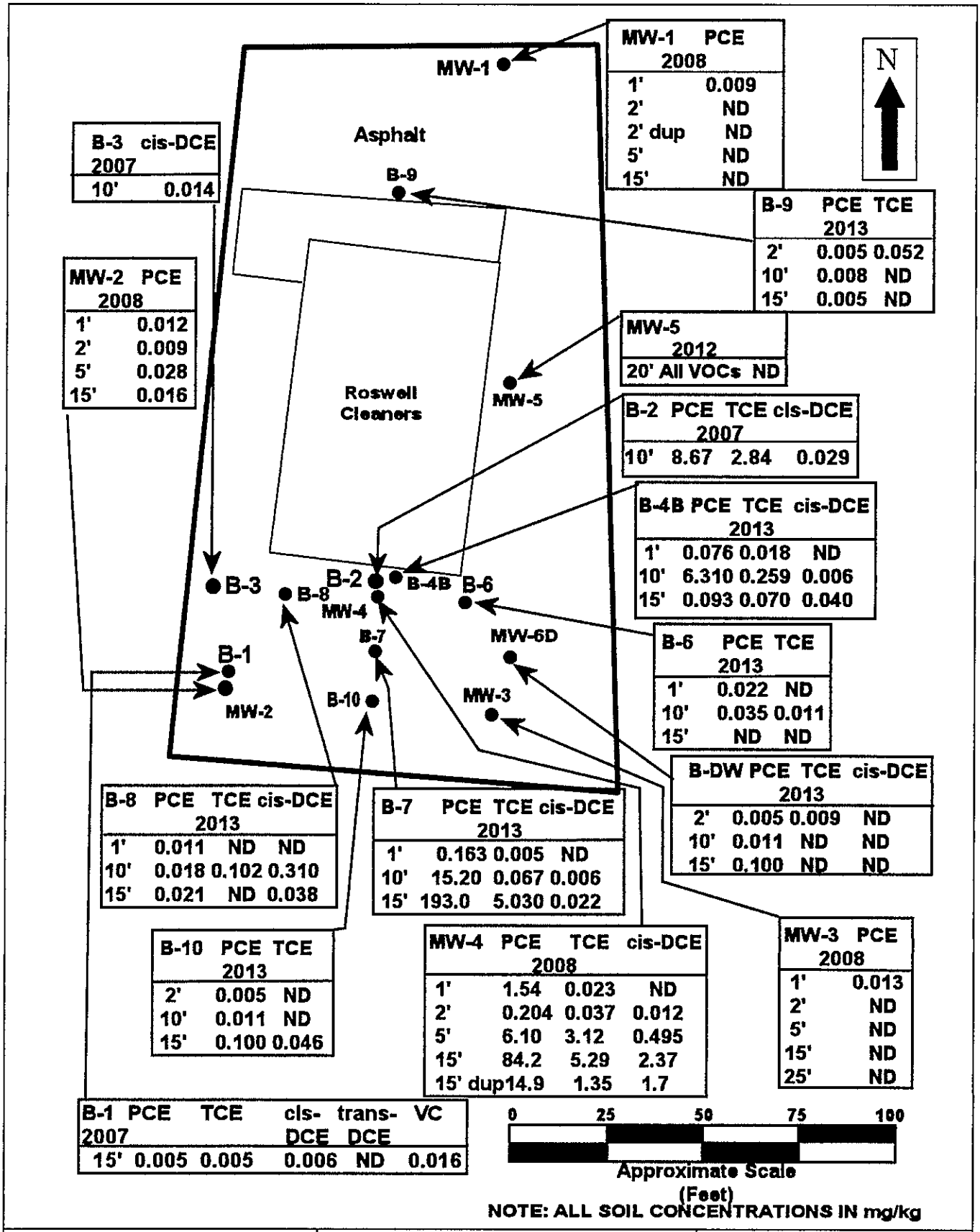


Figure 5: Soil Boring Analytical Date (2007-2013)
Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Fulton County, Georgia

aec
Atlanta Environmental Consultants

Drawn By: Terri Drabek

Checked By: Peter Kallay, P.E.

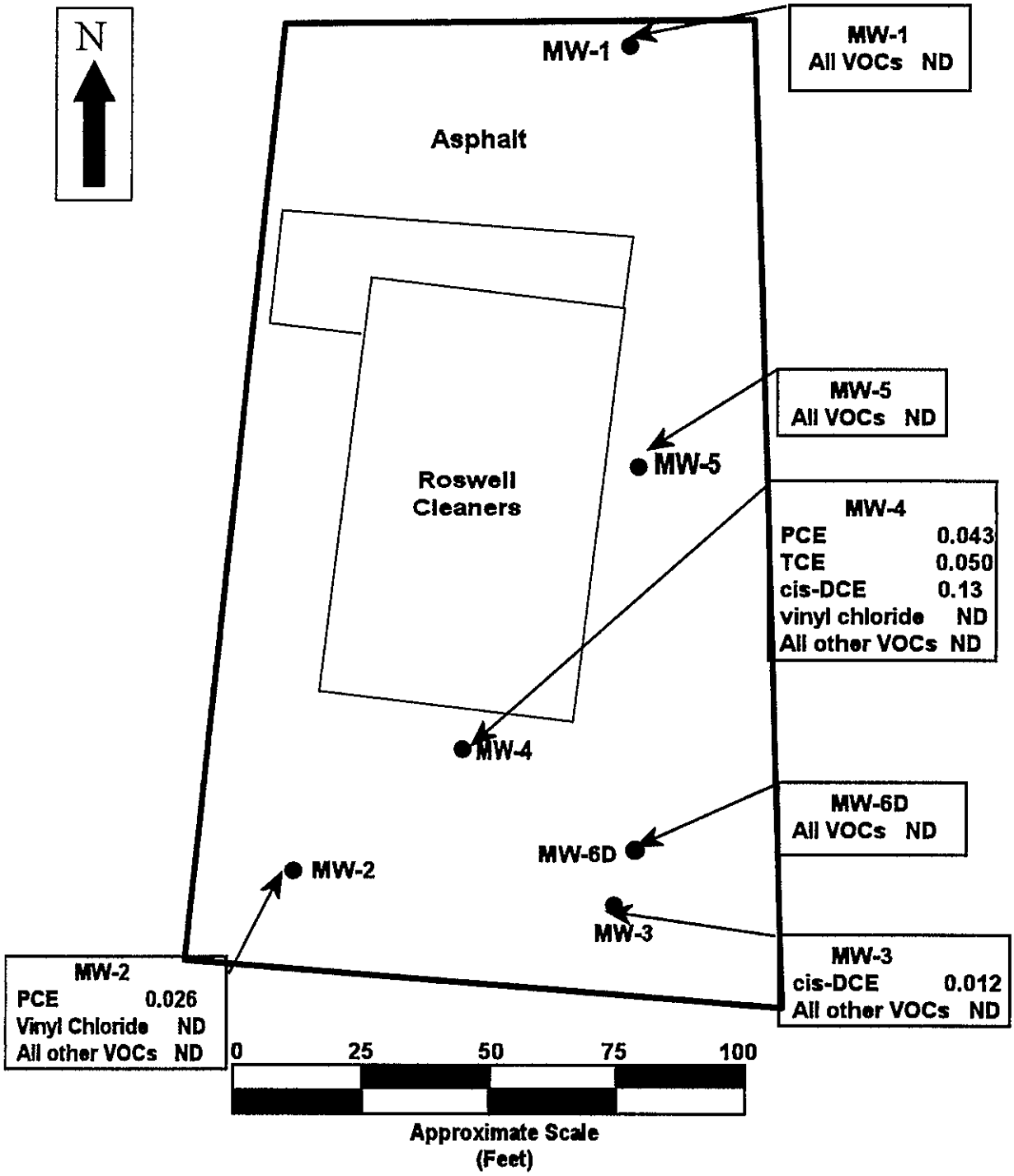
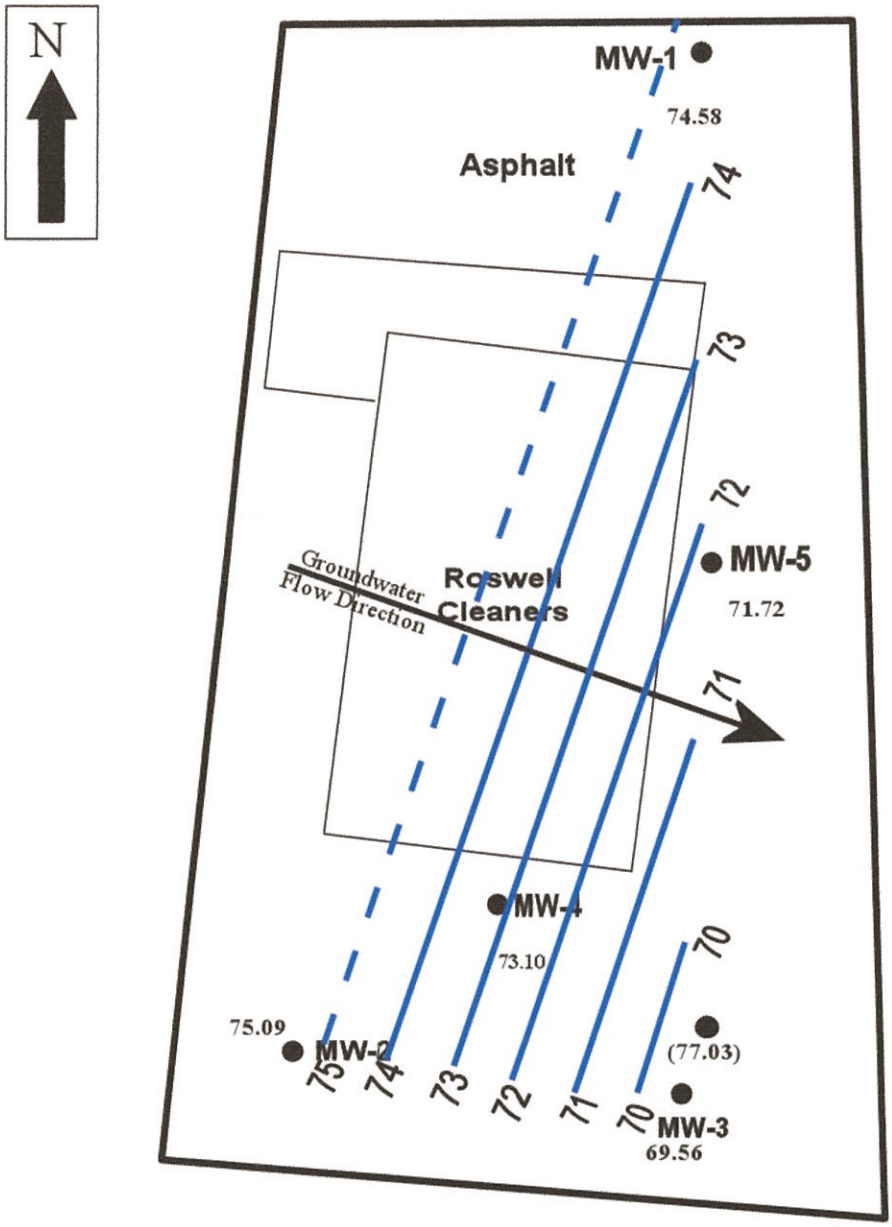


Figure 6: Groundwater Analytical February 25, 2016 Roswell Cleaners and Coin Laundry 1013 Alpharetta Street Roswell, Fulton County, Georgia	**aec** **Atlanta Environmental Consultants**	Drawn By: Terri Drabek Checked By: Peter Kallay, P.E.



Groundwater Elevations
Measured February 25, 2016

Note: MW-6 is a deep well and was not used in determining groundwater contours

Figure 7: Potentiometric Map Roswell Cleaners and Coin Laundry 1013 Alpharetta Street Roswell, Fulton County, Georgia	**aec** **Atlanta Environmental Consultants**	Drawn By: Terri Drabek Checked By: Peter Kallay, P.E.

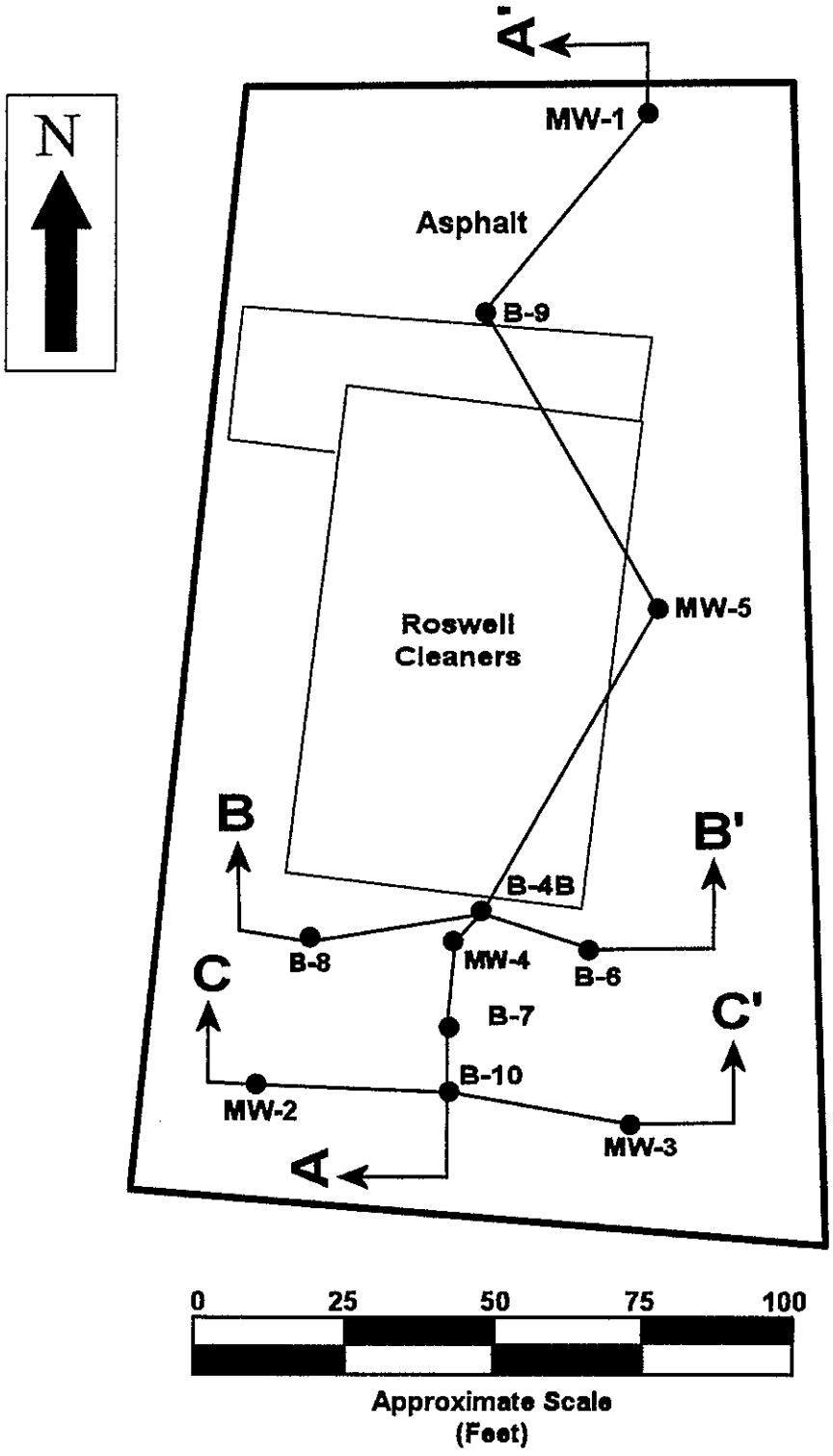


Figure 8: Cross-Section Locations Roswell Cleaners and Coin Laundry 1013 Alpharetta Street Roswell, Fulton County, Georgia	**aec** **Atlanta Environmental Consultants**	Drawn By: Terri Drabek Checked By: Peter Kallay, P.E.

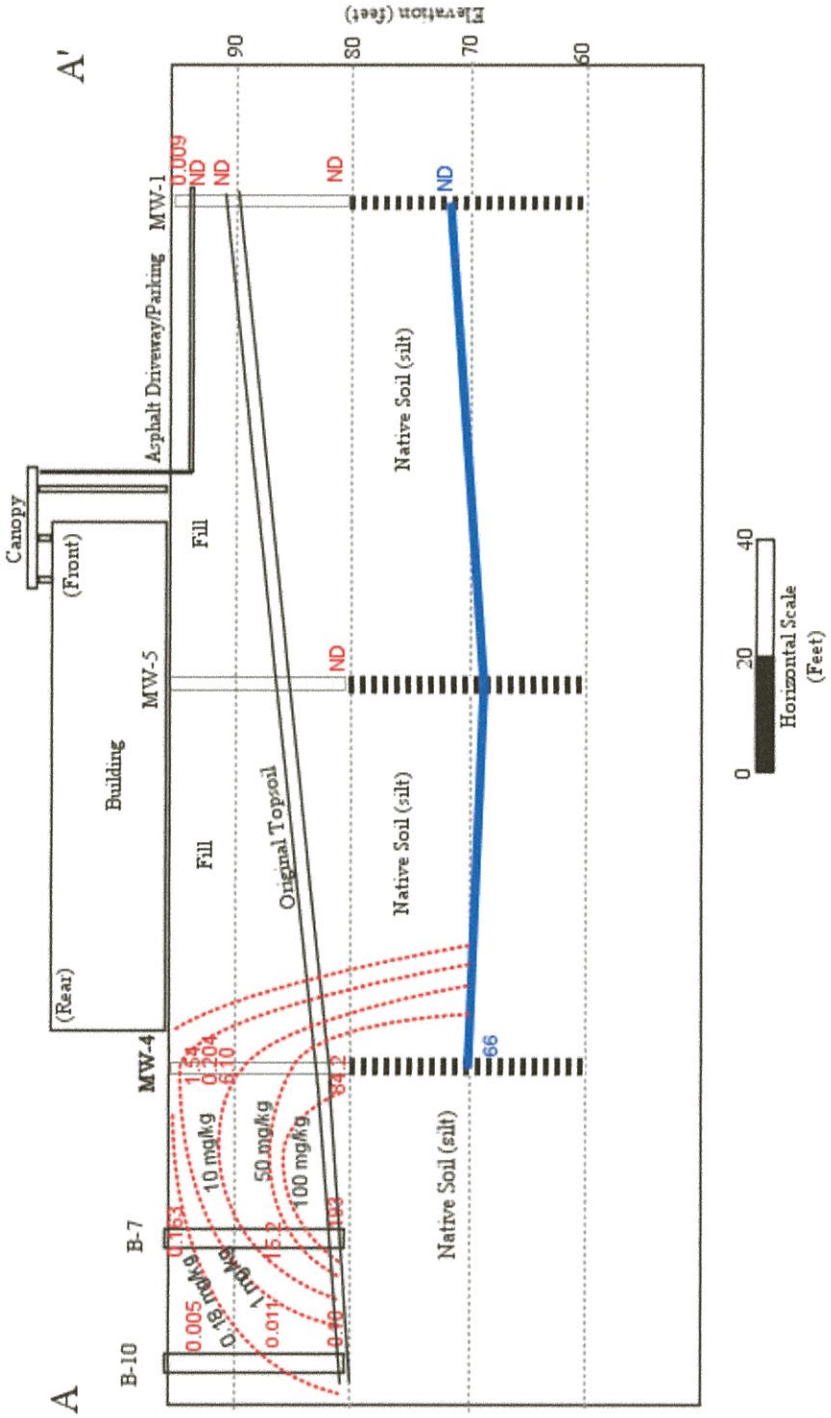


Figure 9 : Cross-Section A-A'
Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Fulton County, Georgia

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Drawn By: Terri Drabek

Checked By: Peter Kallay, P.E.

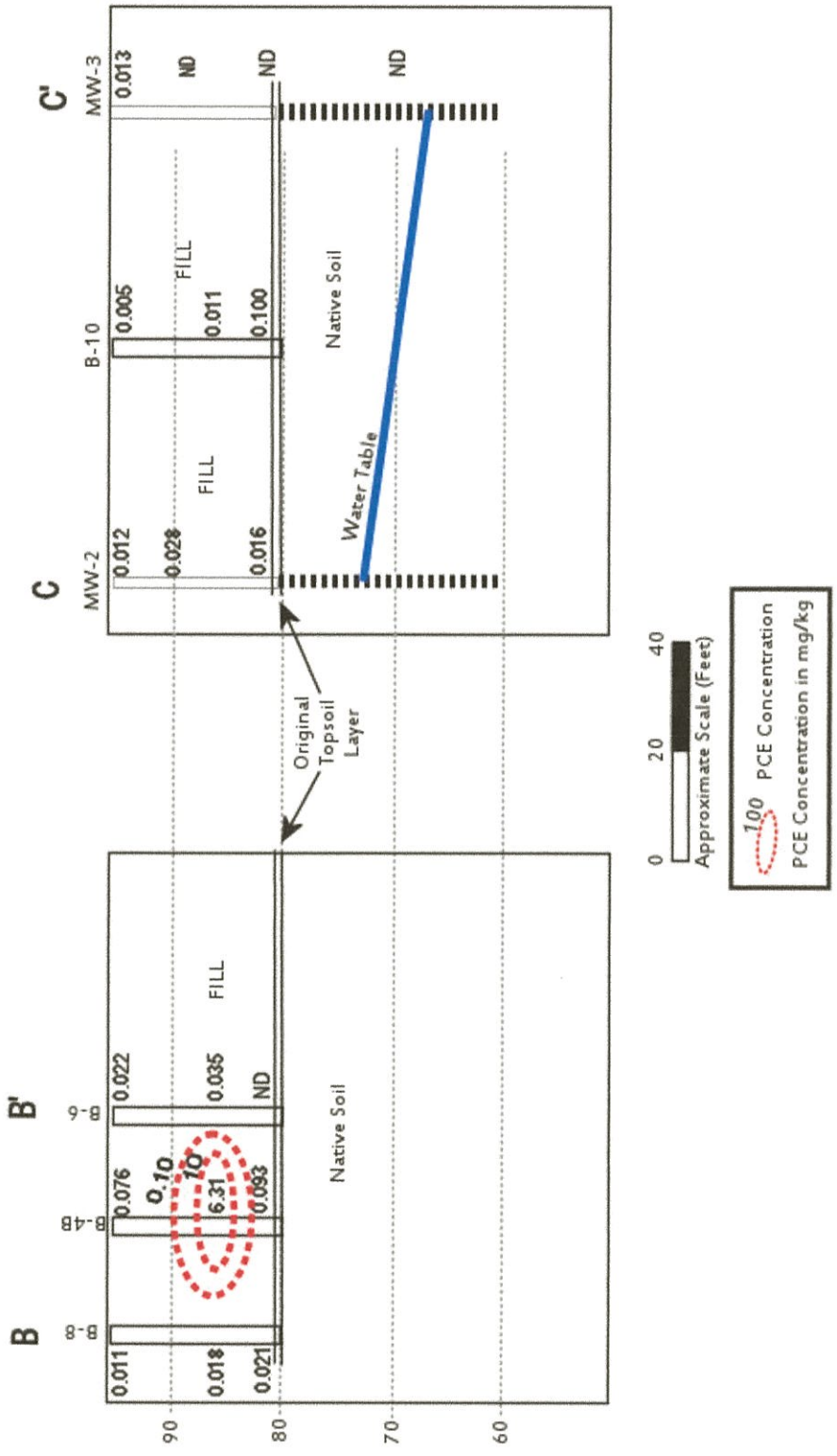

Figure 10 : Cross-Section B-B and C-C'
Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Fulton County, Georgia

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Atlanta Environmental Consultants

Drawn By: Terri Drabek

Checked By: Peter Kallay, P.E.

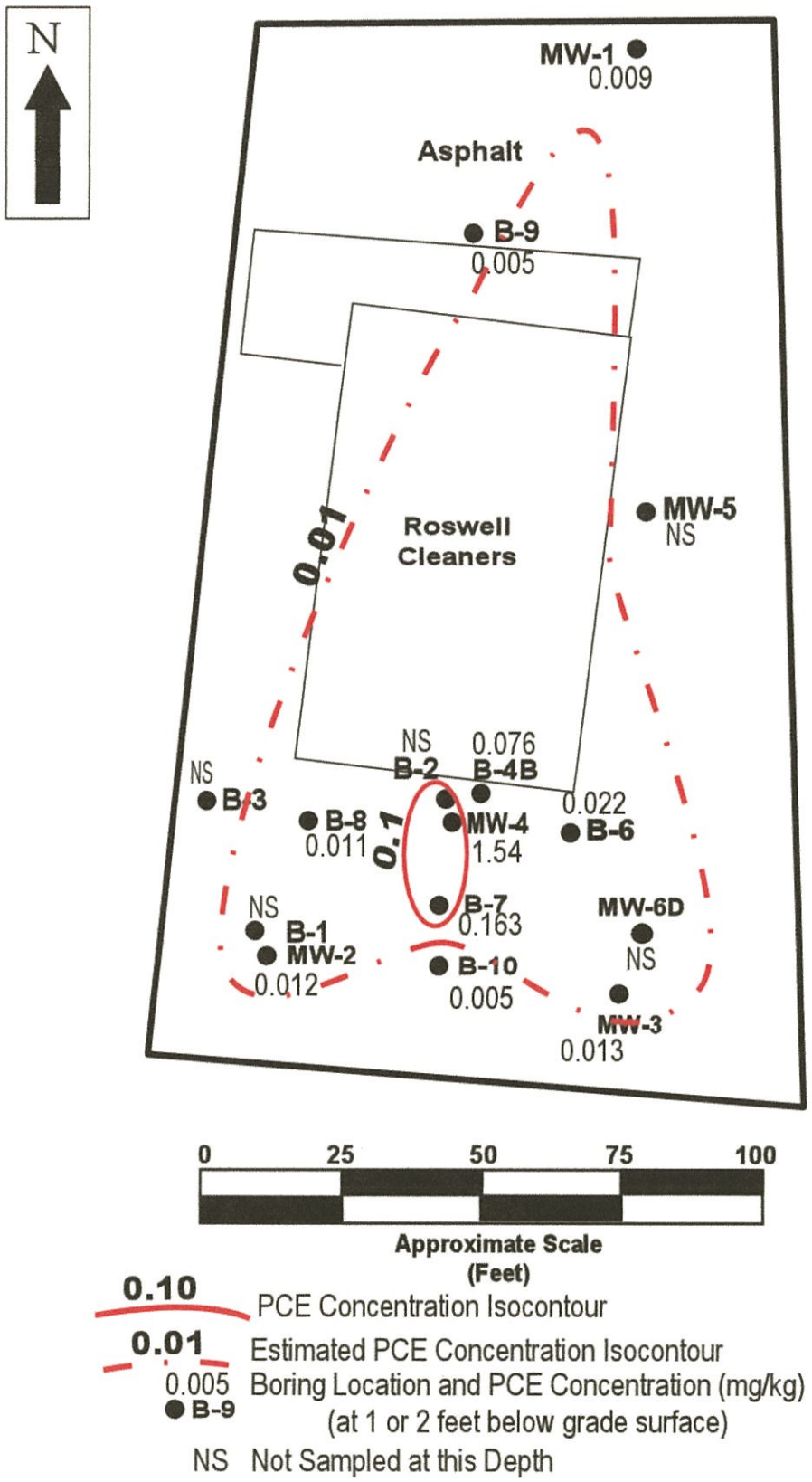


Figure 11A : PCE Soil Concentrations 1 and 2 foot Roswell Cleaners and Coin Laundry 1013 Alpharetta Street Roswell, Fulton County, Georgia	**aec** **Atlanta Environmental Consultants**	Drawn By: Terri Drabek Checked By: Peter Kallay, P.E.

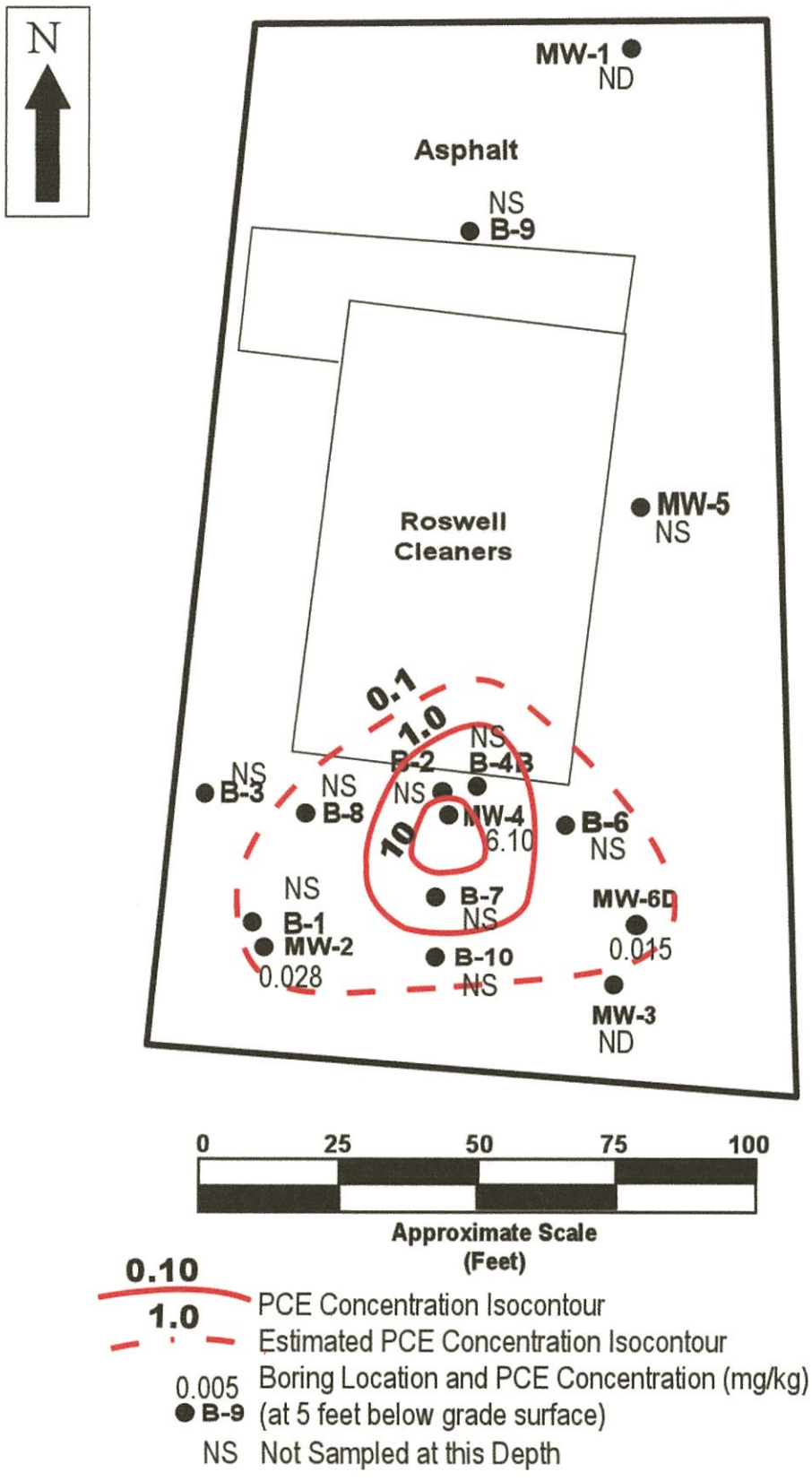


Figure 11B : PCE Soil Concentrations 5 foot Roswell Cleaners and Coin Laundry 1013 Alpharetta Street Roswell, Fulton County, Georgia	**aec** **Atlanta Environmental Consultants**	Drawn By: Terri Drabek Checked By: Peter Kallay, P.E.

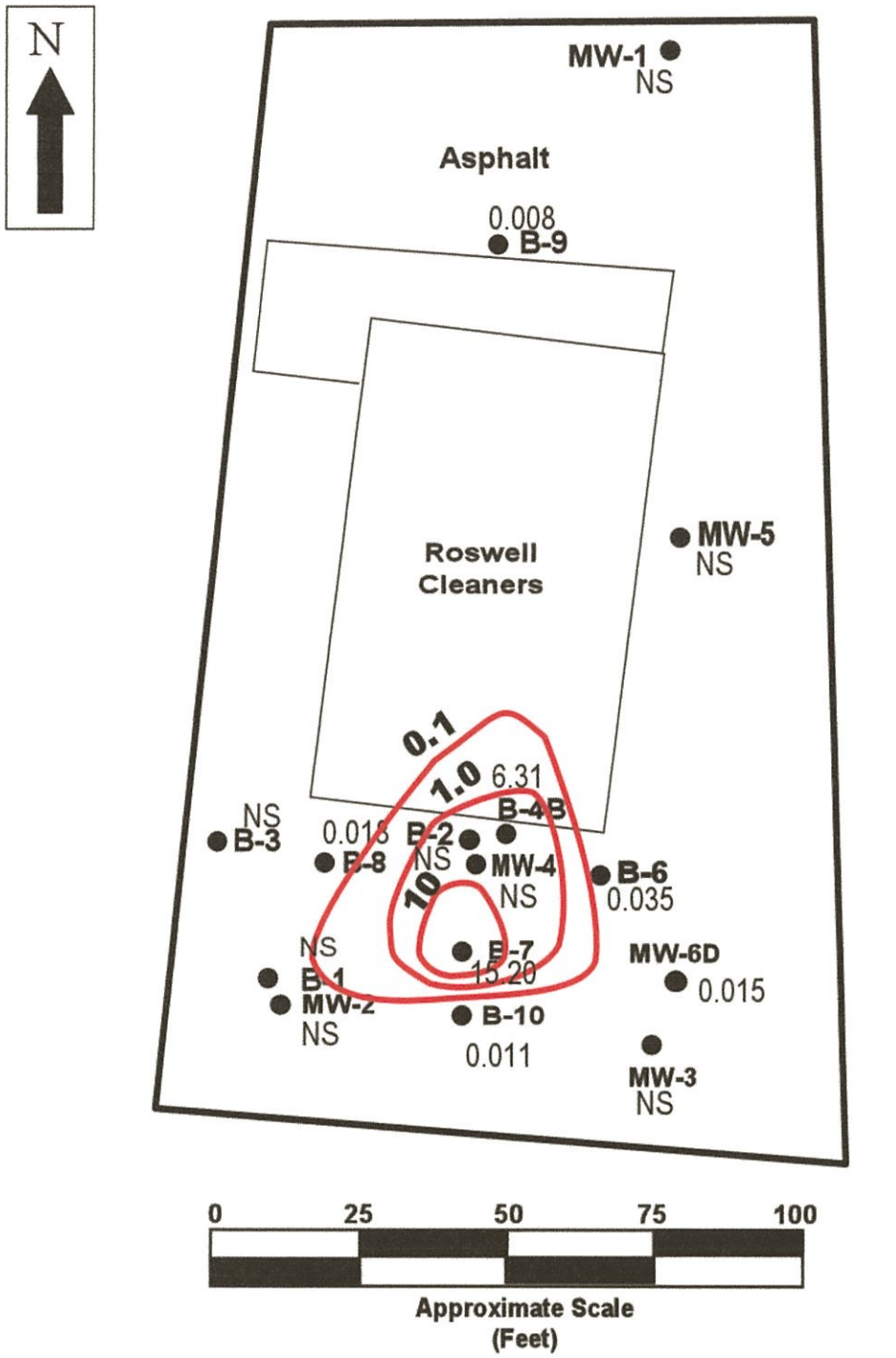


Figure 11C : PCE Soil Concentrations 10 foot Roswell Cleaners and Coin Laundry 1013 Alpharetta Street Roswell, Fulton County, Georgia	**aec** **Atlanta Environmental Consultants**	Drawn By: Terri Drabek Checked By: Peter Kallay, P.E.

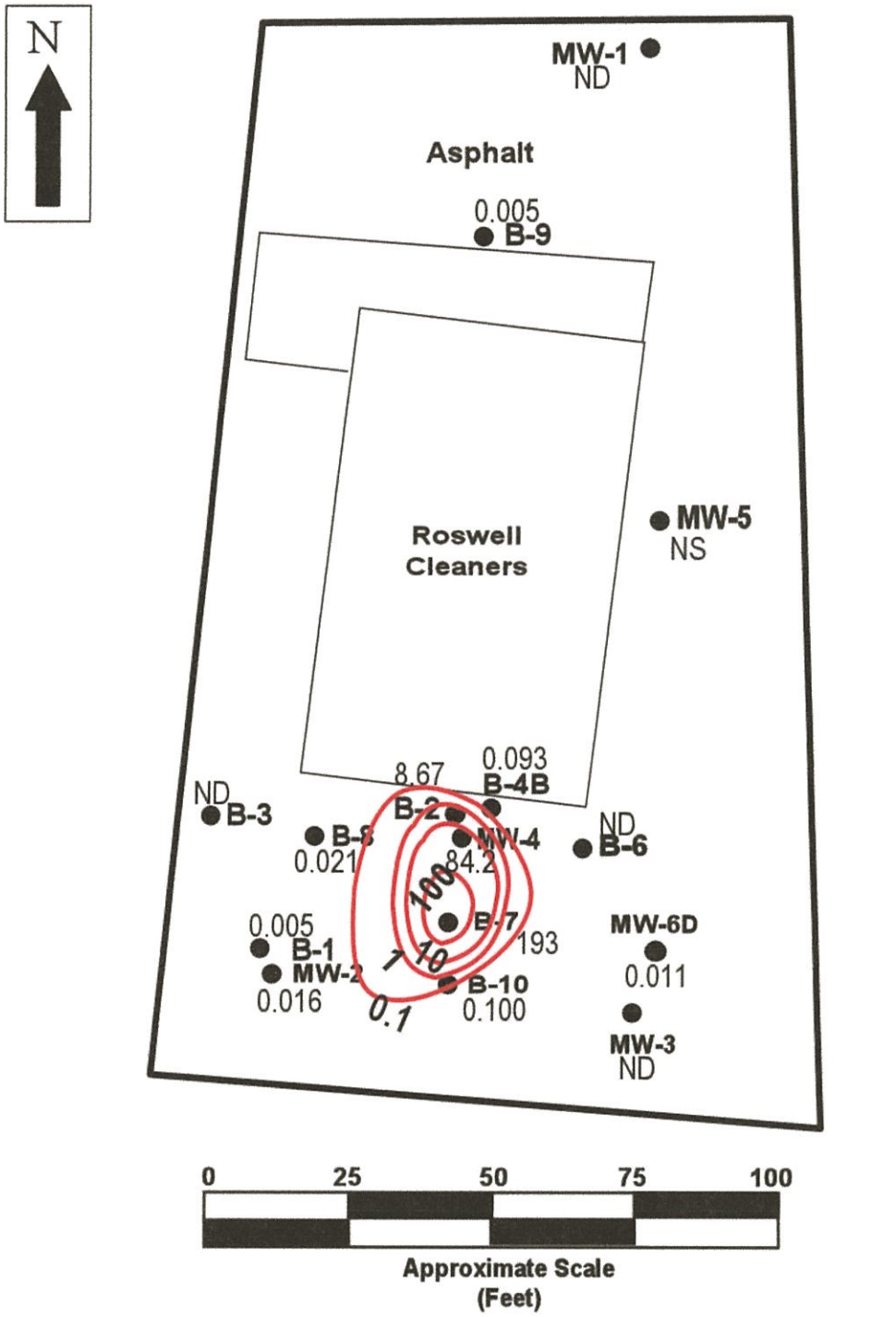
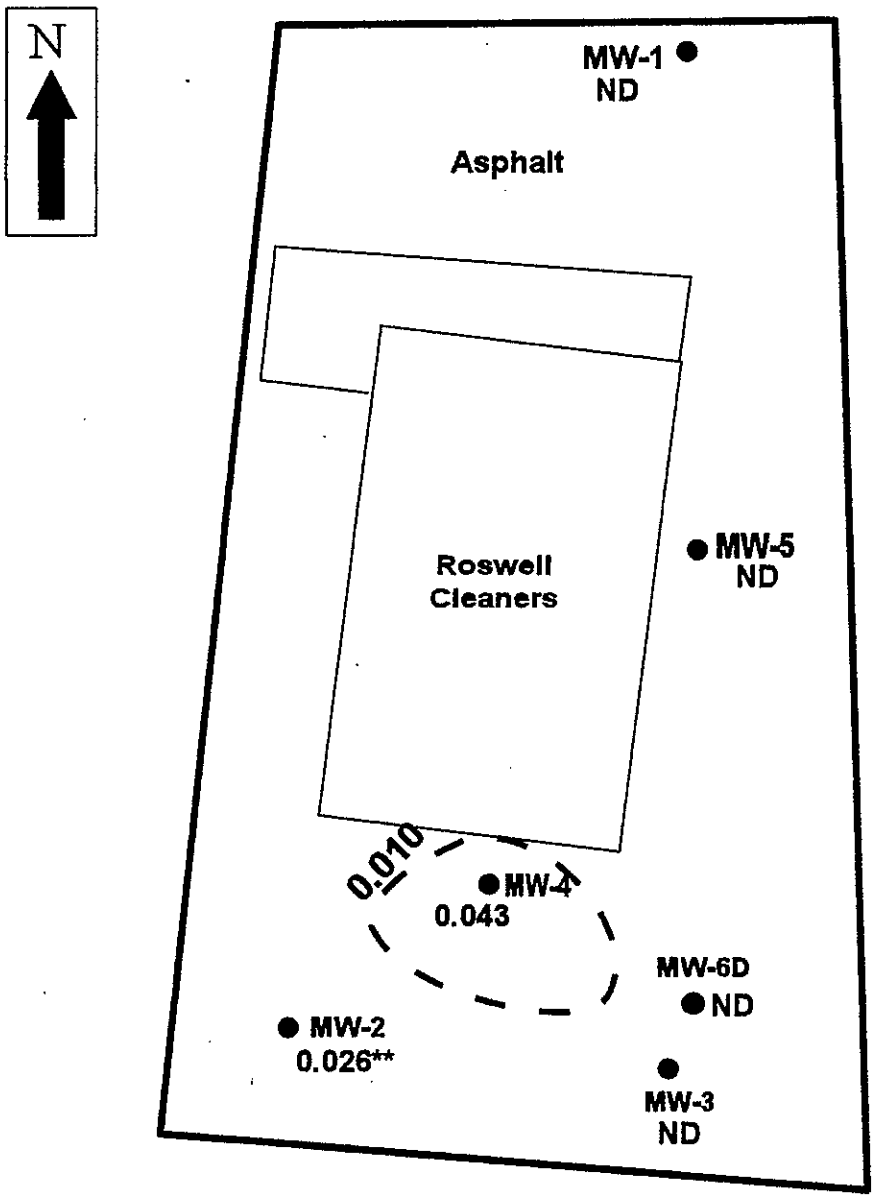


Figure 11D : PCE Soil Concentrations 15 foot Roswell Cleaners and Coin Laundry 1013 Alpharetta Street Roswell, Fulton County, Georgia	**aec** **Atlanta Environmental Consultants**	Drawn By: Terri Drabek Checked By: Peter Kallay, P.E.



PCE Concentrations measured February 25, 2016
(Concentrations in mg/L)

** Note that the detection of PCE in MW-2 is considered to be anomalous, and, therefore, was not contoured. See the report text for more information.

Figure 12: PCE Concentrations in Groundwater, February 25, 2016

Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Fulton County, Georgia

aec
Atlanta Environmental Consultants

Drawn By: Terri Drabek

Checked By: Peter Kallay, P.E.

TABLES

TABLE 1. Soil Analytical Results - Roswell Cleaners
1013 Alpharetta Street, Roswell, Fulton County, Georgia 30075

SAMPLE ID	SAMPLE Depth (ft)	SAMPLE Date	ANALYTICAL RESULTS - Milligrams Per Kilogram (mg/kg)					
			PCE	TCE	cis-DCE	trans-DCE	VC	OTHER
B-1(by MW-2	15'	3/19/2007	0.005	0.005	0.006	ND(.005)	0.016	* (1)
B-2(by MW-4	10'	3/19/2007	8.670	2.840	0.029	ND(.005)	ND(.010)	* (2)
B-3	10'	3/19/2007	ND(.005)	ND(.005)	0.014	ND(.005)	ND(.010)	* (3)
MW-1 1'	1'	8/25/2008	0.009	ND(.005)	ND(.005)	ND(.005)	ND(.010)	* (4)
MW-1 2'	2'	8/25/2008	ND(.005)	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
MW-1 5'	5'	8/25/2008	ND(.005)	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
MW-1 15'	15'	8/25/2008	ND(.005)	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
MW-2 1'	1'	8/25/2008	0.012	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
MW-2 2'	2'	8/25/2008	0.009	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
MW-2 5'	5'	8/25/2008	0.028	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
MW-2 15'	15'	8/25/2008	0.016	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
MW-3 1'	1'	8/25/2008	0.013	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
MW-3 2'	2'	8/25/2008	ND(.005)	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
MW-3 5'	5'	8/25/2008	ND(.005)	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
MW-3 15'	15'	8/25/2008	ND(.005)	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
MW-3 25'	25'	8/25/2008	ND(.005)	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
MW-4 1'	1'	8/26/2008	1.540	0.023	ND(.005)	ND(.005)	ND(.010)	* (5)
MW-4 2'	2'	8/26/2008	0.204	0.037	0.012	ND(.005)	ND(.010)	All ND
MW-4 5'	5'	8/26/2008	6.100	3.120	0.495	ND(.005)	ND(.010)	All ND
MW-4 15'	15'	8/26/2008	84.200	5.290	2.370	0.841	ND(.010)	* (6)
MW-1 2' Dup	2'	8/25/2008	ND(.005)	ND(.005)	0.061	ND(.005)	ND(.010)	All ND
MW-4 15'Dup	15'	8/26/2008	14.900	1.350	1.700	0.282	ND(.010)	* (7)
MW-5 20'	20'	4/16/2012	ND(.005)	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
B-4B 1'	1'	3/14/2013	0.076	0.018	ND(.005)	ND(.005)	ND(.010)	All ND
B-4B 10'	10'	3/14/2013	6.310	0.259	0.006	ND(.005)	ND(.010)	* (8)
B-4B 15'	15'	3/14/2013	0.093	0.070	'0.040	ND(.005)	ND(.010)	All ND
B-6 1'	1'	3/14/2013	0.022	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
B-6 10'	10'	3/14/2013	0.035	0.011	ND(.005)	ND(.005)	ND(.010)	All ND
B-6 15'	15'	3/14/2013	ND(.005)	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
B-7 1'	1'	3/14/2013	0.163	0.005	ND(.005)	ND(.005)	ND(.010)	All ND
B-7 10'	10'	3/14/2013	15.200	0.067	0.006	ND(.005)	ND(.010)	* (9)
B-7 15'	15'	3/14/2013	193.000	5.030	0.022	ND(.005)	ND(.010)	* (10)
B-8 1'	1'	3/14/2013	0.011	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
B-8 10'	10'	3/14/2013	0.018	0.102	0.310	0.035	ND(.010)	All ND
B-8 15'	15'	3/14/2013	0.021	ND(.005)	0.038	0.005	ND(.010)	All ND
B-9 2'	2'	3/14/2013	0.005	0.052	ND(.005)	ND(.005)	ND(.010)	* (11)
B-9 10'	10'	3/14/2013	0.008	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
B-9 15'	15'	3/14/2013	0.005	ND(.005)	ND(.005)	ND(.005)	ND(.010)	* (12)
B-10 2'	2'	3/14/2013	0.005	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
B-10 10'	10'	3/14/2013	0.011	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
B-10 15'	15'	3/14/2013	'0.100	0.046	ND(.005)	ND(.005)	ND(.010)	All ND
B-DW 5'	5'	10/11/2013	0.005	0.009	ND(.005)	ND(.005)	ND(.010)	All ND
B-DW 15'	15'	10/11/2013	0.011	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND
B-DW 70'	70'	10/11/2013	'0.100	ND(.005)	ND(.005)	ND(.005)	ND(.010)	All ND

Note: Footnotes are on the following page.

FOOTNOTES for Table 1. Soil Analytical Results

NOTES: MW-1, MW-2. MW-3 and MW-4 sampled 8-25-08; MW-5 sampled 4-16-12
Samples, B-6 through B-10, as well as B-4B, were sampled on March 14, 2013.
Soil Samples from the deep well, inadvertently labeled B-6 (a duplicate of another boring number), will be referred to as B-DW (for "boring - deep well") in this Table and associated Reports (sampled 10-11-13).
Concentrations are given in milligrams per kilogram (mg/kg).
Volatile Organic Compounds (VOC) were extracted by EPA Method 5035 and were analyzed by EPA Method 8260B
ND = Not Detected (I.e., compound, if present, is Below Quantitation Limits)
PCE = Tetrachloroethene, also known as perchloroethylene, tetrachloroethylene, or perc
TCE = Trichloroethene, also known as trichloroethylene
DCE = Dichloroethene
VC = Vinyl Chloride 174
Other Compounds identified in soil analyses are as follows:
*(1) Acetone 0.205, benzene 0.004 J, toluene 0.009,
*(2) ethylbenzene 0.061, naphthalene 0.028, toluene 0.006m 1,2,4 trimethylbenzene 0.031, 1,3,5 trimethylbenzene 0.009, total xylenes 0.121
*(3) acetone 0.
*(4) Naphthalene 0.016
*(5) Toluene 0.005
*(6) 0.010 Ethylbenzene, 0.012 1,3,5-Trimethylbenzene, 0.041 m.p-Xylene and 0.015 o-Xylene
*(7) 0.022 Ethylbenzene, 0.006 Toluene, 0.027 1,2,4-Trimethylbenzene, 0.009 1,3,5-Trimethylbenzene, 0.097 m,p-Xylene, 0.036 o-Xylene
*(8) 0.013 Ethylbenzene, 0.016 1,2,4-Trimethylbenzene, 0.005 1,3,5-Trimethylbenzene, 0.063 m,p-Xylene, and 0.023 0-Xylene
*(9) 0.010 1,2,4-Trimethylbenzene, 0.056 m,p-Xylene and 0.017 o-Xylene.
*(10) 0.21 Ethylbenzene, 0.96 m,p-Xylene and 0.21 o-Xylene.
*(11) 0.006 Ethylbenzene, 0.005 Benzene, 0.023 m,p-Xylene and 0.009 o-Xylene.
*(12) 0.185 Acetone and 0.005 Carbon disulfide
The number of decimal places has been equalized to improve ease of comparison of concentrations.
The number of decimal places may not precisely represent the number of significant digits (see lab reports).

TABLE 2. Groundwater Analytical Results
Roswell Cleaners
1013 Alpharetta Street, Roswell, Fulton County, Georgia 30075

Groundwater samples were collected March 19, 2007, Aug 27, 2008, Apr 18, 2012, Apr 14, 2013, Oct. 19, 2013, March 6, 2014, Aug 27, 2014, March 6, 2015, Aug 7, 2015 and Feb 25, 2016.

SAMPLE ID and Approx Date	ANALYTICAL RESULTS - Milligrams Per Liter (mg/L)					
	PCE	TCE	cis-DCE	trans-DCE	VC	OTHER see footnotes
B-1 2007	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	0.003	#
B-2 2007	2.260	0.234	0.016	ND (0.005)	ND (0.002)	#
B-3 2007	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	#
MW-1 2008	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-1 2012	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-1 Mar 2013	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-1 Oct 2013	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-1 Mar 2014	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-1 Aug 2014	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-1 Mar 2015	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-1 Aug 2015	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-1 Mar 2016	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-2 2008	ND (0.005)	ND (0.005)	0.0140	ND (0.005)	0.0030	*1
MW-2 2012	0.0055	0.0066	0.0550	ND (0.005)	0.0036	
MW-2 Mar 2013	ND (0.005)	ND (0.005)	0.0110	ND (0.005)	ND (0.002)	
MW-2 Oct 2013	ND (0.005)	ND (0.005)	J 0.0046	ND (0.005)	ND (0.002)	
MW-2 Mar 2014	ND (0.005)	ND (0.005)	0.0190	ND (0.005)	ND (0.002)	
MW-2 Aug 2014	ND (0.005)	ND (0.005)	0.0250	ND (0.005)	0.0100	
MW-2 Mar 2015	ND (0.005)	0.0120	0.0086	ND (0.005)	ND (0.002)	
MW-2 Aug 2015	ND (0.005)	ND (0.005)	0.0310	ND (0.005)	0.0200	
MW-2 Mar 2016	0.0260	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-3 2008	0.1500	0.1520	0.1770	0.0040	ND (0.002)	
MW-3 2012	0.0160	0.0084	0.0077	ND (0.005)	ND (0.002)	
MW-3 Mar 2013	0.0230	0.0200	0.0210	ND (0.005)	ND (0.002)	
MW-3 Oct 2013	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-3 Mar 2014	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-3 Aug 2014	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-3 Mar 2015	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-3 Aug 2015	ND (0.005)	ND (0.005)	0.0100	ND (0.005)	ND (0.002)	
MW-3 Mar 2016	ND (0.005)	ND (0.005)	0.0120	ND (0.005)	ND (0.002)	
MW-4 2008	2.0100	0.1560	0.3150	0.0360	ND (0.002)	
MW-4 2012	0.0660	0.0370	0.0560	0.0031	ND (0.002)	
MW-4 Mar 2013	0.0270	0.0200	0.0350	ND (0.005)	ND (0.002)	
MW-4 Oct 2013	0.0400	0.0280	0.0530	ND (0.005)	ND (0.002)	
MW-4 Mar 2014	0.0850	0.0560	0.1050	0.0056	ND (0.002)	
MW-4 Aug 2014	0.0280	0.0380	0.0780	ND (0.005)	ND (0.002)	
MW-4 Mar 2015	0.0470	0.0380	0.0710	ND (0.005)	ND (0.002)	
MW-4 Aug 2015	0.2600	0.1500	0.1400	ND (0.005)	ND (0.002)	
MW-4 Mar 2016	0.0430	0.0500	0.1300	ND (0.005)	ND (0.002)	

Table 2 continued on the next page

TABLE 2. Groundwater Analytical Results (Cont.) Page 2						
SAMPLE ID and Approx Date	ANALYTICAL RESULTS - Milligrams Per Liter (mg/L)					
	PCE	TCE	cis-DCE	trans-DCE	VC	OTHER see footnotes
MW-5 2012	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-5 Apr 2013	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-5 Oct 2013	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-5 Mar 2014	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-5 Aug 2014	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-5 Mar 2015	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	*5
MW-5 Aug 2015	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-5 Mar 2016	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-6D Oct 2013	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	*3
MW-6D Mar 2014	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-6D Aug 2014	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	*4
MW-6D Mar 2015	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	*5
MW-6D Aug 2015	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	*6
MW-6D Mar 2016	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-5 Lindsay 08	ND (0.005)	ND (0.005)	0.0050	ND (0.005)	ND (0.002)	
MW-6 Lindsay 08	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
MW-7 Lindsay 08	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	
Eqpt Blank 08	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	*2
Trip Blank 08	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.002)	

FOOTNOTES FOR Table 2. Groundwater Analytical Results.

Concentrations are given in milligrams per liter (mg/L)
Volatile Organic Compounds (VOC) were analyzed by EPA Method 8260B
J before the sample concentration indicates estimated concentration was > MDL, but < PQL.
ND = Not Detected (Below Quantitation Limits)
PCE = Tetrachloroethene, also known as perchloroethylene, tetrachloroethylene, or perc
TCE = Trichloroethene, also known as trichloroethylene
DCE = Dichloroethene
VC = Vinyl Chloride
# Temporary wells were used for the Phase II ESA, B1 is by MW-2; B-2 is by MW-4
A monitoring well was located on the Lindsay Property that was only sampled in 2008. This well will be referred to as MW-5 Lindsay.
A Monitoring Well was installed on the Bowen property. "MW-5" without qualifiers refers to this well
Deep Monitoring Well, MW-6, 70'deep, was installed on the Bowen Property on October 11, 2013
2008 or 08 = Sample was collected on August 27, 2008
2012 or 12 = Sample was collected on April 18, 2012
*1 = Chloroform 0.004 mg/l
*2 = Naphthalene 0.006 mg/l
*3 = Chloroform detected at 0.011 mg/l
*4 = Chloroform 0.044 mg/l; Bromodichloromethane 0.0056 mg/l
*5 = Chloroform detected at .0045 mg/l in MW-5 and at 0.022 mg/l in MW-6D
*6 = Chloroform detected at 0.27 mg/l in MW-6D
The number of decimal places have been equalized to improve the ease of comparisons between relative concentrations. Therefore, the number of decimal places shown do not necessarily equal the number of significant digits. See the lab report for the correct number of significant digits.

Table 3. Water Table Elevations
Roswell Cleaners
1013 Alpharetta Street
Roswell, Fulton County, Georgia

MONITORING WELL	DATE MEASURED	TOP-OF-CASING ELEVATION (feet)	DEPTH TO WATER (feet)	WATER TABLE ELEVATION (feet)	NOTES
MW-1	8/26/2008	93.77	23.56	70.21	
MW-1	8/27/2008	93.77	23.63	70.14	
MW-1	9/28/2008	93.77	23.98	69.79	slug test date
MW-1	4/16/2012	93.77	22.07	71.70	
MW-1	4/18/2012	93.77	22.14	71.63	
MW-1	5/16/2012	93.77	22.36	71.41	
MW-1	3/14/2013	93.77	22.43	71.34	
MW-1	9/19/2013	93.77	19.60	74.17	
MW-1	3/6/2014	93.77	18.98	74.79	
MW-1	8/27/2014	93.77	19.80	73.97	
MW-1	3/6/2015	93.77	21.48	72.29	
MW-1	8/7/2015	93.77	21.02	72.75	
MW-1	2/25/2016	93.77	19.18	74.59	
MW-2	8/26/2008	94.12	24.49	69.63	
MW-2	8/27/2008	94.12	24.27	69.85	
MW-2	9/28/2008	94.12	24.82	69.30	slug test date
MW-2	4/16/2012	94.12	22.55	71.57	
MW-2	4/18/2012	94.12	22.62	71.50	
MW-2	5/16/2012	94.12	22.83	71.29	
MW-2	3/14/2013	94.12	22.03	72.09	
MW-2	9/19/2013	94.12	20.26	73.86	
MW-2	3/6/2014	94.12	19.51	74.61	
MW-2	8/27/2014	94.12	20.58	73.54	
MW-2	3/6/2015	94.12	21.50	72.62	
MW-2	8/7/2015	94.12	21.60	72.52	
MW-2	2/25/2016	94.12	19.03	75.09	
MW-3	8/26/2008	94.87	28.46	66.41	
MW-3	8/27/2008	94.87	28.40	66.47	
MW-3	9/28/2008	94.87	28.63	66.24	slug test date
MW-3	4/16/2012	94.87	27.42	67.45	
MW-3	4/18/2012	94.87	27.50	67.37	
MW-3	5/16/2012	94.87	27.74	67.13	
MW-3	3/14/2013	94.87	27.15	67.72	
MW-3	9/19/2013	94.87	25.83	69.04	
MW-3	3/6/2014	94.87	25.35	69.52	
MW-3	8/27/2014	94.87	26.21	68.66	
MW-3	3/6/2015	94.87	26.73	68.14	
MW-3	8/7/2015	94.87	27.03	67.84	
MW-3	2/25/2016	94.87	25.31	69.56	

Note: Table 3 Continued on the next page.

Table 3. Water Table Elevations (Cont.)
Roswell Cleaners
1013 Alpharetta Street
Roswell, Fulton County, Georgia

MONITORING WELL	DATE MEASURED	TOP-OF-CASING ELEVATION (feet)	DEPTH TO WATER (feet)	WATER TABLE ELEVATION (feet)	NOTES
MW-4	8/26/2008	94.57	26.22	68.35	
MW-4	8/27/2008	94.57	25.77	68.80	
MW-4	4/16/2012	94.57	24.40	70.17	
MW-4	4/18/2012	94.57	24.44	70.13	
MW-4	5/16/2012	94.57	24.72	69.85	
MW-4	3/14/2013	94.57	24.06	70.51	
MW-4	9/19/2013	94.57	22.06	72.51	
MW-4	3/6/2014	94.57	21.17	73.40	
MW-4	8/27/2014	94.57	22.50	72.07	
MW-4	3/6/2015	94.57	23.47	71.10	
MW-4	8/7/2015	94.57	23.53	71.04	
MW-4	2/25/2016	94.57	21.47	73.10	
MW-5	4/18/2012	94.82	25.52	69.30	
MW-5	5/16/2012	94.82	25.75	69.07	
MW-5	3/14/2013	94.82	25.63	69.19	
MW-5	9/19/2013	94.82	23.55	71.27	
MW-5	3/6/2014	94.82	23.01	71.81	
MW-5	8/27/2014	94.82	23.74	71.08	
MW-5	3/6/2015	94.82	24.97	69.85	
MW-5	8/7/2015	94.82	24.72	70.10	
MW-5	2/25/2016	94.82	23.10	71.72	
MW-6D	9/19/2013	95.54	19.53	76.01	deep well
MW-6D	3/6/2014	95.54	18.53	77.01	
MW-6D	8/27/2014	95.54	19.97	75.57	
MW-6D	3/6/2015	95.54	21.30	74.24	
MW-6D	8/7/2015	95.54	21.20	74.34	
MW-6D	2/25/2016	95.54	18.51	77.03	
MW-5 Lindsay	8/26/2008	82.92	15.22	67.70	
MW-5 Lindsay	8/27/2008	82.92	15.00	67.92	
MW-6 Lindsay	8/26/2008	81.59	14.60	66.99	
MW-6 Lindsay	8/27/2008	81.59	14.26	67.33	
MW-7 Lindsay	8/26/2008	81.18	16.00	65.18	
MW-7 Lindsay	8/27/2008	81.18	15.83	65.35	

NOTES:

1. Top of Casing Elevations are relative elevations, relative to an assumed height of instrument (H.I.) of 100.00 feet on August 26, 2008.
2. Gauging conducted on dates (and at monitoring wells) utilized for conducting slug tests is noted in the last column.
3. MW-5 and MW-6D (without add'l notation) refers to wells on the Bowen Property. Wells denoted "Lindsay" are on the Lindsay Property. These wells have not been sampled by AEC since 2008; access has not been available.

TABLE 4. Sub-Slab Soil Vapor Analytical Results
Roswell Cleaners
1013 Alpharetta Street
Roswell, Fulton County, Georgia 30075

SAMPLE ID	Compound	SUB-SLAB VAPOR SAMPLE ANALYTICAL RESULTS		
		parts per billion by volume(ppbv)	micrograms/cubic meter (ug/m3)	NOTES
	PRIMARY TARGET COMPOUNDS			
SSVS-1	Tetrachloroethene (PCE)	39.00	270.00	
SSVS-1	Trichloroethene (TCE)	4.90	26.00	
SSVS-1	cis-1,2-Dichloroethene	2.40	10.00	
SSVS-1	trans-1,2-Dichloroethene	ND(0.50)	ND(2.0)	not detected
SSVS-1	Vinyl Chloride	ND(0.50)	ND(1.3)	not detected
	OTHER TO-15 TARGET COMPOUNDS			
SSVS-1	Acetone	45.00	110.00	
SSVS-1	Acetonitrile	0.72	1.20	
SSVS-1	Benzene	5.90	19.00	
SSVS-1	n-Butane	1.80	4.20	
SSVS-1	2-Butanone (MEK)	2.20	6.60	
SSVS-1	Chloromethane	0.52	1.10	
SSVS-1	Ethanol	33.00	63.00	
SSVS-1	Ethyl Acetate	1.20	4.20	
SSVS-1	4-Ethyltoluene	0.54	2.70	
SSVS-1	n-Hexane	0.58	2.00	
SSVS-1	Isopropyl Alcohol	180.00	450.00	
SSVS-1	Naphthalene	0.54	2.80	
SSVS-1	Tertiary Butyl Alcohol (TBA)	8.40	25.00	
SSVS-1	Toluene	4.60	17.00	
SSVS-1	1,2,4-Trimethylbenzene	0.55	2.70	
SSVS-1	m,p Xylene	1.60	7.20	
SSVS-1	ortho Xylene	0.60	2.60	
	TENTATIVELY IDENTIFIED COMPOUNDS (TICs)			
SSVS-1	Acetaldehyde	5.50	9.90	
SSVS-1	Butanal	5.00	15.00	
SSVS-1	Difluorochloromethane	3.80	5.47	
SSVS-1	Hexanal	1.40	5.90	
SSVS-1	Limonene	5.90	33.00	
SSVS-1	Propanal,2,2-dimethyl-	2.40	8.40	
	Total Volatile Organic Compounds			
SSVS-1	TVOC TO-15 Target Compounds	340.00	1000.00	
SSVS-1	TVOC TICs only	24.00	85.00	
SSVS-1	TVOC Total of all VOCs detected	360.00	1100.00	rounded off

NOTES: ND = Not Detected

Concentrations are given in parts per billion by volume (ppbv) and micrograms per cubic meter (ug/m3)
Compounds not detected are not listed (except primary targets). See Laboratory Analytical Report.
The number of decimal places have been equalized to improve comparability between concentrations.
Number of decimal places shown do not necessarily represent number of significant figures (see lab report).

APPENDICES

APPENDIX A

PHASE II
ENVIRONMENTAL SITE ASSESSMENT

aec

PHASE II ENVIRONMENTAL SITE ASSESSMENT

ROSWELL CLEANERS AND COIN LAUNDRY
1013 Alpharetta Street
Roswell, Fulton County, Georgia 30075

PREPARED FOR:

Mr. Richard E. Bowen
1013 Alpharetta Street
Roswell, Georgia 30075

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APRIL 2007

AEC PROJECT No. REB - 1060

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PHASE II ENVIRONMENTAL SITE ASSESSMENT

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PREPARED FOR:

Mr. Richard E. Bowen
1013 Alpharetta Street
Roswell, Georgia 30075

APRIL 2007

Peter T. Kallay, P.E.
Project Manager

ATLANTA ENVIRONMENTAL CONSULTANTS
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EXECUTIVE SUMMARY

Mr. Richard E. Bowen, 1013 Alpharetta Street, Roswell, Georgia 30075, retained Atlanta Environmental Consultants, Inc. (AEC) to conduct a Phase II Environmental Site Assessment (ESA) of an 0.657 acre parcel with one building housing one business located at 1013 Alpharetta Street, Roswell, Georgia 30075. The business is known as Roswell Cleaners and Coin Laundry, a dry cleaning and coin laundry business that has operated here for a number of years. The objective was to determine whether any impacts from the dry cleaning business or former neighboring businesses, a machine shop associated with NAPA Auto Parts and an auto body shop exist, and, if so, to estimate the extent of the impact(s). The work was requested in conjunction with a potential transaction involving possible sale of the subject property, should a potential buyer consider purchasing the property in the near future.

This assessment was performed in accordance with discussions with Mr. Bowen and good environmental practice regarding Phase II Environmental Site Assessments at dry cleaners and near petroleum related sources. Limitations of this assessment are described in this report. The scope of services provided by AEC is described in AEC's Proposal Number 07-016, dated February 23, 2007. Details regarding the work performed, sources of information, and findings are presented in the report.

The Subject Property is a parcel located adjacent to the Roswell Value Village Shopping Center and is developed with one single-story commercial building housing Roswell Cleaners and Coin Laundry, a dry cleaners and coin laundry. The property also contains driveways, paved parking and driveway areas, and retaining walls.

Field observation and field screening using a portable Photo Ionization Detector (PID) indicated the presence of relatively high volatile concentrations immediately behind (south) of the building in an area in which floor mopping water was formerly disposed. The concentrations appeared to be limited mostly to the immediate rear of the building; other soil borings did not exhibit significant readings on the PID. All borings reached groundwater at between 25 and 30 feet deep, and were completed to 35 feet deep. Auger refusal was not encountered in any boring.

Laboratory analysis indicated that tetrachloroethene (PCE) and breakdown products, and petroleum-related compounds were identified in soils at the site, and PCE and its breakdown products were identified in groundwater at the site. PCE was identified in soils at a maximum concentration of 8.67 milligrams per kilogram (mg/kg) and in groundwater at a maximum concentration of 2,260 micrograms per liter (ug/l). Soil concentrations of PCE and trichloroethene (TCE) exceeded Georgia Notification Concentrations. Groundwater concentrations of PCE and TCE exceeded Federal Maximum Contaminant Levels (MCL).

INTRODUCTION

Mr. Richard E. Bowen, 1013 Alpharetta Street, Roswell, Georgia 30075, retained Atlanta Environmental Consultants, Inc. (AEC) to conduct a Phase II Environmental Site Assessment (ESA) of a 0.657 acre parcel with one building housing one business located at 1013 Alpharetta Street, Roswell, Georgia 30075 (Figures 1 and 2). The business is known as Roswell Cleaners and Coin Laundry, a dry cleaning and coin laundry business that has operated here for a number of years. The objective was to determine whether any impacts from the dry cleaning business or former neighboring businesses, a machine shop associated with NAPA Auto Parts and an auto body shop exist, and, if so, to estimate the extent of the impact(s). The work was requested in conjunction with a potential transaction involving possible sale of the subject property, should a potential buyer consider purchasing the property in the near future.

1.1 PURPOSE

The objective was to determine whether any impacts from the dry cleaning business onsite or from former neighboring businesses, a machine shop associated with NAPA Auto Parts and an auto body shop exist, and, if so, to estimate the extent of the impact(s). The work was requested in conjunction with a potential transaction involving possible sale of the subject property, should a potential buyer consider purchasing the property in the near future.

1.2 METHODS

A truck-mounted hollow stem auger drilling rig was used to auger soil borings B-1, B-2, and B-3 through unsaturated soils and into groundwater. Soil samples were collected every 5 feet for field screening and for possible laboratory analysis. The highest reading in each boring on a portable field Photo Ionization Detector capable of detecting volatile organic compounds (VOC), including PCE, TCE, and related compounds, and benzene, toluence, ethylbenzene, and total xylenes (BTEX) and related petroleum hydrocarbons was generally used to select soil samples for laboratory analysis. The laboratory sample corresponding to the depth of field screening sample so selected was placed into pre-cleaned, laboratory-provided sample jars, labeled, and placed on ice in a cooler. The laboratory samples were promptly transported to a qualified analytical laboratory under Chain of Custody protocol for analysis for volatile organic compounds (VOC) by EPA Method 8260B and Polynuclear Aromatic Hydrocarbons (PAH) by EPA Method 8270.

The Phase II ESA included the following scopes of work:

- Notify the Georgia Utilities Protection Center (UPC) regarding proposed subsurface work. Verify that utility clearance is complete before commencing work.
- Install three soil borings in locations selected to assist in estimating horizontal and vertical extent of PCE and/or petroleum hydrocarbons concentrations at the site. Collect soil samples for field screening and laboratory analysis for volatile organics. Field screen soils with a portable Photo Ionization Detector; use results to select samples for laboratory analysis.

- Install temporary monitoring wells in soil borings if groundwater is reached or approached.
- Analyze soil and/or groundwater samples collected for VOCs and PAHs at a qualified analytical laboratory.
- Abandon and remove any soil borings, temporary wells; backfill and asphalt patch soil boring locations.
- Document findings, conclusions, and recommendations in a Phase II ESA Report.

Peter T. Kallay, P.E., Project Manager, Atlanta Environmental Consultants, Roswell, Georgia, conducted the drilling, field screening, and sampling portion of the assessment on March 19, 2007. Mr. Richard Bowen visited the work area during the drilling, field screening, and sampling activities.

1.3 LIMITING CONDITIONS OF ASSESSMENT

This assessment focused on areas of the site estimated to be more-or-less down-gradient (e.g., downhill) of current and former potential sources including a dry cleaners currently located onsite, a machine shop associated with a NAPA Auto Parts store formerly located on neighboring property to the west, and an auto body shop formerly located on neighboring property to the west. The ESA did not and does not address the presence or absence of potential contaminants in other areas of the site, and neither does it address parameters not analyzed.

Although the boring and temporary monitoring well locations were more-or-less down-gradient of potential current and/or former sources on- and off-site, some locations were not directly down-gradient, because estimated locations of retaining wall foundations precluded boring in certain locations judged to be likely to result in auger refusal before reaching groundwater. Also, groundwater flow direction was estimated at the time of drilling based on topography, and was not accurately known at that time.

The assessment was limited to volatile organic compounds on the U.S. Environmental Protection Agency (EPA) Method 8260B and 8270 analyte lists. No effort to identify the presence of absence of other types of compounds was made.

2.0 SUBJECT PROPERTY DESCRIPTION

2.1 CURRENT USE OF SUBJECT PROPERTY

The subject property, located at 1013 Alpharetta Street, Roswell, Georgia 30075, contains one single one-story commercial building which houses the Roswell Cleaners and Coin Laundry, a dry cleaners and coin laundry business. The building appears is of slab-on-grade construction, and does not have any subsurface space such as a basement or crawl space. The property has reportedly been operated as a dry cleaners and coin laundry since 1966.

2.2 CURRENT USES OF ADJOINING PROPERTIES

The area surrounding the Subject Property consists of mostly commercial property. A parking lot and driveway for the Value Village shopping center is located on the north side of the subject property; this is up-gradient (uphill) of the Subject Property. A building with several businesses, E & J Liquor, Tienda Carniceria Yuriria (now vacant) and Alfa Driving School adjoins the property on the west, which is cross-gradient (at approximately the same elevation); this building formerly housed a NAPA Auto Parts store with a machine shop and an Auto Body Shop associated with another Auto Body Shop to the south. East of the Subject Property is a department store, Casa del Pueblo Latino Marketplace and a Coin Laundry, which is cross-gradient of the site. A former auto body shop, an office building (now unoccupied), and a dentist's office are located south of the Subject Property. Figure 3 shows adjoining property uses.

It is not determined whether the NAPA Auto Parts store, the auto body shop next door or any other businesses nearby have had any release of any regulated substance, or whether any release has been reported.

2.3 PHYSICAL SETTING

The Subject Property is located in the Sandy Springs Group (Eastern Belt) of the Northern Piedmont Physiographic Province of Georgia. Specifically, the site is in the Powers Ferry Formation, consisting of undifferentiated biotite-quartz-plagioclase gneiss (metagraywacke), mica schist and amphibolite. The unit also contains a mappable mica schist unit, a banded iron formation, and a continuous amphibolite formation.

Regional groundwater in the Northern Piedmont consists of a surficial aquifer in the shallow soils, which grades into partially weathered rock, which is hydraulically connected to bedrock underlying soils in this area, typically at 40 feet deep or less. Groundwater in the bedrock is found primarily in fractures and other secondary openings. Depth to groundwater on hilltops and mountaintops is typically deeper than in valleys and draws. Therefore, the likelihood that the water table is in bedrock rather than in soil is greater on hilltops and mountaintops. The site is located near the top of a ridge.

The estimated depth to groundwater at the Subject Property is approximately 25 feet, based on depths at which groundwater was encountered. Groundwater flow direction is most likely toward the south based on topography. The local gradient and flow direction may be influenced by natural zones of lower or higher permeability, bedrock outcrops, and by man-made influences such as cutting and filling, retaining walls, channeling of runoff water, infiltration in pervious areas of the site, runoff and drainage patterns from impervious areas of the site, and leakages (if any) from storm drains and sewers, etc.

3.0 FINDINGS

3.1 FIELD WORK

The soils at the site appeared to be fill material to 10 or more feet of depth, which appeared to be consistent with the fact that a nearby retaining wall 12 feet above grade at its base held back soils at approximately 12 feet higher elevation than adjoining downhill properties. No significant odors were noted in borings B-1 or B-3 at any depth.

Field screening of soil samples with a portable PID was conducted. Table 1 presents PID readings taken of soil samples from the soil borings.

Field screening suggested the presence of low concentrations of volatile organic compound vapors, mostly at shallow and intermediate depths, interspersed with nondetectable or very low readings, except for boring B-2. In boring B-2, elevated PID readings were encountered, particularly at the 10-foot depth.

After soil borings were installed, the borings were converted into temporary monitoring wells TMW-1, TMW-2, and TMW-3. The wells were then developed and sampled.

3.2 LABORATORY ANALYSIS

Laboratory analysis indicated that tetrachloroethene (PCE) and breakdown products, and petroleum-related compounds were identified in soils at the site, and PCE and its breakdown products were identified in groundwater at the site. PCE was identified in soils at a maximum concentration of 8.67 milligrams per liter (mg/kg) at 10 feet deep in Boring B-2 and in groundwater at a maximum concentration of 2,260 micrograms per liter (ug/L) in Temporary Monitoring Well TMW-2. TCE was identified in soils at a maximum concentration of 2.84 mg/kg at 10 feet deep in Boring B-2 and in groundwater at 234 ug/l in Temporary Monitoring Well TMW-2. Soil concentrations of PCE and trichloroethene (TCE) in B-2 exceeded Georgia Notification Concentrations. Groundwater concentrations of PCE and TCE in TMW-2 exceeded Federal Maximum Contaminant Levels (MCL). Vinyl Chloride in TMW-1 exceeded the Federal MCL. Soil concentrations identified are summarized in Table 2. Groundwater concentrations identified are summarized in Table 3. Figures 4 and 5 depict the locations of soil and groundwater concentrations detected at the site, respectively.

A number of petroleum related compounds were identified in soils, but none exceeded Georgia Notification Concentrations. In addition to BTEX, acetone was identified in B-1 at 15 feet deep. 1,2,4-Trimethylbenzene and 1,3,5-Trimethylbenzene were identified at low concentrations in B-2 at 10 feet deep. No Georgia Notification Concentrations exist for these industrial solvents.

3.3 DISCUSSION

PCE and TCE exceeding Georgia Notification Concentrations were identified in soils in boring location B-2 just south of the Roswell Cleaners and Coin Laundry building. PCE and TCE were also identified in groundwater in TMW-2 (installed in B-2) exceeding MCL. Vinyl chloride exceeding MCL was identified in groundwater in TMW-1 in the southwest corner of the property.

Roswell Cleaners and Coin Laundry have been located at the present location since 1966. In the 1960s, there was little or no regulation of PCE and TCE, and little or no regulation of disposal methods for these compounds. Recycling and reuse of PCE and TCE was not as widely practiced as today, and, typically, much larger quantities were used than today. Efforts to prevent spills or to clean up spills when they occurred were not as well developed as today. Cis-1,2-Dichloroethene and vinyl chloride represent breakdown products of PCE and TCE. The presence of these compounds suggests that PCE and TCE may have aged and partially biodegraded over time at this facility.

PCE and TCE are widely used industrial solvents and degreasers. Common uses of these compounds have included auto parts cleaning, industrial parts cleaning, degreasing parts before servicing or painting, spot removal, dry cleaning, and other uses. Businesses that most likely regularly use or have used solvents on and adjacent to the Subject Property included a machine shop, an auto body shop, and a dry cleaners. Any of these businesses or others that may have existed nearby could be considered potential sources of the compounds identified onsite.

Petroleum-related compounds were identified in soils at B-1 at the southeast corner of the property and at B-2 behind the cleaners. Acetone was identified in soils at B-1 and B-3, both near the western property line. Petroleum-related compounds may have originated at the NAPA Auto Parts machine shop and/or auto body shop formerly located west of the Subject Property, from minor fuel drips from motor vehicles, or from spotting compounds, etc. Acetone, a solvent, appeared to most likely be from the NAPA Auto Parts machine shop and/or Auto Body Shop formerly located west of the Subject Property.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

A Phase II Environmental Site Assessment has been conducted for the 0.657 acre parcel at which Roswell Cleaners and Coin Laundry, 1013 Alpharetta Street, Roswell, Georgia 30075, is located. The following conclusions can be drawn:

- This limited assessment indicated the presence of PCE and TCE that exceeds Georgia Notification Concentrations in soils and exceeds MCL in groundwater. Vinyl chloride exceeds MCL in groundwater.

- This assessment indicated the presence of minor concentrations of BTEX and other petroleum related compounds in soils. No petroleum compound exceeded Georgia Notification Concentrations.

- Minor concentrations of acetone and 1,2,4-Trimethylbenzene and 1,3,5-Trimethylbenzene were identified in soils onsite.

- Field screening suggested the highest concentration of organic vapors was at the fill/native soil interface. This was the depth at which soil samples were collected.

4.2 RECOMMENDATIONS

A Phase II Environmental Site Assessment has been conducted for the 0.657 acre parcel at which Roswell Cleaners and Coin Laundry, 1013 Alpharetta Street, Roswell, Georgia 30075, is located. The following recommendations are made:

- Compounds identified onsite should be managed in accordance with Georgia law following appropriate management options developed consistent with current and future uses of the Subject Property and nearby properties.

- It is recommended that dry cleaning operations, if to be continued, should continue to follow Best Management Practices (BMP) that eliminate or minimize the potential for release of tetrachloroethene (PCE) or other compounds to the environment. Proper collection, storage and disposal of spent dry cleaning solvents should continue to follow all current applicable law and BMPs.

- It is recommended that neighboring businesses, if any such businesses store, manufacture, use, or dispose of petroleum products, dry cleaning compounds, or other regulated compounds be observed for compliance with applicable law and BMPs. Should any releases occur, documentation of such occurrence (s) is recommended. Should poor practices or practices that fail to meet applicable law or good practice be observed, it is recommended that these be documented.

- Maintain spill kits and materials onsite, familiarizing all personnel with their deployment and use in the event of a spill or release. This will assist in minimizing the impact of any release of PCE, etc. that may occur.

- Promptly and thoroughly clean up any release, if one occurs, including soils, if affected. Prompt cleanup can help avoid costly investigation and cleanup.

5.0 REFERENCES

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U. S. Geological Survey. 1992. Roswell Quadrangle, Roswell, Georgia, 7.5-Minute Series Topographic Map. DMA 4152 III SE-SERIES V845. U. S. Geological Survey, Reston, Virginia.

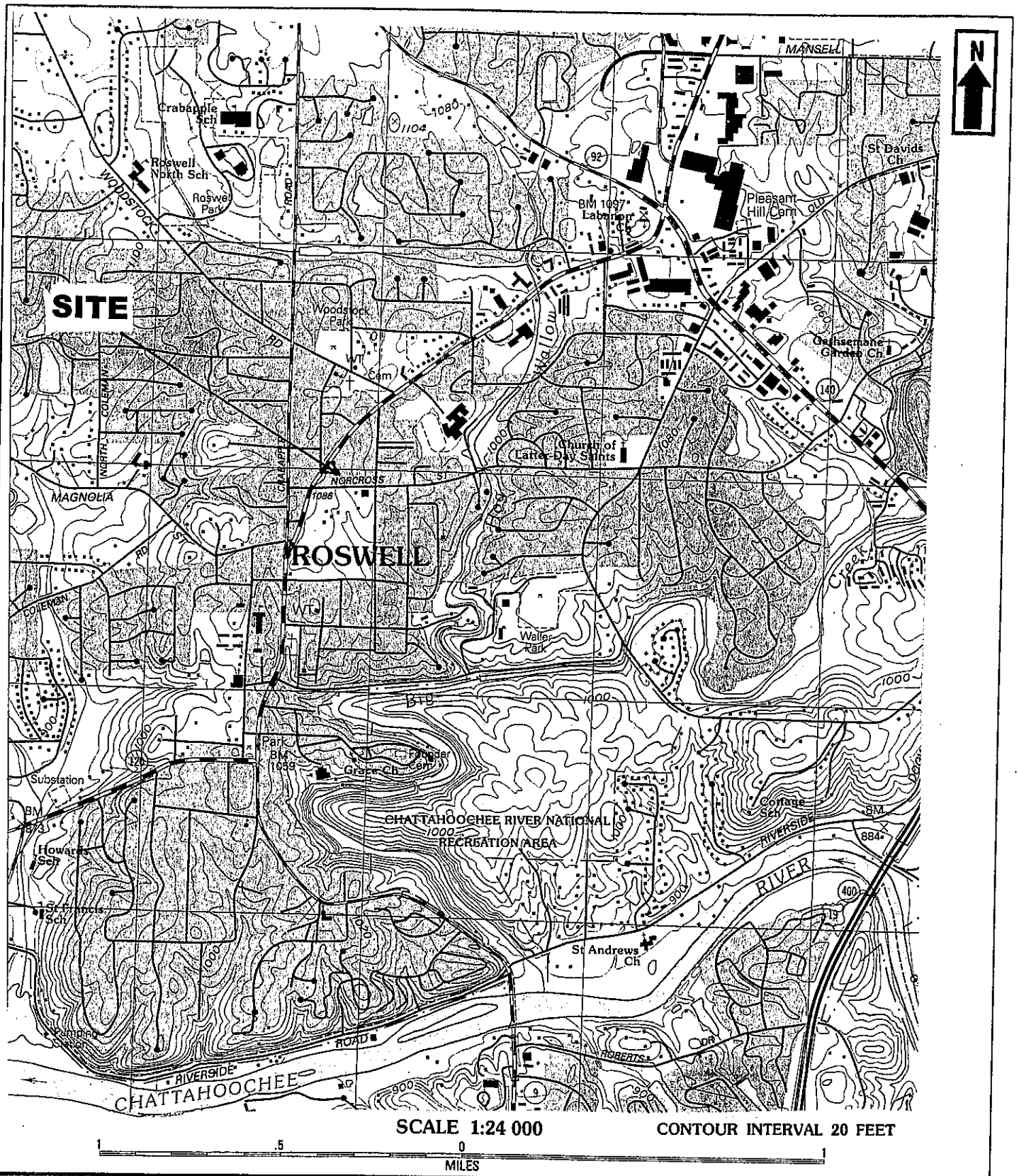

Figure 1: Site Location Map

Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Georgia 30075

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Atlanta Environmental Consultants

Drawn By: Terri Drabek

Checked By: Peter Kallay, P.E.

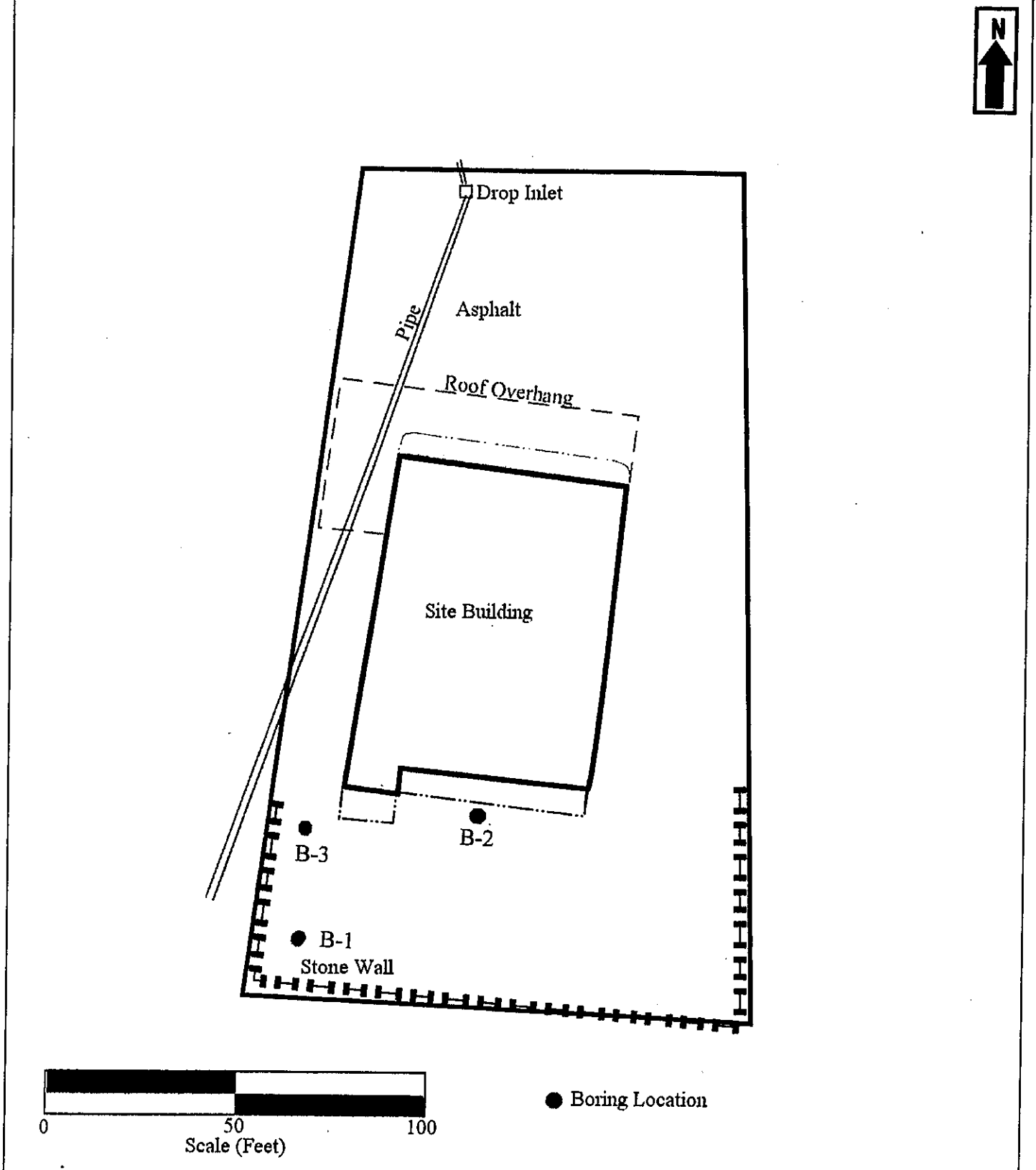

Figure 2: Site Plan

Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Georgia 30075

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Atlanta Environmental Consultants

Drawn By: Terri Drabek

Checked By: Peter Kallay, P.E.

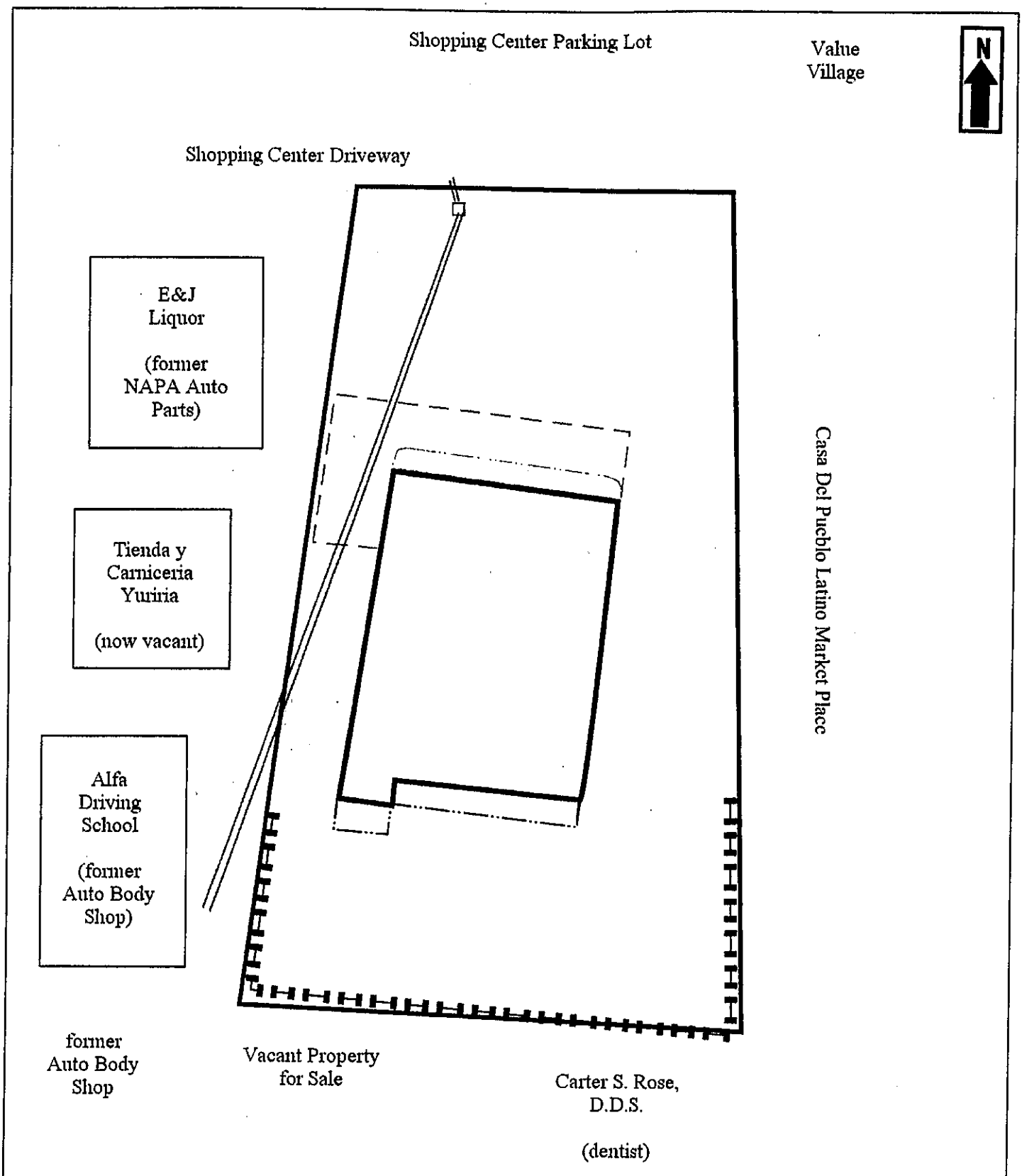


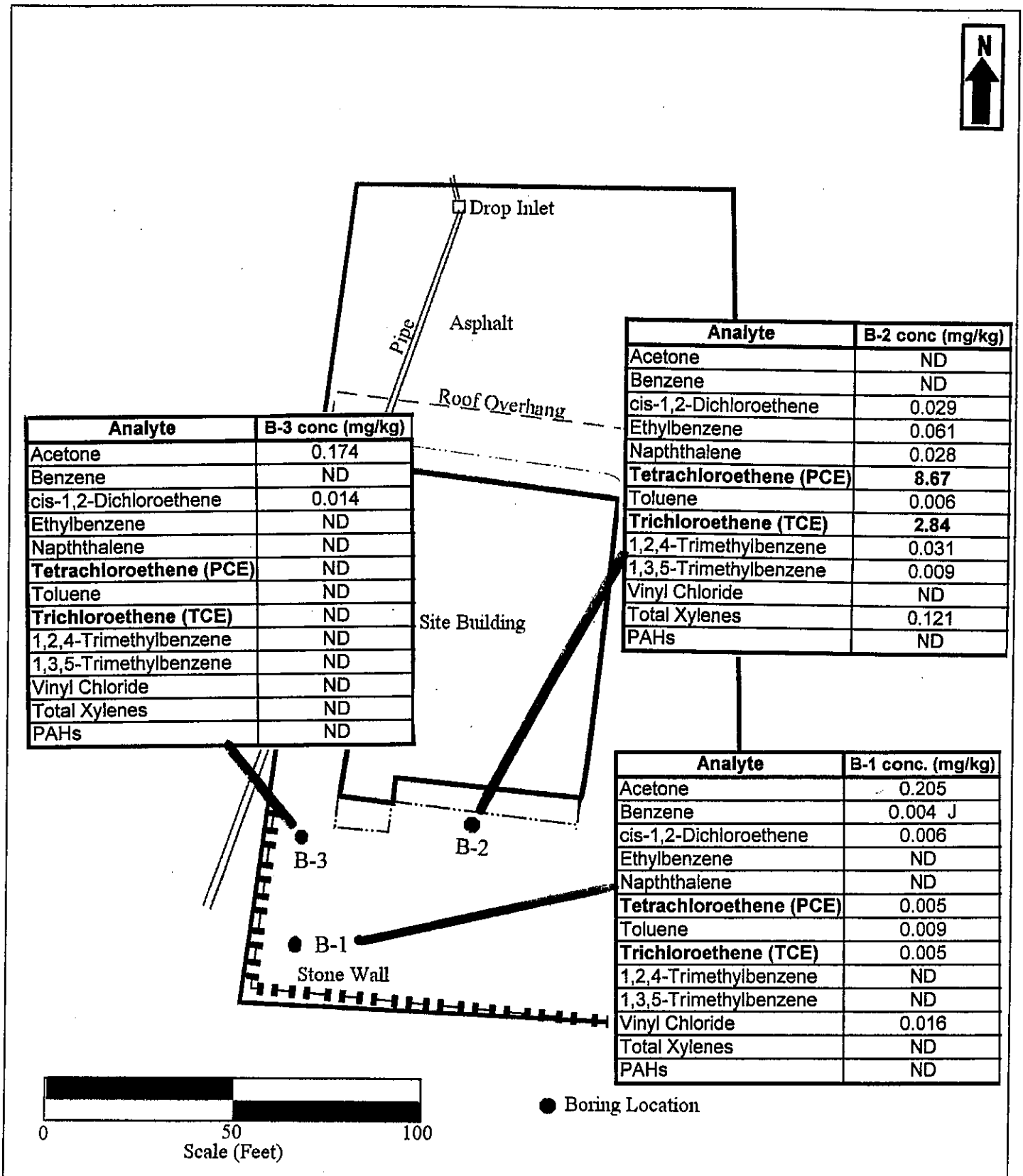
Figure 3: Site Area Plan

Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Georgia 30075

aec
Atlanta Environmental Consultants

Drawn By: Terri Drabek

Checked By: Peter Kallay, P.E.



Analyte	B-3 conc (mg/kg)
Acetone	0.174
Benzene	ND
cis-1,2-Dichloroethene	0.014
Ethylbenzene	ND
Napththalene	ND
Tetrachloroethene (PCE)	ND
Toluene	ND
Trichloroethene (TCE)	ND
1,2,4-Trimethylbenzene	ND
1,3,5-Trimethylbenzene	ND
Vinyl Chloride	ND
Total Xylenes	ND
PAHs	ND

Analyte	B-2 conc (mg/kg)
Acetone	ND
Benzene	ND
cis-1,2-Dichloroethene	0.029
Ethylbenzene	0.061
Napththalene	0.028
Tetrachloroethene (PCE)	**8.67**
Toluene	0.006
Trichloroethene (TCE)	**2.84**
1,2,4-Trimethylbenzene	0.031
1,3,5-Trimethylbenzene	0.009
Vinyl Chloride	ND
Total Xylenes	0.121
PAHs	ND

Analyte	B-1 conc. (mg/kg)
Acetone	0.205
Benzene	0.004 J
cis-1,2-Dichloroethene	0.006
Ethylbenzene	ND
Napththalene	ND
Tetrachloroethene (PCE)	0.005
Toluene	0.009
Trichloroethene (TCE)	0.005
1,2,4-Trimethylbenzene	ND
1,3,5-Trimethylbenzene	ND
Vinyl Chloride	0.016
Total Xylenes	ND
PAHs	ND

Figure 4. Soil Concentration Map
Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Georgia 30075

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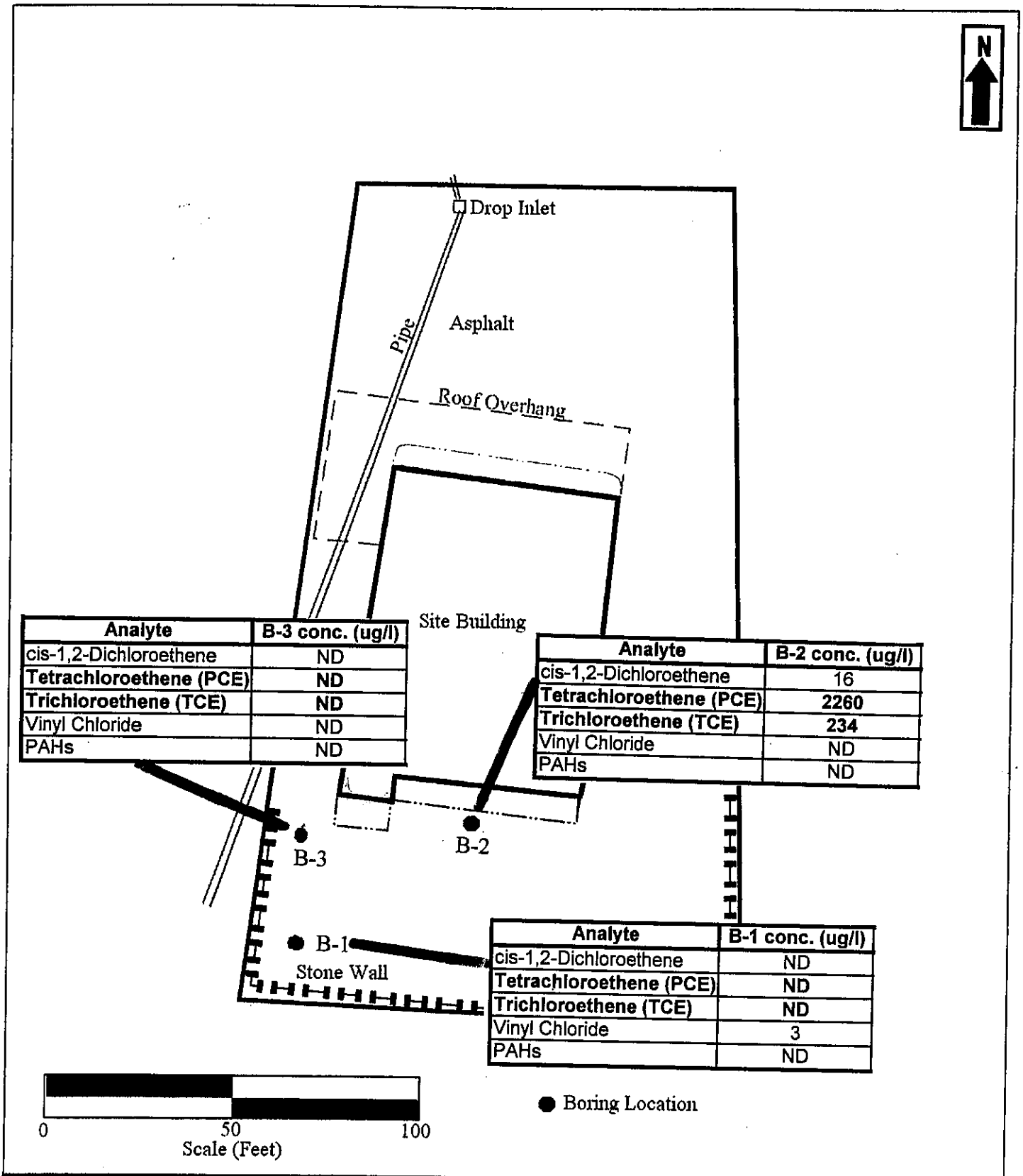
Atlanta Environmental Consultants

Drawn By: Terri Drabek
Checked By: Peter Kallay, P.E.



Analyte	B-3 conc. (ug/l)
cis-1,2-Dichloroethene	ND
Tetrachloroethene (PCE)	**ND**
Trichloroethene (TCE)	**ND**
Vinyl Chloride	ND
PAHs	ND

Analyte	B-2 conc. (ug/l)
cis-1,2-Dichloroethene	16
Tetrachloroethene (PCE)	**2260**
Trichloroethene (TCE)	**234**
Vinyl Chloride	ND
PAHs	ND

Analyte	B-1 conc. (ug/l)
cis-1,2-Dichloroethene	ND
Tetrachloroethene (PCE)	**ND**
Trichloroethene (TCE)	**ND**
Vinyl Chloride	3
PAHs	ND

Figure 5. Groundwater Concentration Map

Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Georgia 30075

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Atlanta Environmental Consultants

Drawn By: Terri Drabek

Checked By: Peter Kallay, P.E.

Table 1. Photo Ionization Detector (PID) Readings of Soil Samples
Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Fulton County, Georgia

Depth (feet bgs)	PID Reading (ppm)			Notes
	B-1	B-2	B-3	
5	0.0	32.3	0.3	Fill
10	0.0	*2009.	*1.8	Fill
15	*4.2	73.0	1.5	Native Soil
20	2.4	63.6	1.2	Native Soil
25	0.0	30.1	0.7	Native Soil
30	0.0	60.5	NS	Native Soil

NOTES:

bgs = Below ground surface
NS = Not Sampled
ppm = Parts per million
* Denotes Samples Selected for Laboratory Analysis

Table 2. Soil Analytical Results
Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Fulton County, Georgia

Analyte	Concentration (mg/kg)			Notification
	B-1	B-2	B-3	Concentrations
Depth of Sample >>>	15 ft bgs	10 ft bgs	10 ft bgs	
Acetone	0.205	ND	0.174	2.74
Benzene	0.004 J	ND	ND	0.02
cis-1,2-Dichloroethene	0.006	0.029	0.014	0.53 (1)
Ethylbenzene	ND	0.061	ND	20.00
Napththalene	ND	0.028	ND	100.00
Tetrachloroethene (PCE)	0.005	**8.67**	ND	0.18
Toluene	0.009	0.006	ND	14.40
Trichloroethene (TCE)	0.005	**2.84**	ND	0.13
1,2,4-Trimethylbenzene	ND	0.031	ND	*
1,3,5-Trimethylbenzene	ND	0.009	ND	*
Vinyl Chloride	0.016	ND	ND	0.04
Total Xylenes	ND	0.121	ND	20.00
PAHs	ND	ND	ND	5.00

NOTES:
Volatile Organic Compounds (VOC) analyzed by EPA Method 5035/8260B
Polynuclear Aromatic Hydrocarbons (PAH) analyzed by EPA Method 3550B/8270C
ND = Not Detected (Below Quantitation Limits)
PQL = Practical Quantitation Limits
ft bgs = feet below ground surface
(1) Standard is for total of cis-1,2-Dichloroethene and trans-1,2-Dichloroethene
Notification Concentrations as given in Appendix I, Georgia Hazardous Site Response Rules O.C.G.A. 391-3-19
Only compounds detected in at least one sample are listed, except for total PAHs
* No Notification Concentrations were identified for these compounds

Table 3. Groundwater Analytical Results
Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Fulton County, Georgia

Analyte	Concentration (ug/L)			Applicable
	B-1	B-2	B-3	Standards(ug/L)
				(1)
cis-1,2-Dichloroethene	ND	16	ND	70
Tetrachloroethene (PCE)	ND	**2,260**	ND	5
Trichloroethene (TCE)	ND	**234**	ND	5
Vinyl Chloride	**3**	ND	ND	2
PAHs	ND	ND	ND	*

NOTES:

Volatile Organic Compounds (VOC) analyzed by EPA Method 8260B
Polynuclear Aromatic Hydrocarbons (PAH) analyzed by EPA Method 3510B/8270C
ND = Not Detected (Below Quantitation Limits)
PQL = Practical Quantitation Limits
Only compunds detected in at least one sample are listed, except for total PAHs
(1) Standards given are for Federal Maximum Contaminant Levels (MCL)
* No groundwater standard is applicable to total PAHs

APPENDIX I

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Atlanta Environmental Consultants, LLC

Field Representative: Peter T Kallay, P.E.
Project #: REB-1060
Driller: Betts Environ. Recovery
Boring #: B-1
Date: 3-19-07
Crew: Sam Conner, Roscoe Pasc
Daniel Conrady

Depth From	Depth to	Soil Description and Remarks	Time	Type	First 6"	Sec 6"	Third 6"	Rec.	PID/ FID
0	0.25	Asphalt Pavement							
.25	1	Gravel FILL							
1	14	Red-brown clayey SILT with some mica, some bits of asphalt FILL low plasticity, damp, no odor increasing moisture content with depth. Increasing odor (slight) with depth.	9:40	SPT	1	2	2		0
10			9:50	SPT	1	1	2		0
15			10:00	SPT	3	3	4		4.
14	15	FILL;Native Soil Interface							
14	18	Brown clayey SILT with some sand more micaceous than fill. damp. no odor. low plasticity some vegetation and roots							
20	22	Grey clayey SILT, low plasticity moist. no odor.	10:10	SPT	1	1	2	2	2.4
25	27	Tan-brown, beige, black stratified sandy SILT, very micaceous, damp. no odor.	10:20	SPT	5	16	27		0
30		Same as above, but wet, saturated	10:25	SPT	7	10	9		0
		BORING TERMINATED AT 35 Ft							

Method: Hollow Stem Auger
Auger [X] Size 6 1/4 OD
Wash [ ] Size ____ OD
Core [ ] Size ____ OD
Casing Size: ____
UD Samples: ____
Water Loss: ____ Gallons

Weather: Clear, sunny, mild
Non Drilling Time ____
Water Level ____
Borehole Depth 35 feet
Date Completed 3-19-07

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Atlanta Environmental Consultants, LLC

Field Representative Peter T Kallay
Project # REB-1060
Driller Betts Environ. Recovery

Boring # B-2
Date 3-19-07
Crew Sam, Roscoe, Daniel

Depth From	Depth to	Soil Description and Remarks	Time	Type	First 6"	Sec 6"	Third 6"	Rec.	PID/ FID
0	.25	ASPHALT PAVEMENT							
.25	1	Gravel. FILL							
1	12	Red-brown clayey SILT with some sand, some mica. low plasticity							
5		FILL. Some dark grey to black clumps of soil mixed with red-brown soil around 10 ft deep damp. No odor near ground surface increasing odor with depth	1:00	SPT	2	4	4		32.3
10		odor was not recognizable.	1:15	SPT	2	6	6	2009.	
		FIL;Native soil interface at 12 feet							
15	17	Tan-brown, beige, and black stratified sandy SILT, very micaceous. damp. no odor.	1:25	SPT	4	9	10		73.
20	22	same as above, with a lot of mica damp. no odor	1:35	SPT	4	7	8		63.6
25	27	same as above, with a lot of mica damp. no odor.	1:50	SPT	21	72	50:1¼		30.1
30	32	as above, but very micaceous, and a more uniform golden brown color wet. no odor	2:10	SPT	7	16	20		60.5
		BORING TERMINATED AT 35 FEET							

Method: Hollow Stem Auger

Auger	X	Size 6 1/4	OD
Wash		Size	OD
Core		Size	OD

Casing Size:
UD Samples:
Water Loss: Gallons

Weather: Clear, sunny, mild
Non Drilling Time
Water Level
Borehole Depth 35 feet
Date Completed 3-19-07

aec

SOIL BORING LOG

Atlanta Environmental Consultants, LLC

Field Representative: Peter T Kallay
Project #: REB-1060
Driller: Betts Environ. Recovery
Boring #: B-3
Date: 3-19-07
Crew: Same, Roscoe, Daniel

Depth From	Depth to	Soil Description and Remarks	Time	Type	First 6"	Sec 6"	Third 6"	Rec.	PID/ FID
0	.25	Asphalt Pavement							
.25	1	Gravel, crushed rock. FILL							
1	10	Red-brown clayey SILT with some mica. FILL							
5		low plasticity. damp. no odor.	2:40	SPT	2	3	3		0.3
10	12	Grey-brown clayey SILT with some mica. damp. no odor.	2:50	SPT	1	2	6		1.8
15	17	same as above. damp. no odor.	2:55	SPT	2	4	6		1.5
20	22	Mostly red to reddish-brown and light grey silty CLAY. moist no odor. poor recovery	3:05	SPT	3	5	5		1.2
25	27	Light grey to tan silty CLAY highly plasctic. wet. no odor.	3:20	SPT	1	1	1		0.7
30	32	same as above. wet no odor							
		BORING TERMINATED AT 35 FEET							

Method: Hollow Stem Auger
Auger [X] Size 6 1/4 OD
Wash [ ] Size ____ OD
Core [ ] Size ____ OD
Casing Size:
UD Samples:
Water Loss: ____ Gallons

Weather: Clear, sunny, mild
Non Drilling Time:
Water Level:
Borehole Depth: 35 feet
Date Completed: 3-19-07

APPENDIX II

ACL

ADVANCED CHEMISTRY LABS, INC.

Phone: (770) 409-1444
Fax: (770) 409-1844
e-mail: acl@acl-labs.net

3039 Amwiler Road • Suite 100 • Atlanta, GA 30360
P.O. Box 88610 • Atlanta, GA 30356
www.advancedchemistrylabs.com

Laboratory Report

ACL Project #: **53026**

Client Proj #: REB-1060 / Roswell Cleaners

Prepared For:

Atlanta Environmental Consultants
255 Norcross St.
Suite B
Roswell, GA 30075-0000

Attention: Mr. Peter Kallay

Report Date: 03/28/2007

This report contains 15 pages.
(including this cover page and chain of custody)

John Andros
Technical Director

Advanced Chemistry Labs is a woman owned small business concern.

If you have any questions concerning this report, please do not hesitate to call us at (770) 409-1444.

ACL certifies that the following analytical results meet all the requirements of NELAC.

ACL is accredited by the National Environmental Laboratory Accreditation Program (NELAP).

ACL maintains the following certifications: NELAC (E87212), South Carolina (98009001), North Carolina (362), Florida (E87212), USDA Soil Import License (S-36503).

ACL

ADVANCED CHEMISTRY LABS, INC.

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e-mail: acl@acl-labs.net

3039 Amwiler Road, Suite 100, Atlanta, GA 30360
P. O. Box 88610, Atlanta, GA 30356

Data Qualifier Codes

Code	Description
A	Value reported is the mean of two or more determinations;
B	Indicates the analyte was detected in the sample and method blank;
BQL	Below practical quantitation limit;
DW	Results reported on a dry-weight basis (ex: mg/kg, dw),
E	Estimated value: (i) sample received or analyzed beyond the accepted holding time; (ii) sample received at improper container or temperature or with inappropriate preservative; (iii) the continuing calibration for an analyte did not meet qc criteria;
H	Estimated value; result higher than the highest calibration standard;
J	Reported value is between the method detection limit and the practical quantitation limit;
PQL	Practical quantitation limit;
TIC	Tentatively identified compound;
***	Not analyzed due to interferences;

Upon client request, a statement of the test result estimated uncertainty can be provided.

NOTE: Unless otherwise noted, all results are reported on an as received basis.

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P.O. Box 88610 • Atlanta, GA 30356
www.advancedchemistrylabs.com

Client: Atlanta Environmental Consultants
255 Norcross St.
Suite B
Roswell, GA 30075-0000

Contact: Mr. Peter Kallay

Client Proj #: REB-1060 / Roswell Cleaners
ACL Project #: 53026
Date Received: 03/20/2007
Date Reported: 03/28/2007

Volatile Organics (5035/8260B)

Sample ID: B-1

Matrix: Soil
Date Sampled: 03/19/2007
Date Extracted: 03/19/2007
Date Analyzed: 03/20/2007

ACL Sample #: 253829 **Units:** mg/kg **Analyst:** ME

Analyte	Result	PQL	Analyte	Result	PQL
Acetone	0.205	0.100	trans-1,2-Dichloroethene	BQL	0.005
Acrolein	BQL	0.050	1,2-Dichloropropane	BQL	0.005
Acrylonitrile	BQL	0.050	1,3-Dichloropropane	BQL	0.005
Benzene	0.004 J	0.005	2,2-Dichloropropane	BQL	0.005
Bromobenzene	BQL	0.005	1,1-Dichloropropene	BQL	0.005
Bromochloromethane	BQL	0.005	cis-1,3-Dichloropropene	BQL	0.005
Bromodichloromethane	BQL	0.005	trans-1,3-Dichloropropene	BQL	0.005
Bromoform	BQL	0.005	Ethylbenzene	BQL	0.005
Bromomethane	BQL	0.010	Hexachlorobutadiene	BQL	0.005
2-Butanone	BQL	0.100	2-Hexanone	BQL	0.050
n-Butylbenzene	BQL	0.005	Isopropylbenzene	BQL	0.005
sec-Butylbenzene	BQL	0.005	p-Isopropyltoluene	BQL	0.005
tert-Butylbenzene	BQL	0.005	4-Methyl-2-pentanone	BQL	0.050
Carbon disulfide	BQL	0.005	Methylene chloride	BQL	0.005
Carbon tetrachloride	BQL	0.005	Naphthalene	BQL	0.005
Chlorobenzene	BQL	0.005	n-Propylbenzene	BQL	0.005
Chloroethane	BQL	0.010	Styrene	BQL	0.005
2-Chloroethylvinyl ether	BQL	0.010	1,1,1,2-Tetrachloroethane	BQL	0.005
Chloroform	BQL	0.005	1,1,2,2-Tetrachloroethane	BQL	0.005
Chloromethane	BQL	0.010	Tetrachloroethene	0.005	0.005
2-Chlorotoluene	BQL	0.005	Toluene	0.009	0.005
4-Chlorotoluene	BQL	0.005	1,2,3-Trichlorobenzene	BQL	0.005
1,2-Dibromo-3-chloropropane	BQL	0.005	1,2,4-Trichlorobenzene	BQL	0.005
Dibromochloromethane	BQL	0.005	1,1,1-Trichloroethane	BQL	0.005
1,2-Dibromoethane	BQL	0.005	1,1,2-Trichloroethane	BQL	0.005
Dibromomethane	BQL	0.005	Trichloroethene	0.005	0.005
1,2-Dichlorobenzene	BQL	0.005	Trichlorofluoromethane	BQL	0.005
1,3-Dichlorobenzene	BQL	0.005	1,2,3-Trichloropropane	BQL	0.005
1,4-Dichlorobenzene	BQL	0.005	1,2,4-Trimethylbenzene	BQL	0.005
Dichlorodifluoromethane	BQL	0.010	1,3,5-Trimethylbenzene	BQL	0.005
1,1-Dichloroethane	BQL	0.005	Vinyl acetate	BQL	0.050
1,2-Dichloroethane	BQL	0.005	Vinyl chloride	0.016	0.010
1,1-Dichloroethene	BQL	0.005	m & p-Xylenes	BQL	0.010
cis-1,2-Dichloroethene	0.006	0.005	o-Xylene	BQL	0.005

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P.O. Box 88610 • Atlanta, GA 30356
www.advancedchemistrylabs.com

Client: Atlanta Environmental Consultants
255 Norcross St.
Suite B
Roswell, GA 30075-0000

Contact: Mr. Peter Kallay

Client Proj #: REB-1060 / Roswell Cleaners
ACL Project #: 53026
Date Received: 03/20/2007
Date Reported: 03/28/2007

Polynuclear Aromatic Hydrocarbons (3550B/8270C)

Sample ID: B-1

Matrix: Soil
Date Sampled: 03/19/2007
Date Extracted: 03/21/2007
Date Analyzed: 03/21/2007
Analyst: RB

ACL Sample #: 253829 **Units:** mg/kg

Analyte	Result	PQL
Acenaphthene	BQL	0.33
Acenaphthylene	BQL	0.33
Anthracene	BQL	0.33
Benzo(a)anthracene	BQL	0.33
Benzo(a)pyrene	BQL	0.33
Benzo(b)fluoranthene	BQL	0.33
Benzo(g,h,i)perylene	BQL	0.33
Benzo(k)fluoranthene	BQL	0.33
Chrysene	BQL	0.33
Dibenz(a,h)anthracene	BQL	0.33
Fluoranthene	BQL	0.33
Fluorene	BQL	0.33
Indeno(1,2,3-cd)pyrene	BQL	0.33
2-Methylnaphthalene	BQL	0.33
Naphthalene	BQL	0.33
Phenanthrene	BQL	0.33
Pyrene	BQL	0.33

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Client: Atlanta Environmental Consultants
255 Norcross St.
Suite B
Roswell, GA 30075-0000

Contact: Mr. Peter Kallay

Client Proj #: REB-1060 / Roswell Cleaners
ACL Project #: 53026
Date Received: 03/20/2007
Date Reported: 03/28/2007

Volatile Organics (8260B)

Sample ID: B-1 (Water)

ACL Sample #: 253830 **Units:** µg/L

Matrix: Water
Date Sampled: 03/19/2007
Date Extracted:
Date Analyzed: 03/23/2007
Analyst: ME

Analyte	Result	PQL	Analyte	Result	PQL
Acetone	BQL	100	trans-1,2-Dichloroethene	BQL	5
Acrolein	BQL	50	1,2-Dichloropropane	BQL	5
Acrylonitrile	BQL	50	1,3-Dichloropropane	BQL	5
Benzene	BQL	5	2,2-Dichloropropane	BQL	5
Bromobenzene	BQL	5	1,1-Dichloropropene	BQL	5
Bromochloromethane	BQL	5	cis-1,3-Dichloropropene	BQL	5
Bromodichloromethane	BQL	5	trans-1,3-Dichloropropene	BQL	5
Bromoform	BQL	5	Ethylbenzene	BQL	5
Bromomethane	BQL	10	Hexachlorobutadiene	BQL	5
2-Butanone	BQL	100	2-Hexanone	BQL	50
n-Butylbenzene	BQL	5	Isopropylbenzene	BQL	5
sec-Butylbenzene	BQL	5	p-Isopropyltoluene	BQL	5
tert-Butylbenzene	BQL	5	4-Methyl-2-pentanone	BQL	50
Carbon disulfide	BQL	5	Methylene chloride	BQL	5
Carbon tetrachloride	BQL	5	Naphthalene	BQL	5
Chlorobenzene	BQL	5	n-Propylbenzene	BQL	5
Chloroethane	BQL	10	Styrene	BQL	5
2-Chloroethylvinyl ether	BQL	10	1,1,1,2-Tetrachloroethane	BQL	5
Chloroform	BQL	5	1,1,2,2-Tetrachloroethane	BQL	5
Chloromethane	BQL	10	Tetrachloroethene	BQL	5
2-Chlorotoluene	BQL	5	Toluene	BQL	5
4-Chlorotoluene	BQL	5	1,2,3-Trichlorobenzene	BQL	5
1,2-Dibromo-3-chloropropane	BQL	5	1,2,4-Trichlorobenzene	BQL	5
Dibromochloromethane	BQL	5	1,1,1-Trichloroethane	BQL	5
1,2-Dibromoethane	BQL	5	1,1,2-Trichloroethane	BQL	5
Dibromomethane	BQL	5	Trichloroethene	BQL	5
1,2-Dichlorobenzene	BQL	5	Trichlorofluoromethane	BQL	5
1,3-Dichlorobenzene	BQL	5	1,2,3-Trichloropropane	BQL	5
1,4-Dichlorobenzene	BQL	5	1,2,4-Trimethylbenzene	BQL	5
Dichlorodifluoromethane	BQL	10	1,3,5-Trimethylbenzene	BQL	5
1,1-Dichloroethane	BQL	5	Vinyl acetate	BQL	50
1,2-Dichloroethane	BQL	5	Vinyl chloride	3	2
1,1-Dichloroethene	BQL	5	m & p-Xylenes	BQL	10
cis-1,2-Dichloroethene	BQL	5	o-Xylene	BQL	5

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Client: Atlanta Environmental Consultants
255 Norcross St.
Suite B
Roswell, GA 30075-0000

Contact: Mr. Peter Kallay

Client Proj #: REB-1060 / Roswell Cleaners
ACL Project #: 53026
Date Received: 03/20/2007
Date Reported: 03/28/2007

Polynuclear Aromatic Hydrocarbons (3510C/8270C)

Sample ID: B-1 (Water)

Matrix: Water
Date Sampled: 03/19/2007
Date Extracted: 03/26/2007
Date Analyzed: 03/26/2007
Analyst: RB

ACL Sample #: 253830 **Units:** µg/L

Analyte	Result	PQL
Acenaphthene	BQL	10
Acenaphthylene	BQL	10
Anthracene	BQL	10
Benzo(a)anthracene	BQL	10
Benzo(a)pyrene	BQL	10
Benzo(b)fluoranthene	BQL	10
Benzo(g,h,i)perylene	BQL	10
Benzo(k)fluoranthene	BQL	10
Chrysene	BQL	10
Dibenz(a,h)anthracene	BQL	10
Fluoranthene	BQL	10
Fluorene	BQL	10
Indeno(1,2,3-cd)pyrene	BQL	10
2-Methylnaphthalene	BQL	10
Naphthalene	BQL	10
Phenanthrene	BQL	10
Pyrene	BQL	10

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Contact: Mr. Peter Kallay

Client Proj #: REB-1060 / Roswell Cleaners
ACL Project #: 53026
Date Received: 03/20/2007
Date Reported: 03/28/2007

Volatile Organics (5035/8260B)

Sample ID: B-2

Matrix: Soil
Date Sampled: 03/19/2007
Date Extracted: 03/19/2007
Date Analyzed: 03/20/2007

ACL Sample #: 253831 **Units:** mg/kg **Analyst:** ME

Analyte	Result	PQL	Analyte	Result	PQL
Acetone	BQL	0.100	trans-1,2-Dichloroethene	BQL	0.005
Acrolein	BQL	0.050	1,2-Dichloropropane	BQL	0.005
Acrylonitrile	BQL	0.050	1,3-Dichloropropane	BQL	0.005
Benzene	BQL	0.005	2,2-Dichloropropane	BQL	0.005
Bromobenzene	BQL	0.005	1,1-Dichloropropene	BQL	0.005
Bromochloromethane	BQL	0.005	cis-1,3-Dichloropropene	BQL	0.005
Bromodichloromethane	BQL	0.005	trans-1,3-Dichloropropene	BQL	0.005
Bromoform	BQL	0.005	Ethylbenzene	0.061	0.005
Bromomethane	BQL	0.010	Hexachlorobutadiene	BQL	0.005
2-Butanone	BQL	0.100	2-Hexanone	BQL	0.050
n-Butylbenzene	BQL	0.005	Isopropylbenzene	BQL	0.005
sec-Butylbenzene	BQL	0.005	p-Isopropyltoluene	BQL	0.005
tert-Butylbenzene	BQL	0.005	4-Methyl-2-pentanone	BQL	0.050
Carbon disulfide	BQL	0.005	Methylene chloride	BQL	0.005
Carbon tetrachloride	BQL	0.005	Naphthalene	0.028	0.005
Chlorobenzene	BQL	0.005	n-Propylbenzene	BQL	0.005
Chloroethane	BQL	0.010	Styrene	BQL	0.005
2-Chloroethylvinyl ether	BQL	0.010	1,1,1,2-Tetrachloroethane	BQL	0.005
Chloroform	BQL	0.005	1,1,2,2-Tetrachloroethane	BQL	0.005
Chloromethane	BQL	0.010	Tetrachloroethene	8.67	0.500
2-Chlorotoluene	BQL	0.005	Toluene	0.006	0.005
4-Chlorotoluene	BQL	0.005	1,2,3-Trichlorobenzene	BQL	0.005
1,2-Dibromo-3-chloropropane	BQL	0.005	1,2,4-Trichlorobenzene	BQL	0.005
Dibromochloromethane	BQL	0.005	1,1,1-Trichloroethane	BQL	0.005
1,2-Dibromoethane	BQL	0.005	1,1,2-Trichloroethane	BQL	0.005
Dibromomethane	BQL	0.005	Trichloroethene	2.84	0.500
1,2-Dichlorobenzene	BQL	0.005	Trichlorofluoromethane	BQL	0.005
1,3-Dichlorobenzene	BQL	0.005	1,2,3-Trichloropropane	BQL	0.005
1,4-Dichlorobenzene	BQL	0.005	1,2,4-Trimethylbenzene	0.031	0.005
Dichlorodifluoromethane	BQL	0.010	1,3,5-Trimethylbenzene	0.009	0.005
1,1-Dichloroethane	BQL	0.005	Vinyl acetate	BQL	0.050
1,2-Dichloroethane	BQL	0.005	Vinyl chloride	BQL	0.010
1,1-Dichloroethene	BQL	0.005	m & p-Xylenes	0.070	0.010
cis-1,2-Dichloroethene	0.029	0.005	o-Xylene	0.051	0.005

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Contact: Mr. Peter Kallay

Client Proj #: REB-1060 / Roswell Cleaners
ACL Project #: 53026
Date Received: 03/20/2007
Date Reported: 03/28/2007

Polynuclear Aromatic Hydrocarbons (3550B/8270C)

Sample ID: B-2

Matrix: Soil
Date Sampled: 03/19/2007
Date Extracted: 03/21/2007
Date Analyzed: 03/21/2007
Analyst: RB

ACL Sample #: 253831 **Units:** mg/kg

Analyte	Result	PQL
Acenaphthene	BQL	0.33
Acenaphthylene	BQL	0.33
Anthracene	BQL	0.33
Benzo(a)anthracene	BQL	0.33
Benzo(a)pyrene	BQL	0.33
Benzo(b)fluoranthene	BQL	0.33
Benzo(g,h,i)perylene	BQL	0.33
Benzo(k)fluoranthene	BQL	0.33
Chrysene	BQL	0.33
Dibenz(a,h)anthracene	BQL	0.33
Fluoranthene	BQL	0.33
Fluorene	BQL	0.33
Indeno(1,2,3-cd)pyrene	BQL	0.33
2-Methylnaphthalene	BQL	0.33
Naphthalene	BQL	0.33
Phenanthrene	BQL	0.33
Pyrene	BQL	0.33

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Contact: Mr. Peter Kallay

Client Proj #: REB-1060 / Roswell Cleaners
ACL Project #: 53026
Date Received: 03/20/2007
Date Reported: 03/28/2007

Volatile Organics (8260B)

Sample ID: B-2 (Water)

Matrix: Water
Date Sampled: 03/19/2007
Date Extracted:
Date Analyzed: 03/23/2007
Analyst: ME

ACL Sample #: 253832 **Units:** µg/L

Analyte	Result	PQL	Analyte	Result	PQL
Acetone	BQL	100	trans-1,2-Dichloroethene	BQL	5
Acrolein	BQL	50	1,2-Dichloropropane	BQL	5
Acrylonitrile	BQL	50	1,3-Dichloropropane	BQL	5
Benzene	BQL	5	2,2-Dichloropropane	BQL	5
Bromobenzene	BQL	5	1,1-Dichloropropene	BQL	5
Bromochloromethane	BQL	5	cis-1,3-Dichloropropene	BQL	5
Bromodichloromethane	BQL	5	trans-1,3-Dichloropropene	BQL	5
Bromoform	BQL	5	Ethylbenzene	BQL	5
Bromomethane	BQL	10	Hexachlorobutadiene	BQL	5
2-Butanone	BQL	100	2-Hexanone	BQL	50
n-Butylbenzene	BQL	5	Isopropylbenzene	BQL	5
sec-Butylbenzene	BQL	5	p-Isopropyltoluene	BQL	5
tert-Butylbenzene	BQL	5	4-Methyl-2-pentanone	BQL	50
Carbon disulfide	BQL	5	Methylene chloride	BQL	5
Carbon tetrachloride	BQL	5	Naphthalene	BQL	5
Chlorobenzene	BQL	5	n-Propylbenzene	BQL	5
Chloroethane	BQL	10	Styrene	BQL	5
2-Chloroethylvinyl ether	BQL	10	1,1,1,2-Tetrachloroethane	BQL	5
Chloroform	BQL	5	1,1,2,2-Tetrachloroethane	BQL	5
Chloromethane	BQL	10	Tetrachloroethene	2260	50
2-Chlorotoluene	BQL	5	Toluene	BQL	5
4-Chlorotoluene	BQL	5	1,2,3-Trichlorobenzene	BQL	5
1,2-Dibromo-3-chloropropane	BQL	5	1,2,4-Trichlorobenzene	BQL	5
Dibromochloromethane	BQL	5	1,1,1-Trichloroethane	BQL	5
1,2-Dibromoethane	BQL	5	1,1,2-Trichloroethane	BQL	5
Dibromomethane	BQL	5	Trichloroethene	234	50
1,2-Dichlorobenzene	BQL	5	Trichlorofluoromethane	BQL	5
1,3-Dichlorobenzene	BQL	5	1,2,3-Trichloropropane	BQL	5
1,4-Dichlorobenzene	BQL	5	1,2,4-Trimethylbenzene	BQL	5
Dichlorodifluoromethane	BQL	10	1,3,5-Trimethylbenzene	BQL	5
1,1-Dichloroethane	BQL	5	Vinyl acetate	BQL	50
1,2-Dichloroethane	BQL	5	Vinyl chloride	BQL	2
1,1-Dichloroethene	BQL	5	m & p-Xylenes	BQL	10
cis-1,2-Dichloroethene	16	5	o-Xylene	BQL	5

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Contact: Mr. Peter Kallay

Client Proj #: REB-1060 / Roswell Cleaners
ACL Project #: 53026
Date Received: 03/20/2007
Date Reported: 03/28/2007

Polynuclear Aromatic Hydrocarbons (3510C/8270C)

Sample ID: B-2 (Water)

Matrix: Water
Date Sampled: 03/19/2007
Date Extracted: 03/26/2007
Date Analyzed: 03/26/2007
Analyst: RB

ACL Sample #: 253832 **Units:** µg/L

Analyte	Result	PQL
Acenaphthene	BQL	10
Acenaphthylene	BQL	10
Anthracene	BQL	10
Benzo(a)anthracene	BQL	10
Benzo(a)pyrene	BQL	10
Benzo(b)fluoranthene	BQL	10
Benzo(g,h,i)perylene	BQL	10
Benzo(k)fluoranthene	BQL	10
Chrysene	BQL	10
Dibenz(a,h)anthracene	BQL	10
Fluoranthene	BQL	10
Fluorene	BQL	10
Indeno(1,2,3-cd)pyrene	BQL	10
2-Methylnaphthalene	BQL	10
Naphthalene	BQL	10
Phenanthrene	BQL	10
Pyrene	BQL	10

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Client Proj #: REB-1060 / Roswell Cleaners
ACL Project #: 53026
Date Received: 03/20/2007
Date Reported: 03/28/2007

Volatile Organics (5035/8260B)

Sample ID: B-3

Matrix: Soil
Date Sampled: 03/19/2007
Date Extracted: 03/19/2007
Date Analyzed: 03/20/2007

ACL Sample #: 253833 **Units:** mg/kg **Analyst:** ME

Analyte	Result	PQL	Analyte	Result	PQL
Acetone	0.174	0.100	trans-1,2-Dichloroethene	BQL	0.005
Acrolein	BQL	0.050	1,2-Dichloropropane	BQL	0.005
Acrylonitrile	BQL	0.050	1,3-Dichloropropane	BQL	0.005
Benzene	BQL	0.005	2,2-Dichloropropane	BQL	0.005
Bromobenzene	BQL	0.005	1,1-Dichloropropene	BQL	0.005
Bromochloromethane	BQL	0.005	cis-1,3-Dichloropropene	BQL	0.005
Bromodichloromethane	BQL	0.005	trans-1,3-Dichloropropene	BQL	0.005
Bromoform	BQL	0.005	Ethylbenzene	BQL	0.005
Bromomethane	BQL	0.010	Hexachlorobutadiene	BQL	0.005
2-Butanone	BQL	0.100	2-Hexanone	BQL	0.050
n-Butylbenzene	BQL	0.005	Isopropylbenzene	BQL	0.005
sec-Butylbenzene	BQL	0.005	p-Isopropyltoluene	BQL	0.005
tert-Butylbenzene	BQL	0.005	4-Methyl-2-pentanone	BQL	0.050
Carbon disulfide	BQL	0.005	Methylene chloride	BQL	0.005
Carbon tetrachloride	BQL	0.005	Naphthalene	BQL	0.005
Chlorobenzene	BQL	0.005	n-Propylbenzene	BQL	0.005
Chloroethane	BQL	0.010	Styrene	BQL	0.005
2-Chloroethylvinyl ether	BQL	0.010	1,1,1,2-Tetrachloroethane	BQL	0.005
Chloroform	BQL	0.005	1,1,2,2-Tetrachloroethane	BQL	0.005
Chloromethane	BQL	0.010	Tetrachloroethene	BQL	0.005
2-Chlorotoluene	BQL	0.005	Toluene	BQL	0.005
4-Chlorotoluene	BQL	0.005	1,2,3-Trichlorobenzene	BQL	0.005
1,2-Dibromo-3-chloropropane	BQL	0.005	1,2,4-Trichlorobenzene	BQL	0.005
Dibromochloromethane	BQL	0.005	1,1,1-Trichloroethane	BQL	0.005
1,2-Dibromoethane	BQL	0.005	1,1,2-Trichloroethane	BQL	0.005
Dibromomethane	BQL	0.005	Trichloroethene	BQL	0.005
1,2-Dichlorobenzene	BQL	0.005	Trichlorofluoromethane	BQL	0.005
1,3-Dichlorobenzene	BQL	0.005	1,2,3-Trichloropropane	BQL	0.005
1,4-Dichlorobenzene	BQL	0.005	1,2,4-Trimethylbenzene	BQL	0.005
Dichlorodifluoromethane	BQL	0.010	1,3,5-Trimethylbenzene	BQL	0.005
1,1-Dichloroethane	BQL	0.005	Vinyl acetate	BQL	0.050
1,2-Dichloroethane	BQL	0.005	Vinyl chloride	BQL	0.010
1,1-Dichloroethene	BQL	0.005	m & p-Xylenes	BQL	0.010
cis-1,2-Dichloroethene	0.014	0.005	o-Xylene	BQL	0.005

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Contact: Mr. Peter Kallay

Client Proj #: REB-1060 / Roswell Cleaners
ACL Project #: 53026
Date Received: 03/20/2007
Date Reported: 03/28/2007

Polynuclear Aromatic Hydrocarbons (3550B/8270C)

Sample ID: B-3

Matrix: Soil
Date Sampled: 03/19/2007
Date Extracted: 03/21/2007
Date Analyzed: 03/21/2007

ACL Sample #: 253833 **Units:** mg/kg **Analyst:** RB

Analyte	Result	PQL
Acenaphthene	BQL	0.33
Acenaphthylene	BQL	0.33
Anthracene	BQL	0.33
Benzo(a)anthracene	BQL	0.33
Benzo(a)pyrene	BQL	0.33
Benzo(b)fluoranthene	BQL	0.33
Benzo(g,h,i)perylene	BQL	0.33
Benzo(k)fluoranthene	BQL	0.33
Chrysene	BQL	0.33
Dibenz(a,h)anthracene	BQL	0.33
Fluoranthene	BQL	0.33
Fluorene	BQL	0.33
Indeno(1,2,3-cd)pyrene	BQL	0.33
2-Methylnaphthalene	BQL	0.33
Naphthalene	BQL	0.33
Phenanthrene	BQL	0.33
Pyrene	BQL	0.33

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Client Proj #: REB-1060 / Roswell Cleaners
ACL Project #: 53026
Date Received: 03/20/2007
Date Reported: 03/28/2007

Volatile Organics (8260B)

Sample ID: B-3 (Water)

Matrix: Water
Date Sampled: 03/19/2007
Date Extracted:
Date Analyzed: 03/23/2007

ACL Sample #: 253834 **Units:** µg/L **Analyst:** ME

Analyte	Result	PQL	Analyte	Result	PQL
Acetone	BQL	100	trans-1,2-Dichloroethene	BQL	5
Acrolein	BQL	50	1,2-Dichloropropane	BQL	5
Acrylonitrile	BQL	50	1,3-Dichloropropane	BQL	5
Benzene	BQL	5	2,2-Dichloropropane	BQL	5
Bromobenzene	BQL	5	1,1-Dichloropropene	BQL	5
Bromochloromethane	BQL	5	cis-1,3-Dichloropropene	BQL	5
Bromodichloromethane	BQL	5	trans-1,3-Dichloropropene	BQL	5
Bromoform	BQL	5	Ethylbenzene	BQL	5
Bromomethane	BQL	10	Hexachlorobutadiene	BQL	5
2-Butanone	BQL	100	2-Hexanone	BQL	50
n-Butylbenzene	BQL	5	Isopropylbenzene	BQL	5
sec-Butylbenzene	BQL	5	p-Isopropyltoluene	BQL	5
tert-Butylbenzene	BQL	5	4-Methyl-2-pentanone	BQL	50
Carbon disulfide	BQL	5	Methylene chloride	BQL	5
Carbon tetrachloride	BQL	5	Naphthalene	BQL	5
Chlorobenzene	BQL	5	n-Propylbenzene	BQL	5
Chloroethane	BQL	10	Styrene	BQL	5
2-Chloroethylvinyl ether	BQL	10	1,1,1,2-Tetrachloroethane	BQL	5
Chloroform	BQL	5	1,1,2,2-Tetrachloroethane	BQL	5
Chloromethane	BQL	10	Tetrachloroethene	BQL	5
2-Chlorotoluene	BQL	5	Toluene	BQL	5
4-Chlorotoluene	BQL	5	1,2,3-Trichlorobenzene	BQL	5
1,2-Dibromo-3-chloropropane	BQL	5	1,2,4-Trichlorobenzene	BQL	5
Dibromochloromethane	BQL	5	1,1,1-Trichloroethane	BQL	5
1,2-Dibromoethane	BQL	5	1,1,2-Trichloroethane	BQL	5
Dibromomethane	BQL	5	Trichloroethene	BQL	5
1,2-Dichlorobenzene	BQL	5	Trichlorofluoromethane	BQL	5
1,3-Dichlorobenzene	BQL	5	1,2,3-Trichloropropane	BQL	5
1,4-Dichlorobenzene	BQL	5	1,2,4-Trimethylbenzene	BQL	5
Dichlorodifluoromethane	BQL	10	1,3,5-Trimethylbenzene	BQL	5
1,1-Dichloroethane	BQL	5	Vinyl acetate	BQL	50
1,2-Dichloroethane	BQL	5	Vinyl chloride	BQL	2
1,1-Dichloroethene	BQL	5	m & p-Xylenes	BQL	10
cis-1,2-Dichloroethene	BQL	5	o-Xylene	BQL	5

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Contact: Mr. Peter Kallay

Client Proj #: REB-1060 / Roswell Cleaners
ACL Project #: 53026
Date Received: 03/20/2007
Date Reported: 03/28/2007

Polynuclear Aromatic Hydrocarbons (3510C/8270C)

Sample ID: B-3 (Water)

Matrix: Water
Date Sampled: 03/19/2007
Date Extracted: 03/26/2007
Date Analyzed: 03/26/2007
Analyst: RB

ACL Sample #: 253834 **Units:** µg/L

Analyte	Result	PQL
Acenaphthene	BQL	10
Acenaphthylene	BQL	10
Anthracene	BQL	10
Benzo(a)anthracene	BQL	10
Benzo(a)pyrene	BQL	10
Benzo(b)fluoranthene	BQL	10
Benzo(g,h,i)perylene	BQL	10
Benzo(k)fluoranthene	BQL	10
Chrysene	BQL	10
Dibenz(a,h)anthracene	BQL	10
Fluoranthene	BQL	10
Fluorene	BQL	10
Indeno(1,2,3-cd)pyrene	BQL	10
2-Methylnaphthalene	BQL	10
Naphthalene	BQL	10
Phenanthrene	BQL	10
Pyrene	BQL	10

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CHAIN-OF CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: Atlanta Environmental Consultants
Phone #: 770-594-9073
Fax #: 770-594-9093

Company Address: 255 Norcross St Roswell, GA 30075
Site Location: Roswell Cleaners

Project Manager: Peter T. Kelley
Client Project: (#) REB-1060
(Name) Roswell cleaners

I attest that the proper field sampling procedures were used during the collection of these samples.
Sampler Name (Print): Peter T. Kelley

Field Sample ID	# Container	Matrix: Water	Soil	Air	Sludge	Product	Other	Method Preserved: HCl	HNO_3	H_2SO_4	Ice	None	Other	Sampling: Date	Time	8260 Full List	PAHs	Remarks
B-1 15'			✓											3/19	11:30	✓	✓	
B-1		✓												3/19	12:30	✓	✓	
B-2 10'			✓											3/19	2:25	✓	✓	
B-2		✓												3/19	3:30	✓	✓	
B-3 10'			✓											3/19	4:20	✓	✓	
B-3		✓												3/19	4:45	✓	✓	

Special Detection Limits

Remarks:

TAT: Priority (24 hr) ☐ Rush (48 hr) ☐ Rush (72 hr) ☐ Normal ☑

Special Handling: ACL Contact ____ Quote # ____ P. O. ____

QA/QC Level: Level 1 ☐ Level 2 ☐ Other ☐ ____

Special Reporting Requirements: Fax ☑

Lab Use Only: ACL Project #: 53026

Cooler Temp.: 3 °C

CUSTODY RECORD

	Date	Time	
Relinquished by Sampler:	03/29/07	8:29	Received by:
Relinquished by :	Date	Time	Received by:
Relinquished by :	3/20/07	8:29	Received by Laboratory: Waybill # Co-Bartholomew

APPENDIX B

HSRA
NOTIFICATION

RELEASE NOTIFICATION FORM

HAZARDOUS SITES RESPONSE PROGRAM
GEORGIA ENVIRONMENTAL PROTECTION DIVISION
(Please type or print legibly)

1. The information provided in this form is for:

[X] Initial Release Notification
[ ] Supplemental Notification

PART I -- PROPERTY INFORMATION

2	EPA ID NUMBER (if applicable)	GAD981269095				
3	Tax Map and Parcel ID Number:	Fulton County District 1: 12-1902-0412-061-6				
4	Site or Facility Name	Roswell Cleaners & Coin Laundry				
5	Site Street Address	1013 Alpharetta Street				
6	Site City	Roswell	County	Fulton	Zip	30075
7	Property Owner	Richard E. Bowen				
8	Property Owner Mailing Address	811 Serramonte Drive				
9	Property Owner City	Marietta	State	GA	Zip	30068
10	Property Owner Telephone No.	(770) 565-1924				
11	Site Contact Person	Richard E. Bowen	Title	Property Owner		
12	Company Name	None				
13	Site Contact Mailing Address	811 Serramonte Drive				
14	Site Contact City	Marietta	State	GA	Zip	30068
15	Site Contact Telephone No.	(770) 565-1924				
16	Facility Operator	William (Billy) J. Gunn	Title	Owner		
17	Company Name	Roswell Cleaners & Coin Laundry				
18	Facility Operator Mailing Address	1013 Alpharetta Street				
19	Facility Operator City	Roswell	State	GA	Zip	30075
20	Facility Operator Telephone No.	(770) 993-9999				

21. CERTIFICATION --I certify under penalty of law that I am the owner of the real property described in this Release Notification and I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Richard E. Bowen — NAME (Please type or print)

Property Owner — TITLE

SIGNATURE

DATE

Revised 5/4/00

PART II -- RELEASE INFORMATION

Please provide the following information for EACH release at the site. If additional space is needed to answer any of the following questions, attach additional pages, as necessary.

1. Source of this release (i.e., drums, tanks, spills, wastepile etc.). Provide specific information on the suspected or known source of the release, including the source of this information:

Tetrachloroethene (PCE) and Trichloroethene (TCE) are widely used as solvents, degreasers, and dry cleaning fluids. The site has a dry cleaners, and immediately adjacent property on the west side of the Subject Property has had a machine shop and an auto body shop. The source of this release has not been determined.

2. Release dates(s) and any known information about the history of the release, including the physical state of the material (solid, powder/ash, liquid/gas, sludge) and the quantity of material released (lbs, cubic yards, etc.):

No release is known to have ever been reported on the Subject Property or on nearby neighboring properties. No information regarding a date of release is available. PCE and TCE were identified adsorbed to soils and dissolved in groundwater. Information regarding history of the release is not available.

3. Describe those actions that have been taken to investigate, clean up or otherwise remediate this release (e.g., removal of source of contamination; soil or water sampling performed; and monitoring wells installed and sampled).

PCE and TCE were investigated and identified during the course of a Phase II Environmental Site Assessment. Three soil borings and temporary water wells were installed onsite, sampled, and then abandoned.

4. Access to the area affected by the release. Check the appropriate box:

[ ] Inaccessible: A 24-hour surveillance system, or a completely closed barrier or fence to prevent entry.
[ ] Limited Access: Less than 24-hour surveillance system, and/or a barrier or fence that is partially open.
[X] Unlimited Access: No surveillance, and no barrier or fence.

If the site is inaccessible or has limited access, then describe site surveillance systems, fences, security personnel or other barriers that would restrict access to the release.

N/A

5. For soil releases, indicate the type of material covering this release, by checking the appropriate box below.

[X] A permanent or otherwise maintained, essentially impenetrable non-earthen material such as concrete or asphalt
[ ] An engineered and maintained earthen material or compacted fill or a high density synthetic material
[ ] Loose earthen fill or native soil
[ ] No cover
[ ] Other

Describe the type and thickness of the material covering the contaminated soil or wastes.

The area is asphalt paved. Approximately three-inch-thick asphalt overlies the area. Maintenance is performed from time to time to maintain the integrity of the pavement cover.

PART II -- RELEASE INFORMATION

(Continued)

6. **Indicate the approximate distance from the edge of the area affected by the release to the nearest residence, playground, day care, school or nursing home.**

[ ] Less than 300 feet
[X] 301 to 1000 feet
[ ] 1001 to 3000 feet
[ ] 3001 to 5280 feet
[ ] Greater than 1 mile

Provide the name and address of the nearest residence, playground, day care, school or nursing home.

Name: Lawrence E. and Patricia M. Hutto

Address: 1065 Green St., Roswell, Fulton County, Georgia 30075

7. **Indicate the distance between the area affected by the release and the nearest drinking water well (including wells located on the site).**

[ ] Less than 0.5 miles
[ ] 0.5 to 1 mile
[X] 1 to 2 miles
[ ] 2 to 3 miles
[ ] Greater than 3 miles

Provide the name of the property owner and address of the location of the closest drinking water well.

Name: J. S. Robinson

Addres J. S. Robinson, 400 Grimes Bridge Road, Roswell, Georgia 30075
Latitude: 34° 00' 55" N Longitude: 84° 20' 15"

8. **Is there any evidence to suspect that a person or a sensitive environment has been exposed to this release?**

[ ] Yes [X] No

If yes, provide details on the potentially affected humans or sensitive environments.

N/A

REQUIRED ATTACHMENTS

9. **SITE SUMARY**

A. Attach a summary (no longer than one page) that gives a general description of the property, the areas affected by the release both within and beyond the property boundaries, and any actions taken to investigate, clean up or otherwise remediate the property. The summary shall include a description of the property boundaries of the site and adjacent properties as well as a detailed description of the nature and known or estimated extent of the area of contamination. Describe any additional relevant information concerning the nature of the release. In addition to the one page summary, other information concerning the property may also be attached.

B. Attach a site map that shows known or suspected sources as well as the locations of all samples collected at the site. The site map should include outlines of buildings as well as covered ground areas (e.g., parking lots or other paved areas). A legend should be provided to explain any symbols used on the map.

10. **U.S.G.S. Topographic Map**

Along with this form, you MUST submit an original U.S.G.S. topographical map (1:24000) with the geographic center of the site clearly marked. See instructions for information on how to obtain an original of the map on which your site is located.

PART III -- SOIL RELEASE INFORMATION

Please provide the following information for EACH regulated substance released to the soil at the site and submit the laboratory analytical sheets for all samples analyzed from the site. Use additional sheets if necessary.

Regulated Substance	CAS Number	Highest Concentration Detected Between 0-6 Inches	Highest Concentration Detected Between 6-24 Inches	Highest Concentration Detected Greater Then 24 Inches
Acetone	67641			0.205 mg/kg
Benzene	71432			0.004 J
cis-1,2-Dichloroethene	25323302			0.029
Ethylbenzene	100414			0.061
Napththalene	91203			0.028
Tetrachloroethene (PCE)	127184			8.67
Toluene	108883			0.009
Trichloroethene (TCE)	79016			2.84
Vinyl Chloride	75014			0.016
Total Xylenes	1330207			0.121

Specify Units for Concentrations

PART IV -- GROUNDWATER RELEASE INFORMATION

Please provide the following information for EACH regulated substance released to the groundwater at the site and submit the laboratory analytical sheets for all samples analyzed from the site. Use additional sheets if necessary.

Regulated Substance	CAS Number	Highest Detected Concentration (Specify Units)	Sample Depth Below Ground Surface (Feet)
cis-1,2-Dichloroethene	25323302	16 ug/L	25
Tetrachloroethene (PCE)	127184	2,260	25
Trichloroethene (TCE)	79016	234	25
Vinyl Chloride	75014	3	25

9. SITE SUMMARY

The site is an approximately 0.657 acre commercial property located adjacent to the Value Village/ Roswell Plaza shopping center. The site has one single-story building of slab-on-grade construction on it. The building is the location of Roswell Cleaners and Coin Laundry. Roswell Cleaners and Coin Laundry has been at this location since 1966

A commercial building located on adjacent property to the west was formerly the location of an automotive machine shop associated with NAPA Auto Parts and an Auto Body Shop. Both of these businesses were located only a few feet from the property line with the Subject Property. Both of these businesses, as well as Roswell Cleaners and Coin Laundry, are potential sources of TCE and PCE, each of which are widely used industrial compounds commonly used as solvents, degreasers, and dry cleaning fluids.

In order to investigate the potential presence of these compounds onsite, three soil borings were advanced at locations potentially down-gradient of these three current and former potential sources. Soil samples were field-screened with a photo-ionization detector (PID); the soil sample exhibiting the highest PID reading in each boring, above the water table, was submitted for laboratory analysis. The borings were advanced a number of feet below the water table; a temporary well was completed, developed, and sampled. Groundwater samples were submitted to a qualified analytical laboratory for analysis.

PCE and TCE concentrations exceeding Georgia Notification Concentrations (NC) were identified in soils onsite, 10 feet deep, at 8.67 milligrams per kilogram (mg/kg) and 2.84 mg/kg, respectively, exceeding NC of 0.18 mg/kg and 0.13 mg/kg, respectively. PCE and TCE were identified in groundwater onsite at 2,260. micrograms per liter (ug/L) and 234 ug/L, respectively.

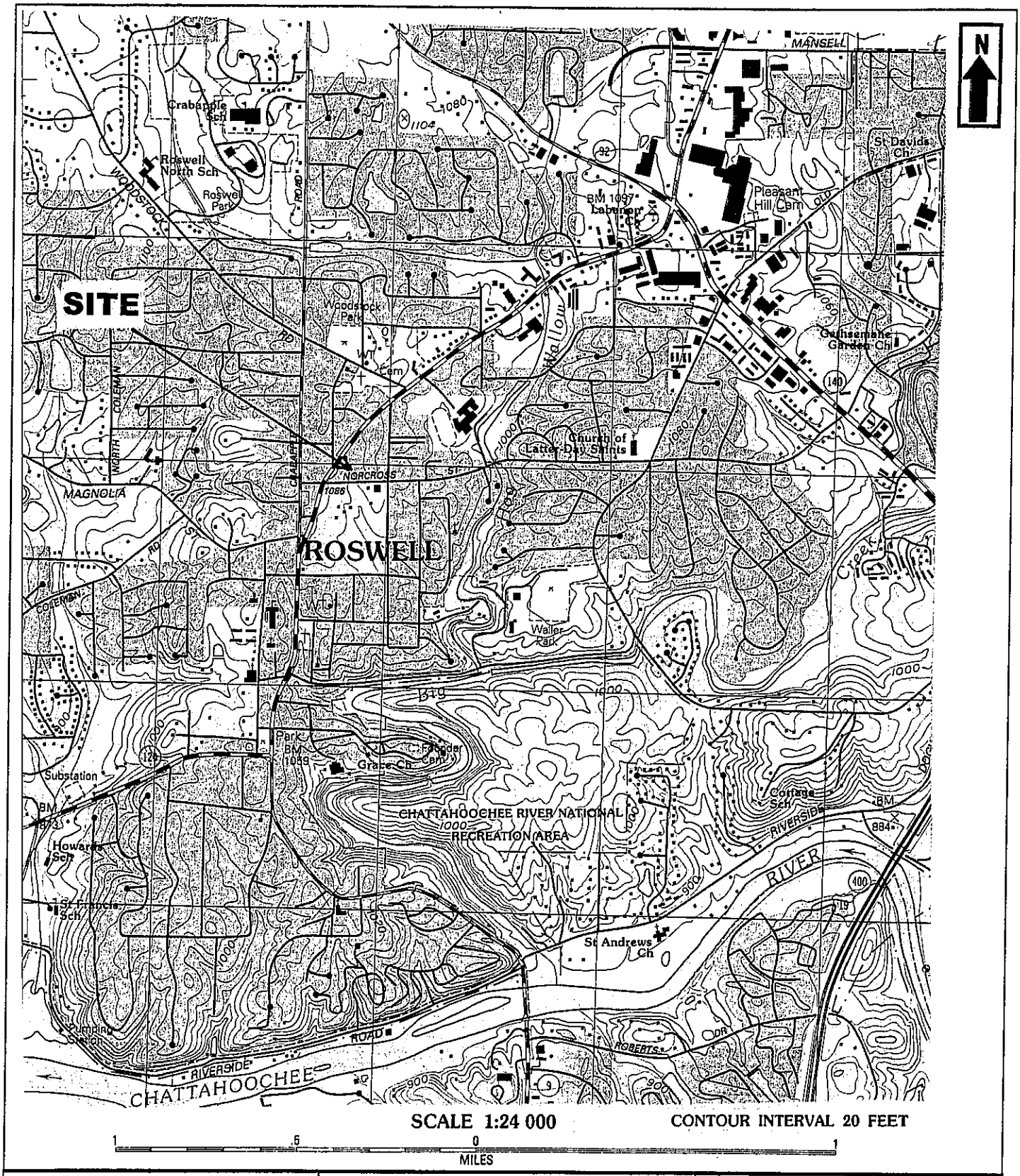

Figure 1: Site Location Map

Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Georgia 30075

aec
Atlanta Environmental Consultants

Drawn By: Terri Drabek

Checked By: Peter Kallay, P.E.

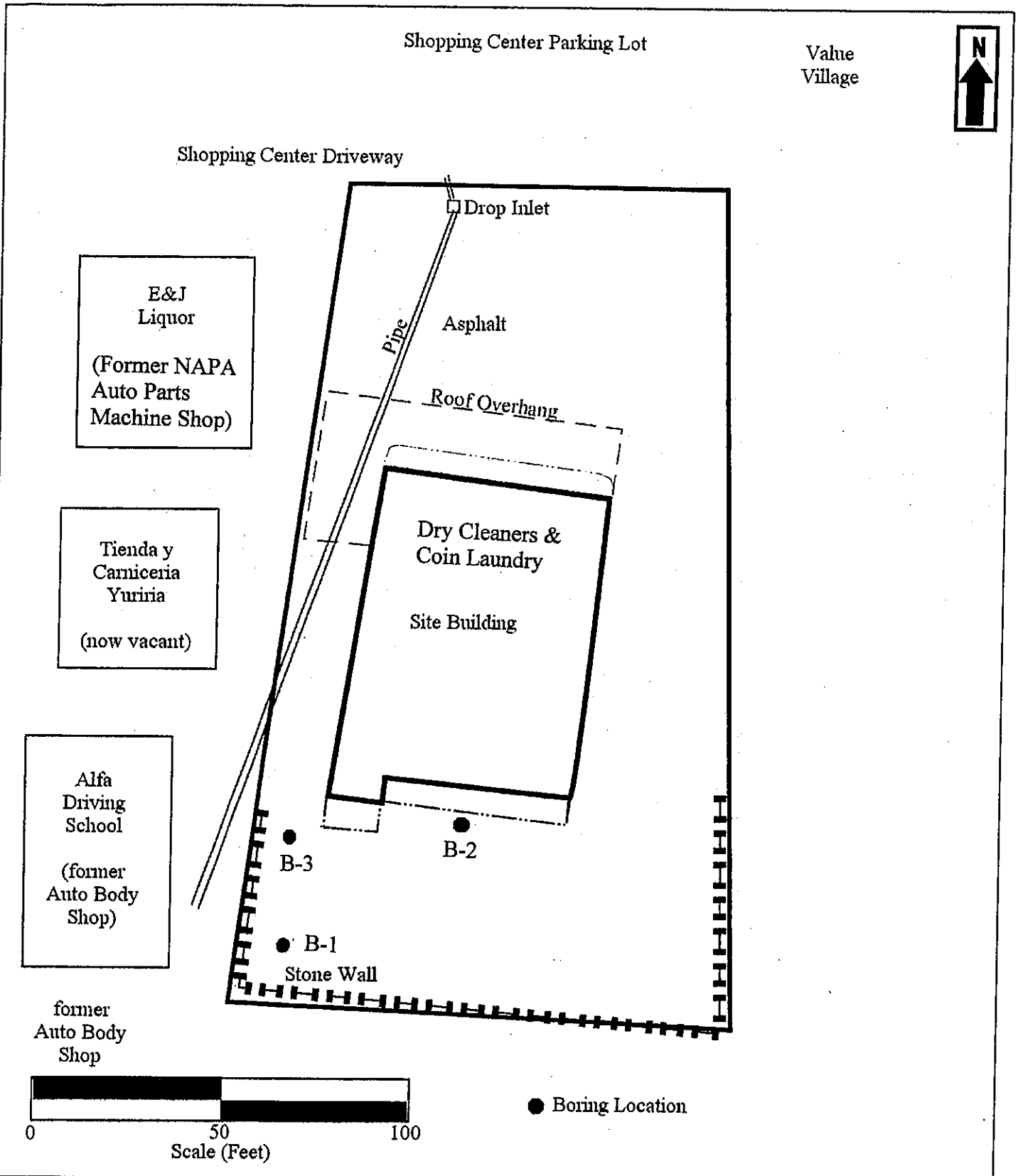

Figure 2: Site Plan

Roswell Cleaners and Coin Laundry
1013 Alpharetta Street
Roswell, Georgia 30075

aec
Atlanta Environmental Consultants

Drawn By: Terri Drabek

Checked By: Peter Kallay, P.E.

ATTACHMENT I

ROSWELL AREA WATER WELL SURVEY

Ground-water Site Inventory for Georgia

Times for Georgia stations are shown as Eastern Standard Time. If your clock is set to Eastern Daylight Savings Time, add one hour to the time shown on the Web page to compare to your clock time.

Additional information may be found on the USGS Water Resources of Georgia page, including low-flow statistics and flood-frequency information for selected stations.

NEW! If you would like to stay informed about USGS activities in Georgia, including publication releases, gage shutdown notifications, and other general USGS news, sign up for Georgia Water Science Center E-mail Notices.

Site Description Information -- 6 sites match criteria

Site type = Spring, Ground Water

lat_long_bounding_box =

Position	Latitude	Longitude
Corner 1	34.07581	84.40914
Corner 2	33.97585	84.30918

Coordinates are entered as Decimal Degrees. DMS values are converted to Decimal degrees using NAD83 as the datum. Make your bounding box bigger if you are using NAD27 Datum for your DMS values

Agency	Site Number	Site Name	Latitude	Longitude	Dec. Lat.	Dec. Lon	Coor meth.	Coor accr.	lat/long datum	Dec. lat/long datum	District	State	County	Country	Land net	Location
USGS	340334084185601	11GG15	34°03'34"	84°18'56"	34.05954320	-84.31547970	M	F	NAD27	NAD83	13	13	121	US		ROSWELL
USGS	340336084185601	11GG16	34°03'36"	84°18'56"	34.06009877	-84.31547970	M	F	NAD27	NAD83	13	13	121	US		NORTHMI
USGS	340343084184201	11GG17	34°03'43"	84°18'42"	34.06204317	-84.31159060	M	F	NAD27	NAD83	13	13	121	US		ROSWELL
USGS	340345084184501	11GG13	34°03'45"	84°18'45"	34.06259870	-84.31242400	M	F	NAD27	NAD83	13	13	121	US		ROSWELL
USGS	340351084185901	11GG14	34°03'51"	84°18'59"	34.06426535	-84.31631300	M	F	NAD27	NAD83	13	13	121	US		ROSWELL
USGS	340352084193601	11GG18	34°03'52"	84°19'36"	34.06454315	-84.32659120	M	F	NAD27	NAD83	13	13	121	US		ROSWELL

Questions about sites/data?
Feedback on this web site
Top
Explanation of terms

Ground-water Site Inventory -- 6 sites found
http://waterdata.usgs.gov/ga/nwis/gwsi?

Retrieved on 2007-05-02 11:47:24 EDT

Water Resources

National Water Information System: Web Interface

Data Category: Ground Water | Geographic Area: Georgia | GO

Times for Georgia stations are shown as Eastern Standard Time. If your clock is set to Eastern Daylight Savings Time, add one hour to the time shown on the Web page to compare to your clock time.

Additional information may be found on the USGS Water Resources of Georgia page, including low-flow statistics and flood-frequency information for selected stations.

NEW! If you would like to stay informed about USGS activities in Georgia, including publication releases, gage shutdown notifications, and other general USGS news, sign up for Georgia Water Science Center E-mail Notices.

USGS 340336084185601 11GG16

Available data for this site | Site home page | GO

Ground Water Site

LOCATION

Latitude 34°03'36", Longitude 84°18'56" NAD27
Fulton County, Georgia , Hydrologic Unit 03130001

DESCRIPTION

Well depth: 600 feet
Hole depth: 600 feet
Land surface altitude: 1,040 feet above sea level NGVD29.

AVAILABLE DATA:

*****There are no data available online for this site.*****
Contact the state office (below) to inquire about the availability of other data for this site.

OPERATION:

Record for this site is maintained by the USGS Georgia Water Science Center
Email questions about this site to Georgia NWISWeb Data Inquiries

Water Resources

National Water Information System: Web Interface

Data Category: Ground Water | Geographic Area: Georgia | GO

Times for Georgia stations are shown as Eastern Standard Time. If your clock is set to Eastern Daylight Savings Time, add one hour to the time shown on the Web page to compare to your clock time.

Additional information may be found on the USGS Water Resources of Georgia page, including low-flow statistics and flood-frequency information for selected stations.

NEW! If you would like to stay informed about USGS activities in Georgia, including publication releases, gage shutdown notifications, and other general USGS news, sign up for Georgia Water Science Center E-mail Notices.

USGS 340343084184201 11GG17

Available data for this site | Site home page | GO

Ground Water Site

LOCATION

Latitude 34°03'43", Longitude 84°18'42" NAD27
Fulton County, Georgia , Hydrologic Unit 03130001

DESCRIPTION

Well depth: 505 feet
Hole depth: 505 feet
Land surface altitude: 1,060 feet above sea level NGVD29.

AVAILABLE DATA:

*****There are no data available online for this site.*****
Contact the state office (below) to inquire about the availability of other data for this site.

OPERATION:

Record for this site is maintained by the USGS Georgia Water Science Center
Email questions about this site to Georgia NWISWeb Data Inquiries

Times for Georgia stations are shown as Eastern Standard Time. If your clock is set to Eastern Daylight Savings Time, add one hour to the time shown on the Web page to compare to your clock time.

Additional information may be found on the USGS Water Resources of Georgia page, including low-flow statistics and flood-frequency information for selected stations.

NEW! If you would like to stay informed about USGS activities in Georgia, including publication releases, gage shutdown notifications, and other general USGS news, sign up for Georgia Water Science Center E-mail Notices.

USGS 340352084193601 11GG18

Available data for this site | Site home page | GO

Ground Water Site

LOCATION

Latitude 34°03'52", Longitude 84°19'36" NAD27
Fulton County, Georgia , Hydrologic Unit 03130001

DESCRIPTION

Well depth: 300 feet
Hole depth: 300 feet
Land surface altitude: 1,100 feet above sea level NGVD29.

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field ground-water-level measurements	1988-05-30	1988-05-30	1

OPERATION:

Record for this site is maintained by the USGS Georgia Water Science Center
Email questions about this site to Georgia NWISWeb Data Inquiries

Contact USGS

Message Sent

Thank you. Your message has been mailed. You can expect to hear from us within 2 business days. We answer more than 80 percent of incoming messages within 1 business day. If you send us any additional correspondence on this matter, please include the identifier GSFZKHZX in your message.

If you are using a filter to block unwanted email ("spam"), please set it to allow messages from *usgs.gov*.

Message from: Peter T Kallay, P.E.
Reply will be sent to: AtlantaEnviro@cs.com

Subject:
http://waterdata.usgs.gov/ga/nwis/gwsi/?site_no=340334084185601
Message: Please send me the following information required for a Georgia Hazardous Site Response Act (HSRA)Notification regarding the following wells:

Site Name, street address or other location information
Owner Name, Address, Telephone Number (or other available contact information)
Purpose or use of well
Is the well currently in use or being maintained?
Date well was constructed

WELLS
340345084184501 11GG13
340351084185901 11GG14
340334084185601 11GG15
340336084185601 11GG16
340343084184201 11GG17
340352084193601 11GG18

Please do not hesitate to ciontact me should you have any questions.

Peter T Kallay, P.E.
phone: 770-594-9073
fax: 770-594-9093
e-mail: AtlantaEnviro@cs.com
340

Looking at your message, we see some links to USGS categories that might be helpful immediately:

hazards
roadways
streamflow
surface water quality
water quality
wells
Georgia

How this feature works

Ground-water Site Inventory for Georgia

Times for Georgia stations are shown as Eastern Standard Time. If your clock is set to Eastern Daylight Savings Time, add one hour to the time shown on the Web page to compare to your clock time.

Additional information may be found on the USGS Water Resources of Georgia page, including low-flow statistics and flood-frequency information for selected stations.

NEW! If you would like to stay informed about USGS activities in Georgia, including publication releases, gage shutdown notifications, and other general USGS news, sign up for Georgia Water Science Center E-mail Notices.

Site Selection Results -- 6 sites found

Site type = Spring, Ground Water

lat_long_bounding_box =

Position	Latitude	Longitude
Corner 1	34.07581	84.40914
Corner 2	33.97585	84.30918

Coordinates are entered as Decimal Degrees. DMS values are converted to Decimal degrees using NAD83 as the datum. Make your bounding box bigger if you are using NAD27 Datum for your DMS values

Save file of selected sites to local disk for future upload

Data for individual sites can be obtained by selecting the site number below

Agency	Site Number	Site Name
USGS	340345084184501	11GG13
USGS	340351084185901	11GG14
USGS	340332084185601	11GG15
USGS	340336084185601	11GG16
USGS	340343084184201	11GG17
USGS	340352084193601	11GG18

Water Resources

National Water Information System: Web Interface

Data Category: Ground Water | Geographic Area: Georgia | GO

Times for Georgia stations are shown as Eastern Standard Time. If your clock is set to Eastern Daylight Savings Time, add one hour to the time shown on the Web page to compare to your clock time.

Additional information may be found on the USGS Water Resources of Georgia page, including low-flow statistics and flood-frequency information for selected stations.

NEW! If you would like to stay informed about USGS activities in Georgia, including publication releases, gage shutdown notifications, and other general USGS news, sign up for Georgia Water Science Center E-mail Notices.

USGS 340334084185601 11GG15

Available data for this site | Site home page | GO

Ground Water Site

LOCATION

Latitude 34°03'34", Longitude 84°18'56" NAD27
Fulton County, Georgia , Hydrologic Unit 03130001

DESCRIPTION

Well depth: 600 feet
Hole depth: 600 feet
Land surface altitude: 1,040 feet above sea level NGVD29.
Well completed in "Piedmont and Blue Ridge crystalline-rock aquifers" (N400PDMBRX) national aquifer.
Well completed in "CRYSTALLINE ROCK AQUIFER" (320CRSL) local aquifer

AVAILABLE DATA:

*****There are no data available online for this site.*****

Contact the state office (below) to inquire about the availability of other data for this site.

OPERATION:

Record for this site is maintained by the USGS Georgia Water Science Center
Email questions about this site to Georgia NWISWeb Data Inquiries

Water Resources

National Water Information System: Web Interface

Data Category: Ground Water | Geographic Area: Georgia | GO

Times for Georgia stations are shown as Eastern Standard Time. If your clock is set to Eastern Daylight Savings Time, add one hour to the time shown on the Web page to compare to your clock time.

Additional information may be found on the USGS Water Resources of Georgia page, including low-flow statistics and flood-frequency information for selected stations.

NEW! If you would like to stay informed about USGS activities in Georgia, including publication releases, gage shutdown notifications, and other general USGS news, sign up for Georgia Water Science Center E-mail Notices.

USGS 340351084185901 11GG14

Available data for this site | Site home page | GO

Ground Water Site

LOCATION

Latitude 34°03'51", Longitude 84°18'59" NAD27
Fulton County, Georgia , Hydrologic Unit 03130001

DESCRIPTION

Well depth: 300 feet
Hole depth: 300 feet
Land surface altitude: 1,075 feet above sea level NGVD29.
Well completed in "Piedmont and Blue Ridge crystalline-rock aquifers" (N400PDMBRX) national aquifer.
Well completed in "CRYSTALLINE ROCK AQUIFER" (320CRSL) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field ground-water-level measurements	1988-05-30	1988-05-30	1

OPERATION:

Record for this site is maintained by the USGS Georgia Water Science Center
Email questions about this site to Georgia NWISWeb Data Inquiries

Water Resources

National Water Information System: Web Interface

Data Category: Ground Water | Geographic Area: Georgia | GO

Times for Georgia stations are shown as Eastern Standard Time. If your clock is set to Eastern Daylight Savings Time, add one hour to the time shown on the Web page to compare to your clock time.

Additional information may be found on the USGS Water Resources of Georgia page, including low-flow statistics and flood-frequency information for selected stations.

NEW! If you would like to stay informed about USGS activities in Georgia, including publication releases, gage shutdown notifications, and other general USGS news, sign up for Georgia Water Science Center E-mail Notices.

USGS 340345084184501 11GG13

Available data for this site | Site home page | GO

Ground Water Site

LOCATION

Latitude 34°03'45", Longitude 84°18'45" NAD27
Fulton County, Georgia , Hydrologic Unit 03130001

DESCRIPTION

Well depth: 505 feet
Hole depth: 505 feet
Land surface altitude: 1,057 feet above sea level NGVD29.
Well completed in "Piedmont and Blue Ridge crystalline-rock aquifers" (N400PDMBRX) national aquifer.
Well completed in "CRYSTALLINE ROCK AQUIFER" (320CRSL) local aquifer

AVAILABLE DATA:

*****There are no data available online for this site.*****

Contact the state office (below) to inquire about the availability of other data for this site.

OPERATION:

Record for this site is maintained by the USGS Georgia Water Science Center
Email questions about this site to Georgia NWISWeb Data Inquiries

Water Resources

National Water Information System: Web Interface

Data Category: Ground Water | Geographic Area: Georgia | GO

Times for Georgia stations are shown as Eastern Standard Time. If your clock is set to Eastern Daylight Savings Time, add one hour to the time shown on the Web page to compare to your clock time.

Additional information may be found on the USGS Water Resources of Georgia page, including low-flow statistics and flood-frequency information for selected stations.

NEW! If you would like to stay informed about USGS activities in Georgia, including publication releases, gage shutdown notifications, and other general USGS news, sign up for Georgia Water Science Center E-mail Notices.

Search Results -- No sites found

No sites were found for ground-water site inventory data using your search criteria.

The sites you requested may be available offline. For more information, contact Georgia NWISWeb Data Inquiries .

Site type = Spring, Ground Water

lat_long_bounding_box =

Position	Latitude	Longitude
Corner 1	34.04249	84.37582
Corner 2	34.00917	84.34250

Coordinates are entered as Decimal Degrees. DMS values are converted to Decimal degrees using NAD83 as the datum. Make your bounding box bigger if you are using NAD27 Datum for your DMS values

Use the "Back" button on your browser to change your search criteria.

Return To Previous Page

(1) FULTON - PUBLIC WATER

File View Go Bookmarks Tools Help

http://www.gaepd.org/Files_PDF/regcomm/wpb/webpws.txt

Getting Started Latest Headlines MsgAttachment MsgAttachment eValuator Report The Al Franken Show ...

FRANKLIN	GA1190002	FRANKLIN SPRINGS	COMMUNITY	GROUNDWATER
FRANKLIN	GA1190003	LAVONIA	COMMUNITY	SURFACE WATER
FRANKLIN	GA1190004	ROYSTON	COMMUNITY	SURFACE WATER
FRANKLIN	GA1190008	DNR-VICTORIA BRYANT STATE PARK	TRANSIENT NON-COMMUNITY	GROUNDWATER
FRANKLIN	GA1190039	LEATHERWOOD FISH LODGE	TRANSIENT NON-COMMUNITY	GROUNDWATER
FRANKLIN	GA1190048	SUNSET CAMPGROUND	TRANSIENT NON-COMMUNITY	GROUNDWATER
FRANKLIN	GA1190051	FRANKLIN COUNTY WATER SYSTEM	COMMUNITY	PURCHASED SURFACE WATER
FRANKLIN	GA1190052	NAILS CREEK CROSSING	COMMUNITY	GROUNDWATER
FRANKLIN	GA1190053	PARADICE POINT SUBDIVISION	COMMUNITY	GROUNDWATER
FULTON	GA1210000	ALPHARETTA	COMMUNITY	PURCHASED SURFACE WATER
FULTON	GA1210001	ATLANTA	COMMUNITY	SURFACE WATER
FULTON	GA1210002	COLLEGE PARK	COMMUNITY	PURCHASED SURFACE WATER
FULTON	GA1210003	EAST POINT	COMMUNITY	SURFACE WATER
FULTON	GA1210004	FAIRBURN	COMMUNITY	PURCHASED SURFACE WATER
FULTON	GA1210005	NORTH FULTON COUNTY	COMMUNITY	PURCHASED SURFACE WATER
FULTON	GA1210006	HAPEVILLE	COMMUNITY	PURCHASED SURFACE WATER
FULTON	GA1210007	MOUNTAIN PARK	COMMUNITY	PURCHASED SURFACE WATER
FULTON	GA1210008	PALMETTO	COMMUNITY	SURFACE WATER
FULTON	GA1210009	ROSWELL	COMMUNITY	SURFACE WATER
FULTON	GA1210010	UNION CITY	COMMUNITY	PURCHASED SURFACE WATER
FULTON	GA1210020	CHESTNUT HILL ACADEMY	NON-TRANSIENT NON-COMMUNITY	GROUNDWATER
FULTON	GA1210037	PROVIDENCE PARK	TRANSIENT NON-COMMUNITY	GROUNDWATER
FULTON	GA1210038	ATLANTA-FULTON WATER RES COMM	COMMUNITY	SURFACE WATER
FULTON	GA1210040	PAPPY RED'S BBQ #2	TRANSIENT NON-COMMUNITY	GROUNDWATER
GILMER	GA1230000	ELLIJAY-GILMER CO. WATER AUTH.	COMMUNITY	SURFACE WATER
GILMER	GA1230001	OAKLAND ELEMENTARY SCHOOL	NON-TRANSIENT NON-COMMUNITY	GROUNDWATER
GILMER	GA1230004	WALNUT MOUNTAIN SUBDIVISION	COMMUNITY	SURFACE WATER
GILMER	GA1230017	GILMER CO BD OF ED-CHERRY LOG	NON-TRANSIENT NON-COMMUNITY	GROUNDWATER
GILMER	GA1230022	USCE-CARTERS LK-HARRIS BRANCH	TRANSIENT NON-COMMUNITY	GROUNDWATER
GILMER	GA1230034	USCE RIDGEWAY CAMPGROUND HP	TRANSIENT NON-COMMUNITY	GROUNDWATER
GILMER	GA1230035	USCE WOODRING PRIM. CAMPING HP	TRANSIENT NON-COMMUNITY	GROUNDWATER
GILMER	GA1230036	USCE WOODRING BOAT RAMP HP	TRANSIENT NON-COMMUNITY	GROUNDWATER
GILMER	GA1230038	USCE RIDGEWAY BOAT RAMP HP	TRANSIENT NON-COMMUNITY	GROUNDWATER
GILMER	GA1230040	USCE-DOLL MTN. DAY USE AREA HP	TRANSIENT NON-COMMUNITY	GROUNDWATER
GILMER	GA1230042	USCE-CARTERS LK-WOODRING BR	TRANSIENT NON-COMMUNITY	GROUNDWATER
GILMER	GA1230044	USCE-CARTERS LK-DOLL MTN CAMPG	TRANSIENT NON-COMMUNITY	GROUNDWATER

Done

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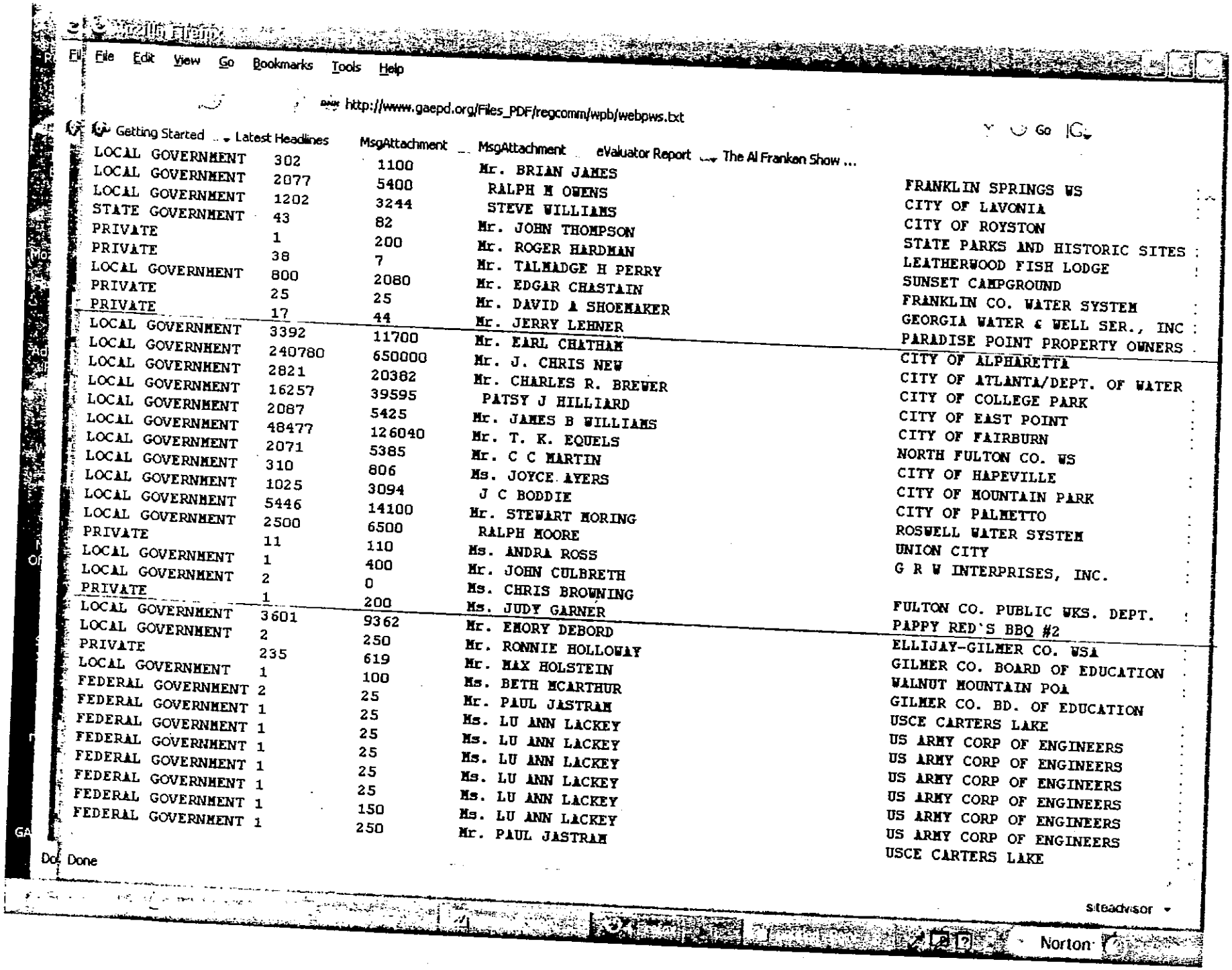
(2) FULTON – PUBLIC WATER



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Getting Started Latest Headlines MsgAttachment MsgAttachment eValuator Report The Al Franken Show ...

LOCAL GOVERNMENT	302	1100	Mr. BRIAN JAMES	FRANKLIN SPRINGS WS
LOCAL GOVERNMENT	2077	5400	RALPH M OWENS	CITY OF LAVONIA
LOCAL GOVERNMENT	1202	3244	STEVE WILLIAMS	CITY OF ROYSTON
STATE GOVERNMENT	43	82	Mr. JOHN THOMPSON	STATE PARKS AND HISTORIC SITES
PRIVATE	1	200	Mr. ROGER HARDMAN	LEATHERWOOD FISH LODGE
PRIVATE	38	7	Mr. TALMADGE H PERRY	SUNSET CAMPGROUND
LOCAL GOVERNMENT	800	2080	Mr. EDGAR CHASTAIN	FRANKLIN CO. WATER SYSTEM
PRIVATE	25	25	Mr. DAVID A SHOEMAKER	GEORGIA WATER & WELL SER., INC
PRIVATE	17	44	Mr. JERRY LEHNER	PARADISE POINT PROPERTY OWNERS
LOCAL GOVERNMENT	3392	11700	Mr. EARL CHATHAM	CITY OF ALPHARETTA
LOCAL GOVERNMENT	240780	650000	Mr. J. CHRIS NEW	CITY OF ATLANTA/DEPT. OF WATER
LOCAL GOVERNMENT	2821	20382	Mr. CHARLES R. BREWER	CITY OF COLLEGE PARK
LOCAL GOVERNMENT	16257	39595	PATSY J HILLIARD	CITY OF EAST POINT
LOCAL GOVERNMENT	2087	5425	Mr. JAMES B WILLIAMS	CITY OF FAIRBURN
LOCAL GOVERNMENT	48477	126040	Mr. T. K. EQUELS	NORTH FULTON CO. WS
LOCAL GOVERNMENT	2071	5385	Mr. C C MARTIN	CITY OF HAPEVILLE
LOCAL GOVERNMENT	310	806	Ms. JOYCE AYERS	CITY OF MOUNTAIN PARK
LOCAL GOVERNMENT	1025	3094	J C BODDIE	CITY OF PALMETTO
LOCAL GOVERNMENT	5446	14100	Mr. STEWART MORING	ROSWELL WATER SYSTEM
LOCAL GOVERNMENT	2500	6500	RALPH MOORE	UNION CITY
PRIVATE	11	110	Ms. ANDRA ROSS	G R W INTERPRISES, INC.
LOCAL GOVERNMENT	1	400	Mr. JOHN CULBRETH	
LOCAL GOVERNMENT	2	0	Ms. CHRIS BROWNING	
PRIVATE	1	200	Ms. JUDY GARNER	FULTON CO. PUBLIC WKS. DEPT.
LOCAL GOVERNMENT	3601	9362	Mr. EMORY DEBORD	PAPPY RED'S BBQ #2
LOCAL GOVERNMENT	2	250	Mr. RONNIE HOLLOWAY	ELLIJAY-GILMER CO. WSA
PRIVATE	235	619	Mr. MAX HOLSTEIN	GILMER CO. BOARD OF EDUCATION
LOCAL GOVERNMENT	1	100	Ms. BETH MCARTHUR	WALNUT MOUNTAIN POA
FEDERAL GOVERNMENT	2	25	Mr. PAUL JASTRAM	GILMER CO. BD. OF EDUCATION
FEDERAL GOVERNMENT	1	25	Ms. LU ANN LACKEY	USCE CARTERS LAKE
FEDERAL GOVERNMENT	1	25	Ms. LU ANN LACKEY	US ARMY CORP OF ENGINEERS
FEDERAL GOVERNMENT	1	25	Ms. LU ANN LACKEY	US ARMY CORP OF ENGINEERS
FEDERAL GOVERNMENT	1	25	Ms. LU ANN LACKEY	US ARMY CORP OF ENGINEERS
FEDERAL GOVERNMENT	1	25	Ms. LU ANN LACKEY	US ARMY CORP OF ENGINEERS
FEDERAL GOVERNMENT	1	150	Ms. LU ANN LACKEY	US ARMY CORP OF ENGINEERS
FEDERAL GOVERNMENT	1	250	Mr. PAUL JASTRAM	USCE CARTERS LAKE

Done

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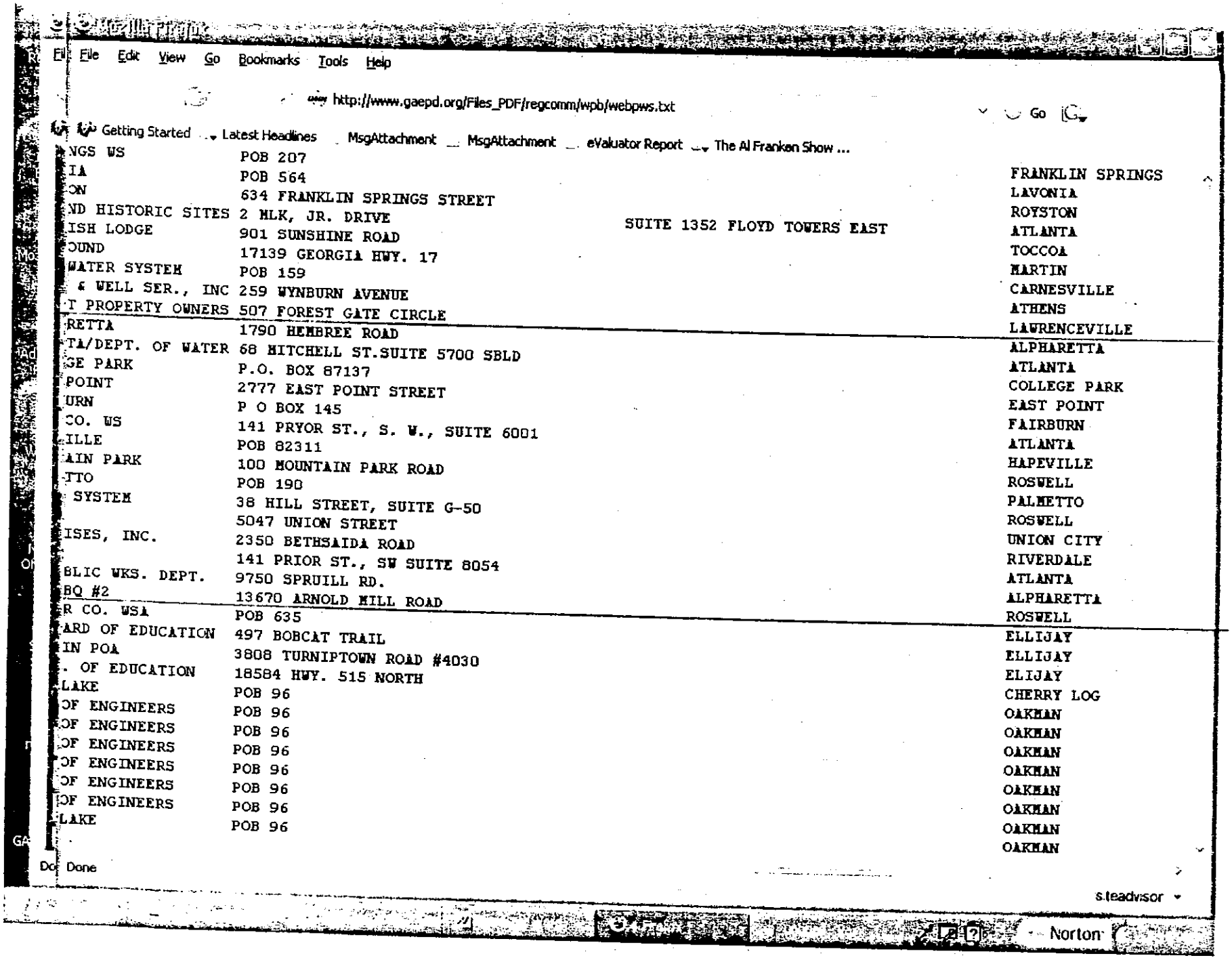
(3) FULTON - PUBLIC WATER



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Getting Started Latest Headlines MsgAttachment MsgAttachment eValuator Report The Al Franken Show ...

NGS WS	POB 207		FRANKLIN SPRINGS
IA	POB 564		LAVONIA
ON	634 FRANKLIN SPRINGS STREET		ROYSTON
ND HISTORIC SITES	2 MLK, JR. DRIVE	SUITE 1352 FLOYD TOWERS EAST	ATLANTA
ISH LODGE	901 SUNSHINE ROAD		TOCCOA
OUND	17139 GEORGIA HWY. 17		MARTIN
WATER SYSTEM	POB 159		CARNESVILLE
& WELL SER., INC	259 WYNBURN AVENUE		ATHENS
T PROPERTY OWNERS	507 FOREST GATE CIRCLE		LAWRENCEVILLE
RETTA	1790 HEMBREE ROAD		ALPHARETTA
TA/DEPT. OF WATER	68 MITCHELL ST.SUITE 5700 SBLD		ATLANTA
GE PARK	P.O. BOX 87137		COLLEGE PARK
POINT	2777 EAST POINT STREET		EAST POINT
URN	P O BOX 145		FAIRBURN
CO. WS	141 PRYOR ST., S. W., SUITE 6001		ATLANTA
ILLE	POB 82311		HAPEVILLE
AIN PARK	100 MOUNTAIN PARK ROAD		ROSWELL
TTO	POB 190		PALMETTO
SYSTEM	38 HILL STREET, SUITE G-50		ROSWELL
	5047 UNION STREET		UNION CITY
ISES, INC.	2350 BETHSAIDA ROAD		RIVERDALE
	141 PRIOR ST., SW SUITE 8054		ATLANTA
BLIC WKS. DEPT.	9750 SPRUILL RD.		ALPHARETTA
BQ #2	13670 ARNOLD MILL ROAD		ROSWELL
R CO. WSA	POB 635		ELLIJAY
ARD OF EDUCATION	497 BOBCAT TRAIL		ELLIJAY
IN POA	3808 TURNIPTOWN ROAD #4030		ELIJAY
. OF EDUCATION	18584 HWY. 515 NORTH		CHERRY LOG
LAKE	POB 96		OAKMAN
OF ENGINEERS	POB 96		OAKMAN
OF ENGINEERS	POB 96		OAKMAN
OF ENGINEERS	POB 96		OAKMAN
OF ENGINEERS	POB 96		OAKMAN
OF ENGINEERS	POB 96		OAKMAN
OF ENGINEERS	POB 96		OAKMAN
LAKE	POB 96		OAKMAN
			OAKMAN

Done

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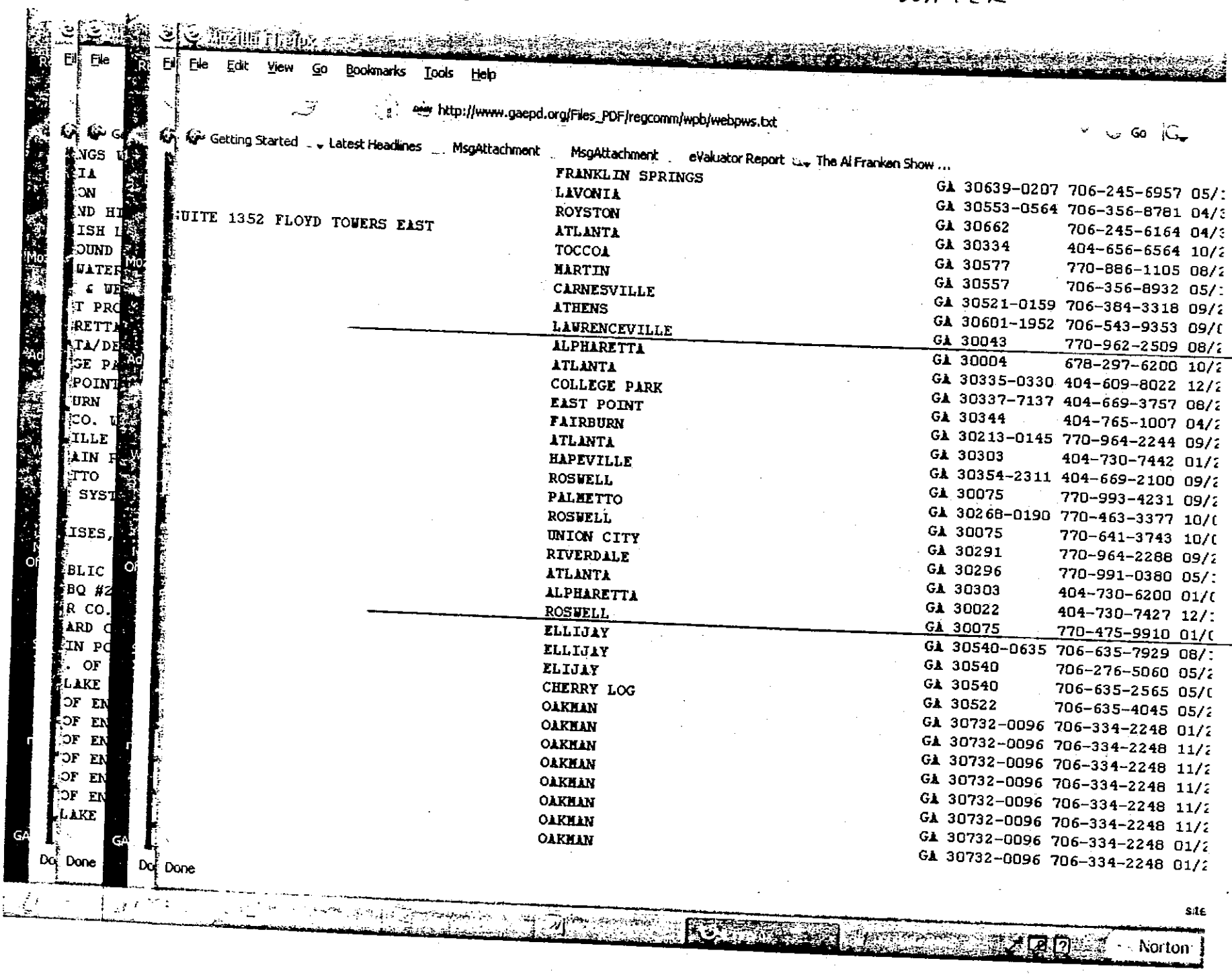
(4) FULTON - PUBLIC WATER



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Getting Started Latest Headlines MsgAttachment MsgAttachment eValuator Report The Al Franken Show ...

UITE 1352 FLOYD TOWERS EAST

FRANKLIN SPRINGS	GA	30639-0207	706-245-6957 05/
LAVONIA	GA	30553-0564	706-356-8781 04/
ROYSTON	GA	30662	706-245-6164 04/
ATLANTA	GA	30334	404-656-6564 10/
TOCCOA	GA	30577	770-886-1105 08/
MARTIN	GA	30557	706-356-8932 05/
CARNESVILLE	GA	30521-0159	706-384-3318 09/
ATHENS	GA	30601-1952	706-543-9353 09/
LAWRENCEVILLE	GA	30043	770-962-2509 08/
ALPHARETTA	GA	30004	678-297-6200 10/
ATLANTA	GA	30335-0330	404-609-8022 12/
COLLEGE PARK	GA	30337-7137	404-669-3757 08/
EAST POINT	GA	30344	404-765-1007 04/
FAIRBURN	GA	30213-0145	770-964-2244 09/
ATLANTA	GA	30303	404-730-7442 01/
HAPEVILLE	GA	30354-2311	404-669-2100 09/
ROSWELL	GA	30075	770-993-4231 09/
PALMETTO	GA	30268-0190	770-463-3377 10/
ROSWELL	GA	30075	770-641-3743 10/
UNION CITY	GA	30291	770-964-2288 09/
RIVERDALE	GA	30296	770-991-0380 05/
ATLANTA	GA	30303	404-730-6200 01/
ALPHARETTA	GA	30022	404-730-7427 12/
ROSWELL	GA	30075	770-475-9910 01/
ELLIJAY	GA	30540-0635	706-635-7929 08/
ELLIJAY	GA	30540	706-276-5060 05/
ELIJAY	GA	30540	706-635-2565 05/
CHERRY LOG	GA	30522	706-635-4045 05/
OAKMAN	GA	30732-0096	706-334-2248 01/
OAKMAN	GA	30732-0096	706-334-2248 11/
OAKMAN	GA	30732-0096	706-334-2248 11/
OAKMAN	GA	30732-0096	706-334-2248 11/
OAKMAN	GA	30732-0096	706-334-2248 11/
OAKMAN	GA	30732-0096	706-334-2248 11/
OAKMAN	GA	30732-0096	706-334-2248 01/
OAKMAN	GA	30732-0096	706-334-2248 01/

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(1) FULTON - LIST OF DRINKING WATER SOURCES

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Getting Started Latest Headlines MsgAttachment MsgAttachment eValuator Report The Al Franken Show ...

FRANKLIN	GA1190051	FRANKLIN COUNTY WATER SYSTEM	104 CITY OF ROYSTON #1190004	GA
FRANKLIN	GA1190051	FRANKLIN COUNTY WATER SYSTEM	106 WELL #3 - DWIGHT EAVENSON FARM, GA106	
FRANKLIN	GA1190051	FRANKLIN COUNTY WATER SYSTEM	107 BANKS COUNTY WATER SYSTEM 0110026	GA
FRANKLIN	GA1190052	NAILS CREEK CROSSING	101 HWY 106 SOUTH WELL #1	
FRANKLIN	GA1190052	NAILS CREEK CROSSING	102 PHILLIPS DRIVE WELL #2	
FRANKLIN	GA1190052	NAILS CREEK CROSSING	103 HWY 106 NORTH WELL #3	
FRANKLIN	GA1190053	PARADICE POINT SUBDIVISION	101 WELL #1	
FULTON	GA1210000	ALPHARETTA	101 NORTH FULTON COUNTY	GA
FULTON	GA1210001	ATLANTA	101 CHATTAHOOCHEE RIVER	
FULTON	GA1210001	ATLANTA	102 ATLANTA/FULTON WATER RES COMM	GA
FULTON	GA1210002	COLLEGE PARK	101 EAST POINT WATER SYSTEM	GA
FULTON	GA1210003	EAST POINT	101 SWEETWATER CREEK	
FULTON	GA1210003	EAST POINT	102 ATLANTA WATER SYSTEM	GA
FULTON	GA1210003	EAST POINT	103 HAPEVILLE WATER SYSTEM	GA
FULTON	GA1210004	FAIRBURN	101 ATLANTA WATER SYSTEM	GA
FULTON	GA1210005	NORTH FULTON COUNTY	101 COBB CO.-MARIETTA WATER SYSTEM	GA
FULTON	GA1210005	NORTH FULTON COUNTY	102 GWINNETT COUNTY WATER SYSTEM	GA
FULTON	GA1210005	NORTH FULTON COUNTY	103 ATLANTA WATER SYSTEM	GA
FULTON	GA1210005	NORTH FULTON COUNTY	104 ATLANTA-FULTON WATER RES COMM	GA
FULTON	GA1210006	HAPEVILLE	101 ATLANTA WATER SYSTEM	GA
FULTON	GA1210007	MOUNTAIN PARK	101 COBB CO.-MARIETTA WATER SYSTEM	GA
FULTON	GA1210008	PALMETTO	101 OLD CEDAR CREEK RESERVOIR	
FULTON	GA1210008	PALMETTO	102 NEW CEDAR CREEK RESERVOIR	
FULTON	GA1210009	ROSWELL	101 BIG CREEK	
FULTON	GA1210009	ROSWELL	102 ATLANTA/FULTON CO WATER PLANT	GA
FULTON	GA1210010	UNION CITY	101 ATLANTA WATER SYSTEM	GA
FULTON	GA1210020	CHESTNUT HILL ACADEMY	101 WELL #1	
FULTON	GA1210037	PROVIDENCE PARK	101 WELL #1	
FULTON	GA1210038	ATLANTA-FULTON WATER RES COMM	101 CHATTAHOOCHEE RIVER	
FULTON	GA1210040	PAPPY RED'S BBQ #2	101 WELL #1	
GILMER	GA1230000	ELLIJAY-GILMER CO. WATER AUTH.	101 CARTECAY RIVER	
GILMER	GA1230000	ELLIJAY-GILMER CO. WATER AUTH.	102 ELLIJAY RIVER	
GILMER	GA1230000	ELLIJAY-GILMER CO. WATER AUTH.	103 JOYCE SPRING	
GILMER	GA1230000	ELLIJAY-GILMER CO. WATER AUTH.	104 WINGATE SPRING	
GILMER	GA1230000	ELLIJAY-GILMER CO. WATER AUTH.	105 BURGESS SPRING	

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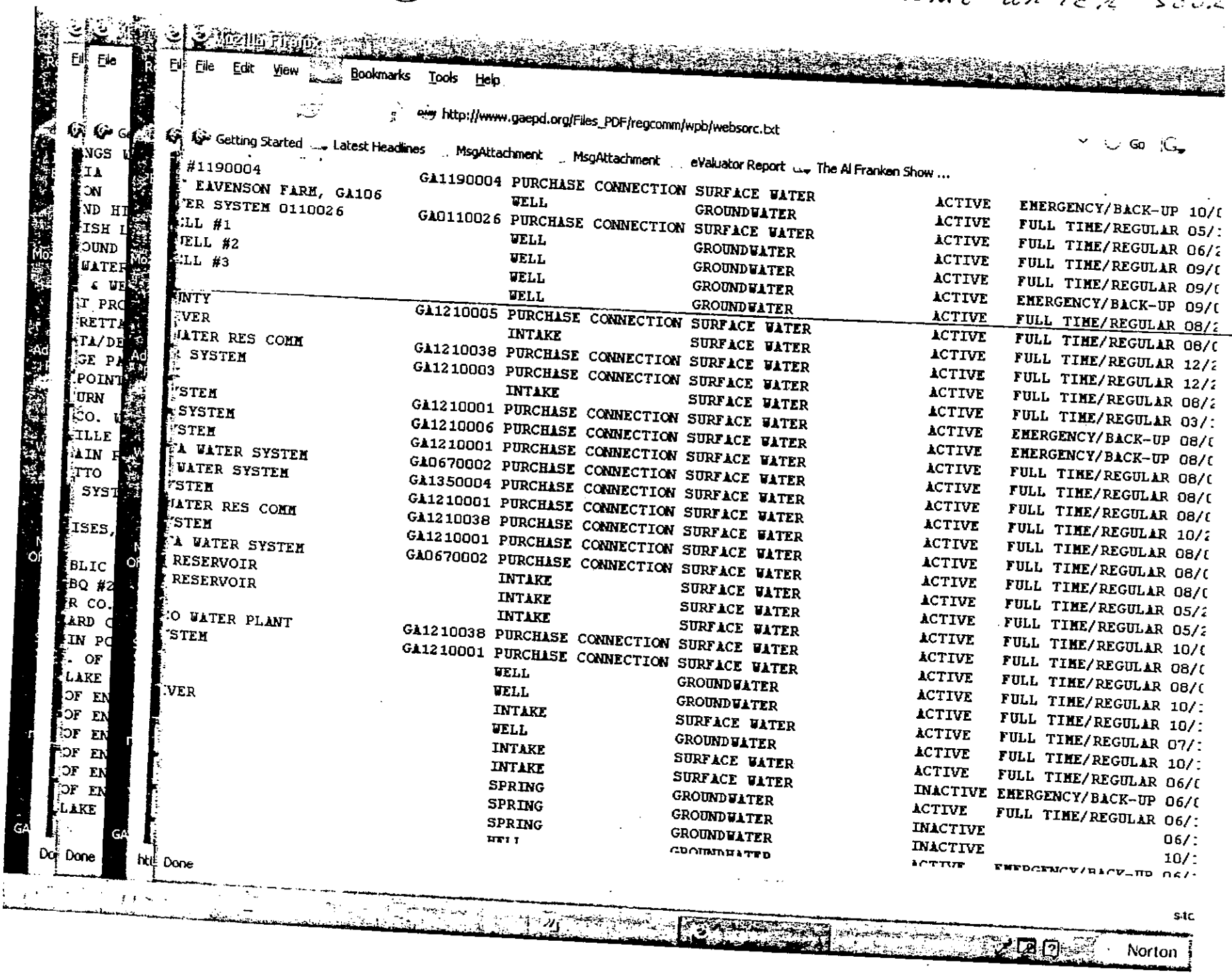
(2) FULTON – LIST OF DRINKING WATER SOURCES



#1190004	GA1190004	PURCHASE CONNECTION	SURFACE WATER	
EAVENSON FARM, GA106		WELL	GROUNDWATER	ACTIVE EMERGENCY/BACK-UP 10/(
ER SYSTEM 0110026	GA0110026	PURCHASE CONNECTION	SURFACE WATER	ACTIVE FULL TIME/REGULAR 05/:
LL #1		WELL	GROUNDWATER	ACTIVE FULL TIME/REGULAR 06/2
ELL #2		WELL	GROUNDWATER	ACTIVE FULL TIME/REGULAR 09/(
LL #3		WELL	GROUNDWATER	ACTIVE FULL TIME/REGULAR 09/(
		WELL	GROUNDWATER	ACTIVE EMERGENCY/BACK-UP 09/(
NTY	GA1210005	PURCHASE CONNECTION	SURFACE WATER	ACTIVE FULL TIME/REGULAR 08/2
VER		INTAKE	SURFACE WATER	ACTIVE FULL TIME/REGULAR 08/(
ATER RES COMM	GA1210038	PURCHASE CONNECTION	SURFACE WATER	ACTIVE FULL TIME/REGULAR 12/2
SYSTEM	GA1210003	PURCHASE CONNECTION	SURFACE WATER	ACTIVE FULL TIME/REGULAR 12/2
		INTAKE	SURFACE WATER	ACTIVE FULL TIME/REGULAR 08/2
STEM	GA1210001	PURCHASE CONNECTION	SURFACE WATER	ACTIVE FULL TIME/REGULAR 03/:
SYSTEM	GA1210006	PURCHASE CONNECTION	SURFACE WATER	ACTIVE EMERGENCY/BACK-UP 08/(
STEM	GA1210001	PURCHASE CONNECTION	SURFACE WATER	ACTIVE EMERGENCY/BACK-UP 08/(
A WATER SYSTEM	GA0670002	PURCHASE CONNECTION	SURFACE WATER	ACTIVE FULL TIME/REGULAR 08/(
WATER SYSTEM	GA1350004	PURCHASE CONNECTION	SURFACE WATER	ACTIVE FULL TIME/REGULAR 08/(
STEM	GA1210001	PURCHASE CONNECTION	SURFACE WATER	ACTIVE FULL TIME/REGULAR 08/(
ATER RES COMM	GA1210038	PURCHASE CONNECTION	SURFACE WATER	ACTIVE FULL TIME/REGULAR 10/2
STEM	GA1210001	PURCHASE CONNECTION	SURFACE WATER	ACTIVE FULL TIME/REGULAR 08/(
A WATER SYSTEM	GA0670002	PURCHASE CONNECTION	SURFACE WATER	ACTIVE FULL TIME/REGULAR 08/(
RESERVOIR		INTAKE	SURFACE WATER	ACTIVE FULL TIME/REGULAR 08/(
RESERVOIR		INTAKE	SURFACE WATER	ACTIVE FULL TIME/REGULAR 05/2
		INTAKE	SURFACE WATER	ACTIVE FULL TIME/REGULAR 05/2
O WATER PLANT	GA1210038	PURCHASE CONNECTION	SURFACE WATER	ACTIVE FULL TIME/REGULAR 10/(
STEM	GA1210001	PURCHASE CONNECTION	SURFACE WATER	ACTIVE FULL TIME/REGULAR 08/(
		WELL	GROUNDWATER	ACTIVE FULL TIME/REGULAR 08/(
VER		WELL	GROUNDWATER	ACTIVE FULL TIME/REGULAR 10/:
		INTAKE	SURFACE WATER	ACTIVE FULL TIME/REGULAR 10/:
		WELL	GROUNDWATER	ACTIVE FULL TIME/REGULAR 07/:
		INTAKE	SURFACE WATER	ACTIVE FULL TIME/REGULAR 10/:
		INTAKE	SURFACE WATER	ACTIVE FULL TIME/REGULAR 06/(
		SPRING	GROUNDWATER	INACTIVE EMERGENCY/BACK-UP 06/(
		SPRING	GROUNDWATER	ACTIVE FULL TIME/REGULAR 06/:
		SPRING	GROUNDWATER	INACTIVE 06/:
		WELL	GROUNDWATER	INACTIVE 10/:

GRID #: 116613

GWSI DATA PROCESSING

Data Submitted by: BJM

Project: 201 Date: 1/29/93

Water-Use Site? yes no

North Meadow Phase I Well 2

DATA CHECK

Consolidate files: _____

Add to Well Index: _____

Plot in Master Map File: _____

	Verified By:	Date:
Compute: TMP		
Lat-Long:	BJM	2-2-93
Elevation:	"	"
Assign:		
GWSI Site I.D.:	TMP	2-2-93
Ca Grid #:		
Verify Well Data:		
Check GWSI Forms:	TMP	"
Keypunch Data:	CL	12/06/93
Edit Data:	MEP	12-6-93
Submit Data:	MEP	12-6-93
Check Output:	TMP	12/7/93
** Add to GWNET:		
le data and forms:		
r Water Level Network Sites only:		

MODIFICATIONS RECORD

Date	Component #	Initials	Submitted

W. L. - + 3" above ground surface.

Form 9-1906
(Mar. 1990)

U.S. DEPARTMENT OF THE INTERIOR
Geological Survey

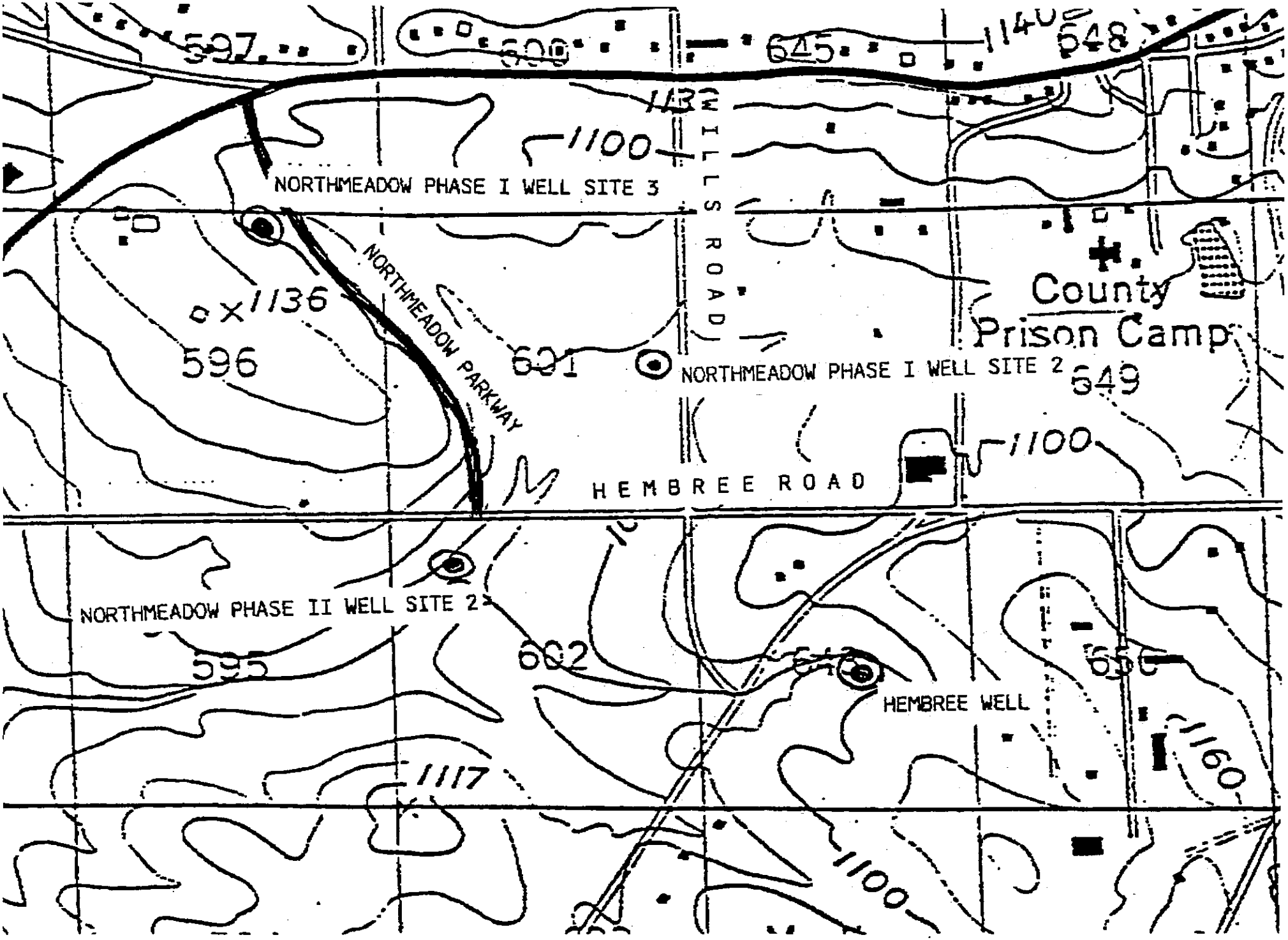
WATER RESOURCES DIVISION
FIELD WELL SCHEDULE

Date 9/7 1992 Grid No. 11GG13

Record by K.M.M. Field No. _____

Source of data Driller, field

1. **Location:** State _____ County Fulton
   Quad Rosnell
   Latitude _____ Longitude _____
2. **Owner:** North Side
   Address _____
   Driller _____ Address _____
3. **Topography:** _____
4. **Elevation:** _____ ft. MSL
5. **Type:** Dug, drilled, driven, bored, jetted 9/7 1992
6. **Depth:** Rept. 505 ft. Meas. _____ ft.
7. **Casing:** Diam. 6 in., to _____ in., Type D/C
   Depth 605 ft. Finish OPEN 8" to 330 6" to 505
8. **Chief aquifer:** _____ From _____ ft. to _____ ft.
   Others _____
9. **Water level:** _____ ft. rept. meas. _____ 19___ above below _____
   _____ which is _____ ft. above below surface
10. **Pump:** Type _____ Capacity _____ GPM
    Power: Kind _____ Horsepower _____
11. **Yield:** Flow _____ GPM, Pump 125 GPM, Meas., Rept. Est. _____
    Drawdown _____ ft. after _____ hours pumping _____ GPM
12. **Use:** Dom., stock, PS, RR, Ind., Irr., Obs. _____
13. **Quality:** _____ Temp. _____ °F
    Taste, odor, color _____ Sample: Yes No _____
14. **Remarks:** (Log, analyses, etc.) _____


597
600
645
1140
548
1132
1100
NORTHMEADOW PHASE I WELL SITE 3
NORTHMEADOW PARKWAY
MILLS ROAD
1136
596
601
County
Prison Camp
NORTHMEADOW PHASE I WELL SITE 2
649
1100
HEMBREE ROAD
NORTHMEADOW PHASE II WELL SITE 2
595
602
HEMBREE WELL
1160
1117
1100

GRID #: 116614

GWSI DATA PROCESSING

* Data Submitted by: BJM
* Project: 201 Date: 2/7/91
* Water-Use Site? yes no

Northmeadow Phase I Well 3

DATA CHECK

Consolidate files: ________
Add to Well Index: ________
Plot in Master Map File: ________

Compute: FMP	Verified By:	Date:
Lat-Long:	JJ	9-28-93
Elevation:	"	

Assign:		
GWSI Site I.D.:	FMP	9-28-93
Ga Grid #:		
Verify Well Data:		
Check GWSI Forms:	FMP	"
Keypunch Data:	CL	12/06/93
Edit Data:	MEC	12-6-93
Submit Data:	MEC	12-6-93
Check Output:	[illegible]	12-17-93
** Add to GWNET:		
File data and forms:		

** For Water Level Network Sites only

MODIFICATIONS RECORD

Date	Component #	Initials	Submitted

Form 9-1906
(Mar. 1990)

U.S. DEPARTMENT OF THE INTERIOR
Geological Survey
WATER RESOURCES DIVISION
FIELD WELL SCHEDULE

Date 3/7 19 88 Grid No. 11GGM

Record by CJM Field No.

Source of data Driller

1. **Location:** State County Fulton
   Quad Roswell
   Latitude Longitude
2. **Owner:** MW 2 Site 3
   Address
   Driller Address
3. **Topography:**
4. **Elevation:** ft. MSL
5. **Type:** Dug, (drilled), driven, bored, jetted April 1988
6. **Depth:** Rept. 300 ft. Meas. ft.
7. **Casing:** Diam. 6 in., to 43 in., Type PVC
   Depth ft. Finish open hole
8. **Chief aquifer:** From ft. to ft.
   Others
9. **Water level:** 30? ft. rept. meas. 5-30 1988 (above) below
   which is ft. above below surface
10. **Pump:** Type Capacity ? GPM
    Power: Kind Horsepower
11. **Yield:** Flow GPM, Pump GPM, Meas., Rept. Est.
    Drawdown ft. after hours pumping GPM
12. **Use:** Dom., stock, PS, RR, Ind., Irr., Obs.
13. **Quality:** Temp. °F
    Taste, odor, color Sample: Yes / No
14. **Remarks:** (Log, analyses, etc.)

MIDDLE GEORGIA WATER SYSTEMS, INC.

Atlanta Division
P.O. Box 2124
Tucker, Georgia 30085-2124
Tel: (404) 621-0911 Fax 404-621-3631

Phase I well site 3

IGG14

Drillers: Mike Davis
Address:
City/State/Zip:
Phone No: ( )

ation
Ground Elevation: ft. MSL., Longitude: W, Latitude: N

WELL DESCRIPTION

lled: 5 30 88
pth: 300 ft.
ter Level (SWL): 307 ft.
L Measured:
G METHOD (Indicate)
Percussion: Other: Air Drill

IAMETER
in., From: 0 ft., To: 43 ft.
in., From: ft., To: ft.
in., From: ft., To: ft.

RECORD
terial: PVC SCH 80
ckness: SDR:
oot:
in., From: 0 ft., To: 43 ft.
in., From: ft., To: ft.
in., From: ft., To: ft.
(Use Additional Sheets If Necessary)

SCREEN

Material:
in., From: 43 ft., To: 300 ft.
in., From: ft., To: ft.
in., From: ft., To: ft.
in., From: ft., To: ft.
Of Gravel Packing:

TING

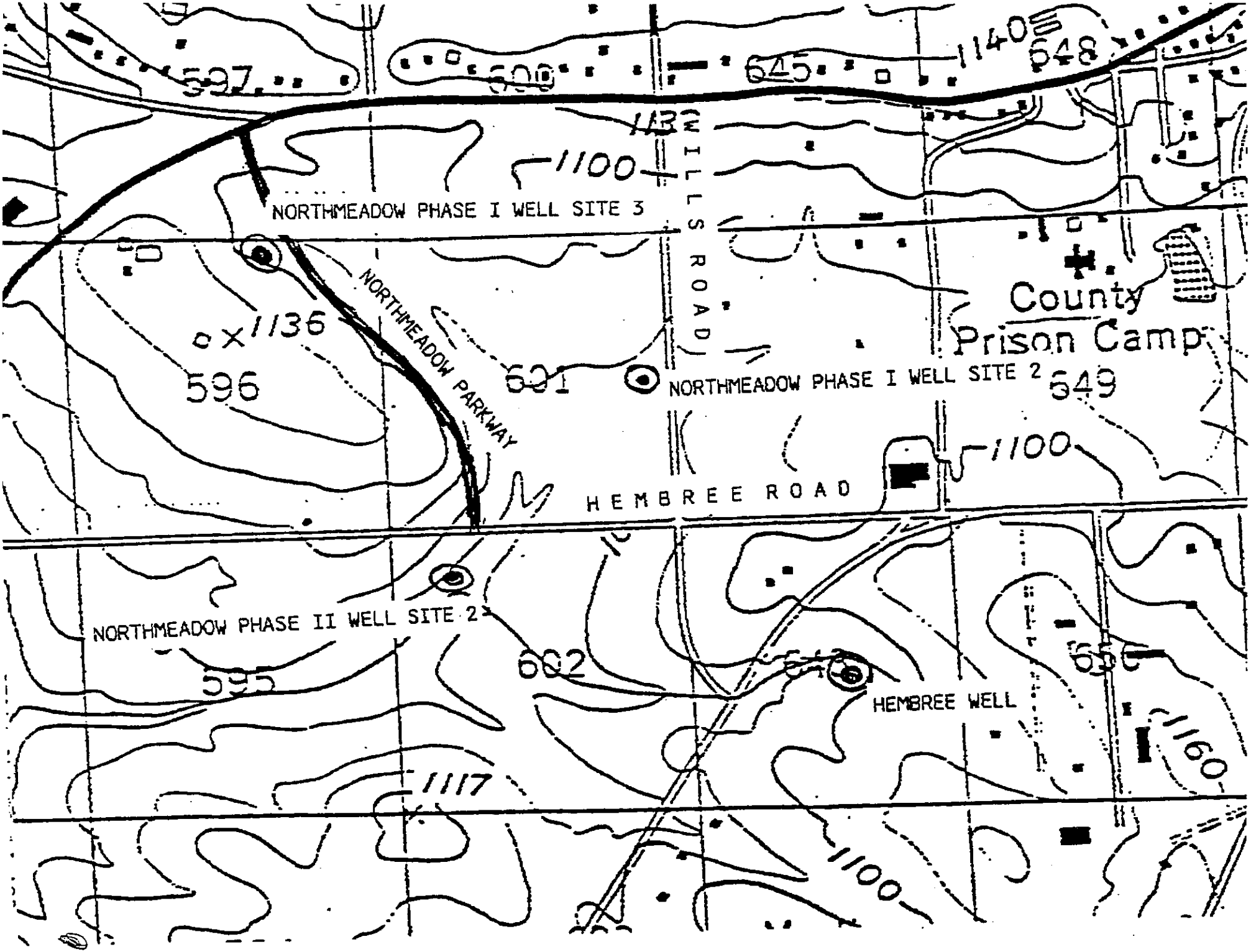
ut:
By Pressure: Yes: No:
ft., To: ft.
ft., To: ft.

PUMPING TEST DATA

Date Tested:
Test Pump Rated: gpm, hp
Total Continuous Hrs. Tested:
Water Level Stabilized: YES: NO:
Hrs. Before Stabilization:
Sustained Well Yield: gpm
Static Water Level : ft.
Total Drawdown: ft.
Specific Capacity: gpm/ft.
Pumping Water Level: ft.
No. Minutes Well To Recover:
Developed Well: Yes: No:
Disinfected Well: Yes: No:
(Attach Time And Drawdown Measurements)

PERMANENT PUMP DATA

(Completed By Contractor Or Owner)
Pump Type:
Diameter: in., Outlet Size: in.
Motor hp: Motor rpm:
Pump Capacity: gpm
Total Dynamic Head: ft.
Pump Set At: ft.
Pump Disinfected: Yes: No:
Deep Well Air Line Length: ft.
Access Port Diameter: In.
Casing Vent Installed: Yes: No:
Sample Tap Installed: Yes: No:
Meter Installed: Yes: No:
Meter Size: in. gpm


597
645
1140
648
1100
NORTHMEADOW PHASE I WELL SITE 3
NORTHMEADOW PARKWAY
1136
596
601
NORTHMEADOW PHASE I WELL SITE 2
549
County
Prison Camp
1100
HEMBREE ROAD
NORTHMEADOW PHASE II WELL SITE 2
595
602
HEMBREE WELL
1160
1117
1100

No map info in file

GRID #: 11GG15

GWSI DATA PROCESSING

****

* Data Submitted by: BJM *

* Project: _____ Date: 1/16/91 *

* Water-Use Site? yes no *

****

North meadow Phase II well 2

DATA CHECK

	Verified By:	Date:
Consolidate files:		
Add to Well Index:		
Plot in Master Map File:		
Compute:	TMP	
Lat-Long:	JJ	9-26-93
Elevation:		
Assign:		
GWSI Site I.D.:	TMP	9-26-93
Ga Grid #:		
Verify Well Data:	"	"
Check GWSI Forms:		
Keypunch Data:	CL	12-6-93
Edit Data:	MFP	12-6-93
Submit Data:	MFP	12-6-93
Check Output:	TMP	12-17-93
** Add to GWNET:		
File data and forms:		

** For Water Level Network Sites only

MODIFICATIONS RECORD

Date	Component #	Initials	Submitted

Lat. 34 03' 36"
Long 84 18' 56"

Northmeadow Phase II
TB 2

WELL REPORT

- [x] Middle Georgia Water Systems
- [ ] Askew-Morris Well Company
- [ ] Harding & Johnson
- [ ] Complete Well Company

Date Started 8-27-90 Date Completed 8-30-90

Customer Name Anderson + SENK Bell Phone

Address North Meadow County Fulton

Job Site Location #1 well

Drill No. # 46

Driller & Helper (Day) McClenny - willie

Driller & Helper (Night)

Bit Size 6 1/8 - 8 Casing 45 8" PVC

Depth 600 GPM 200+

Remarks Drilled 6" to 600 - 8" opened to 330' - Grouted with 15 Bags Cement

Directions 5 Bags Hole plug
1 8" Cap

GRID#	WELL NAME	DEPTH	DATE DRILLED	GGS #
07CC03	B.L. Cannon	126	1970	-
07CC09	Carl B. Crouch	190	1965	-
07CC10	Julian V. Jones	110	1973	-
08CC01	Harold D. Whitley	120	1958	
08CC02	Harold Ellman	150	1957	
08CC03	L.W. Osborne	150	1972	
08CC06	D. Harold Bomar	225	1958	
08CC07	GAR TW-1	256	1979	
08CC08	GAR TW-2	245	1979	
08CC11	Robert Johnson	180	1977	
08DD10	Fulton Co. Sewage Plt.	250	1960	
09CC21	Rita Dyer	158	1955	
09CC22	Whitewater Ck. St. Park	300	1972	
09CC23	James T. Bullard	130	1961	
09CC24	Nelville McClure	208	1959	
09CC25	Nelville McClure	202	1960	
09CC26	City of Union City	350	1954	
09DD02	Fulton Co. Utoy School	250	1953	
09DD03	Barton Brands Ltd.	500	1977	
09EE03	Anaconda Aluminum	500	1976	
10CC17	W.P. Burns	120	1962	
10CC18	L.F. Hagan	100	1955	
10CC19	West Lumber Co.	225	1961	
10DD01	O'Neil Brothers	298	1944	
10DD02	U.S. Army Ft. McPherson	350	1938	
10DD09	City of East Point	552	1928	
10DD16	City of East Point(1940)	402	1940	
10DD26	City of College Park	540	1945	
10DD28	City of College Park	600	1940	
10DD31	City of College Park	616	1937	
10DD33	College Park (1938)	825	1938	
10DD34	City of College Park	600	1914	
10DD42	U.S. Govt.	250	1882	
10DD43	U.S. Govt.	500	1885	
10DD44	U.S. Govt.	500	1904	
10DD45	U.S. Govt.	684	1977	
10DD54	R.L. Lombard	200	1978	
10DD55	Brown Transport	325	1977	
10DD56	U.S. Plt. & Bmpr. Svc.	325	1962	
10DD57	Johnson-Floker Co.	580	1971	
10DD58	State of Ga. Bldg. Auth.	507	1976	
10EE05	Syedel-Wooley & Co.	450	1943	
10EE06	Syedel-Wooley & Co.	550	1967	
10EE15	Wolf Photo	477	1957	
10EE22	Bob Knight	166	1973	
10EE23	Macdougald-Warren	395	1957	
10EE25	Sonoco Products	400	1958	
10EE26	Sonoco Products	500	1966	
10EE27	Sonoco Products	500	1966	
10EE29	Richard L. Aeck	430	1972	
10EE30	W.R. Cox	480	1968	
10EE31	William L. Gunter	285	1965	
10EE34	Sonoco Products	800	1966	
2FF01	River Bend Gun Club	160	1956	
	Ga. Bldg. Auth. #2	563		

11GG16

August 19, 1992

Valerie Lampkin
Groundwater Technology
1281 Kennestone Cir., NW
Marietta, GA

Dear Ms. Lampkin:

Following is a listing of wells, from the Georgia Geologic Survey files, that are located within a three mile radius of the intersection of Holcombe Bridge Rd. and Grimes Bridge/Old Roswell Rd.:

Well Name	Latitude	Longitude
Northmeadow Phase I, Well Site 2	34°03'43"	84°18'43"
Northmeadow Phase I, Well Site 3	34°03'52"	84°19'05"
Northmeadow Phase II, Well Site 2	34°03'36"	84°18'56"
Hembree Well	34°03'31"	84°18'39"

This is a list of wells from our research files within the area you are interested in. It is not a complete list of all wells in this area. You may want to contact Melinda Chapman of the U.S. Geological Survey for additional information on the above-listed wells.

Please call me if you need further information on this or any other matter.

Sincerely,

William M. Steele
Geologist

Thomson
Well Location

WELL REPORT

- [x] Middle Georgia Water Systems
- [ ] Ashew-Morris Well Company
- [ ] Harding & Johnson
- [ ] Complete Well Company

116617

Long 84 18 42"
Lat 34 03 43"

Date Started 9-5-90 Date Completed 9-7-90

Customer Name Anderson Properties Phone

Address County ? Fulton

Job Site Location #2 well

Drill No. #46

Driller & Helper (Day) McClenny & Kevin

Driller & Helper (Night)

Bit Size 6 1/8 Casing 65 8" casing

Depth 505 GPM 125

Remarks Reamed 8" - 330'
4- Hole plug
10- Cement
1- 8" Cap

Directions

	TO FEET	TYPE MATERIAL ENCOUNTERED	REMARKS	INDICATE WATER BEARING ZONES
0	45	Soil & Sand		
45	120	Weathered Blue		
20	121	Fractured	Blow Test	30 GPM
121	134	Weathered Blue	Blow Test	20 GPM
34	136	Fractured	Blow Test	
36	179	Weathered Rock		
79	180	Fractured Blue	Blow Test	160 GPM
80	270	Blue Mica		
70	390	Blue Mixed		
90	600	Blue with Bands	Blow Test	300 GPM

(If More Space is Required, Use Additional Sheet)

THIS WELL WAS DRILLED ACCORDING TO THE RULES FOR SAFE DRINKING WATER (CHAPTER 391-3-5) OF THE GEORGIA DEPARTMENT OF NATURAL RESOURCES AND THE INFORMATION ON THIS FORM IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

SIGNED: _____ LIC. NO.: _____
WATER WELL CONTRACTOR'S SIGNATURE

DATE: _____

GRID # 116011

GWSI DATA PROCESSING

Data Submitted by : CLewis
Project : _____ Date : 12/02/93
Water-Use Site? Yes No

WELL NAME: Northmeadow Place I Well #2 COUNTY: Fulton

DATA CHECK

	COMPUTED BY	DATE	VERIFIED BY	DATE
LAT/LONG	CL	12/03/93	KBM	12/9/93
ELEVATION	CL	12/03/93	KBM	12/9/93
PLOTTED ON MASTER MAP:	CL	12/03/93		

ASSIGN:	BY	DATE
SITE ID	CL	12/02/93
GRID NO.	CL	12/02/93
CHECK GWSI FORMS	FMP	12/7/93
KEY IN DATA	CL	12-10-93
EDIT/SUBMIT DATA	FMP	12-14-93
CHECK OUTPUT	FMP	12/17/93
ADDED TO GWNET (For water level network sites only)		

REMARKS/MODIFICATIONS:

(STAPLE TO FRONT OF GWSI CODING FORM)

GRID # 116618

GWSI DATA PROCESSING

Data Submitted by : C Lewis
Project : _____ Date : 12/03/93
Water-Use Site? Yes No

WELL NAME: Northwestern Phase I Well #3 COUNTY: Fulton

DATA CHECK

	COMPUTED BY	DATE	VERIFIED BY	DATE
LAT/LONG	CL	12/6/93	KBM	12/9/93
ELEVATION	CL	12/6/93	KBM	12/9/93
PLOTTED ON MASTER MAP:	CL	12/6/93		

ASSIGN:	BY	DATE
SITE ID	CL	12/03/93
GRID NO.	CL	12/03/93
CHECK GWSI FORMS	[illegible]	12/7/93
KEY IN DATA	CL	12/10/93
EDIT/SUBMIT DATA	[illegible]	12-14-93
CHECK OUTPUT	[illegible]	12/17/93
ADDED TO GWNET (For water level network sites only)		

REMARKS/MODIFICATIONS:

(STAPLE TO FRONT OF GWSI CODING FORM)

MIDDLE GEORGIA WATER SYSTEMS, INC.

North Meadow Phase 1
Well Site 3

Atlanta Division
P.O. Box 2124
Tucker, Georgia 30085-2124
Tel: (404) 621-0911 Fax 404-621-3631

Owner: Andrew E Sentell Inc
Address: North Meadow Drive
City/State/Zip:
Phone No: ( )

Driller: Mike Daniels
Address:
City/State/Zip:
Phone No: ( )

Well Location
Ground Elevation: ft. MSL., Longitude: W, Latitude: N

WELL DESCRIPTION

Date Drilled: 5 30 88
Total Depth: 300 ft.
Static Water Level (SWL): 307 ft.
Date SWL Measured:
DRILLING METHOD (Indicate)
Rotary: Percussion: Other: Air Dtn

HOLE DIAMETER
Size: 8 in., From: 0 ft., To: 43 ft.
Size: in., From: ft., To: ft.
Size: in., From: ft., To: ft.

CASING RECORD
Type Material: PVC 1480
Wall Thickness: SDR:
Weight/Foot:
Size: 6 in., From: 0 ft., To: 43 ft.
Size: in., From: ft., To: ft.
Size: in., From: ft., To: ft.
(Use Additional Sheets If Necessary)

WELL SCREEN

Type Of Material:
Size: 6 in., From: 43 ft., To: 300 ft.
Size: in., From: ft., To: ft.
Size: in., From: ft., To: ft.
Size: in., From: ft., To: ft.
Thickness Of Gravel Packing:

GROUTING

Type Grout:
Applied By Pressure: Yes: No:
From: ft., To: ft.
From: ft., To: ft.

PUMPING TEST DATA

Date Tested:
Test Pump Rated: gpm, hp
Total Continuous Hrs. Tested:
Water Level Stabilized: YES: NO:
Hrs. Before Stabilization:
Sustained Well Yield: gpm
Static Water Level : ft.
Total Drawdown: ft.
Specific Capacity: gpm/ft.
Pumping Water Level: ft.
No. Minutes Well To Recover:
Developed Well: Yes: No:
Disinfected Well: Yes: No:
(Attach Time And Drawdown Measurements)

PERMANENT PUMP DATA

(Completed By Contractor Or Owner)
Pump Type:
Diameter: in., Outlet Size: in.
Motor hp: Motor rpm:
Pump Capacity: gpm
Total Dynamic Head: ft.
Pump Set At: ft.
Pump Disinfected: Yes: No:
Deep Well Air Line Length: ft.
Access Port Diameter: in.
Casing Vent Installed: Yes: No:
Sample Tap Installed: Yes: No:
Meter Installed: Yes: No:
Meter Size: in. gpm

Lat. 34 03' 52"
Long. 84 19' 06"

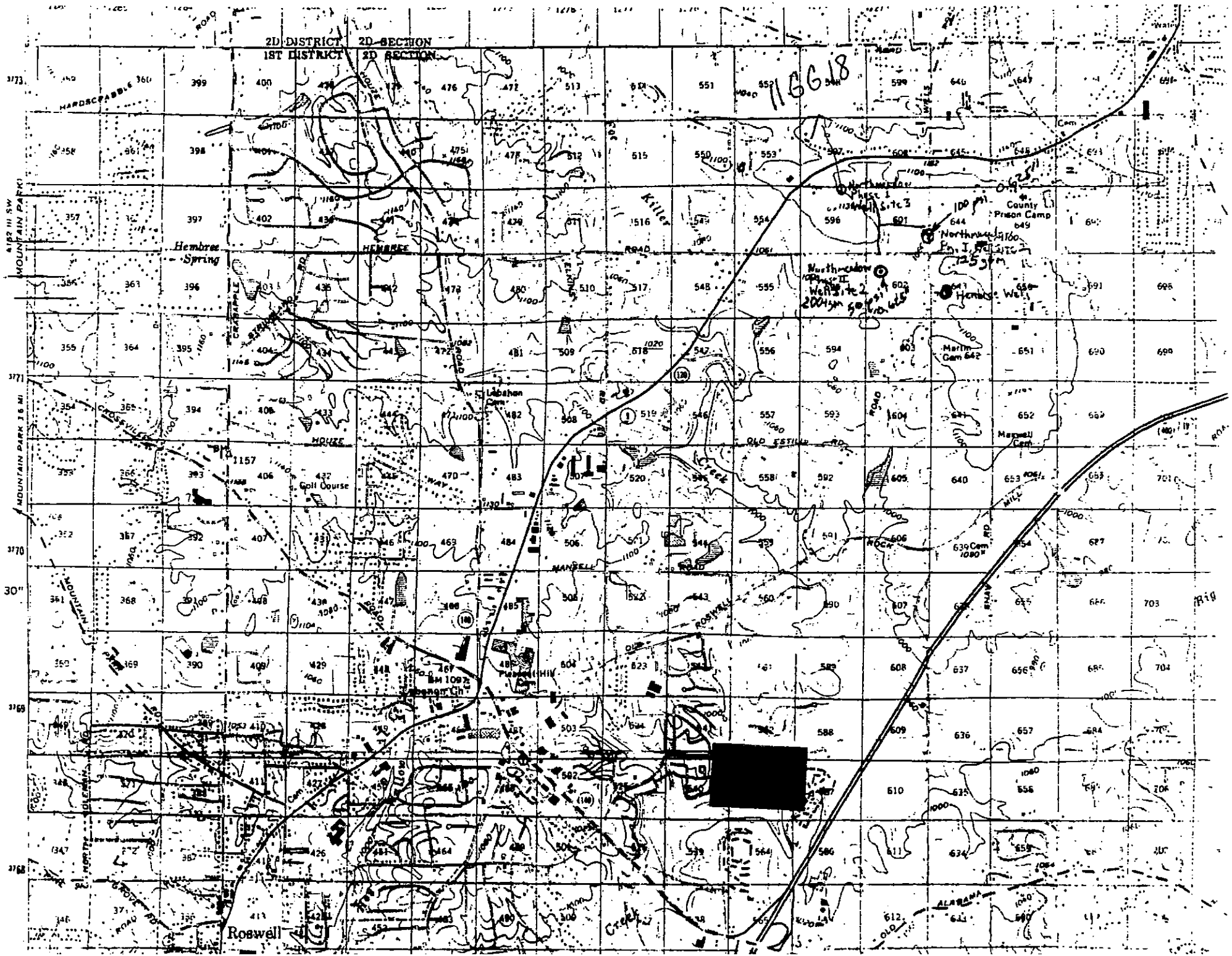

2D DISTRICT 2D SECTION
1ST DISTRICT 2D SECTION
11GG18
Hembree Spring
HEMBREE ROAD
Killer
Northwestern Well Site 3
Northwestern Well Site 2
Hembree Well
County Prison Camp
Labishan Cem
Golf Course
Marlin Cem
Maxwell Cem
639 Cem
MANSELL ROAD
ROSWELL
Roswell
MOUNTAIN PARK 15 MI SW
MOUNTAIN PARK 16 MI

Table 9.—Record of wells in the Greater Atlanta Region--Continued

Well No.	Owner	Water-bearing unit	Latitude and longitude	Yield (gal/min)	Depth (ft)	Casing depth (ft)	Casing diam. (in.)	Date drilled	Driller	Elevation (ft)	Water level below land surface: Static head (ft)	Water level below land surface: Pumping head (ft)
Fulton County												
11EE10	T. Wayne Blanchard 564 Wimbledon Rd. Atlanta	D	33°48'26" 84°22'07"	38	350	20	6	--	Virginia	900	40	200
11FF4	Landmark Apartments I-285 at 5775 Glenridge Rd. Atlanta	G	33°54'45" 84°21'35"	30	173	63	6	11/72	do.	950	10	173
11FF5	N. A. Williams 24 Laurel Dr., NE Atlanta	H,C	33°55'46" 84°21'28"	25	318	79	6	7/60	do.	1,110	62	160
11FF6	Foxcroft Apartments 6851 Roswell Rd. Atlanta	A	33°56'31" 84°22'19"	60	106	45	6	1973	Ward	940	--	--
11FF7	Atlanta Assoc. of Baptist Churches 1900 Northridge Dunwoody	C	33°59'14" 84°19'32"	23	450	39	6	6/56	Virginia	920	60	180
11FF8	E. A. Isakson 1275 Riverside Rd. Roswell	C	33°59'25" 84°19'21"	50	201	19	6	5/66	do.	870	--	--
11FF9	Dr. Robert Smith, III 1750 Brandon Hall Dunwoody	A	33°59'04" 84°18'09"	40	205	70	6	12/76	do.	880	--	--
11FF10	Bill Weaver 3450 Spalding Dr. Atlanta	H	33°57'57" 84°17'36"	30	185	--	6	8/67	do.	990	30	100
11FF11	V. A. Pinnell 3400 Spalding Dr. Atlanta	C,H	33°57'55" 84°17'38"	75	--	--	--	1962	J.A. Wood	990	--	--
11FF12	Joe A. Seibold 8099 Jett Ferry Dunwoody	A	33°58'13" 84°17'15"	30	150	27	6	5/55	Virginia	900	0	100
11FF14	Sidney Wooten 7700 Jett Ferry Dunwoody	H,A	33°57'53" 84°18'09"	100	153	51	6	8/79	--	1,100	--	--
11GG1	J. S. Robinson 400 Grimes Bridge Roswell	C,A	34°00'55" 84°20'15"	24	323	38	6	11/68	Virginia	1,080	--	--
11GG2	A. C. Morris, Jr. 350 Hollyberry Dr. Roswell	C	34°03'25" 84°21'00"	25	306	28	6	4/71	do.	1,100	--	--
11GG3	Jerry Bowden Tote Water Farms 12405 Etris Rd. Roswell	C	34°05'05" 84°22'06"	23	173	61	6	1/71	do.	1,060	--	173
11GG4	Thomas Archer 335 Ranchette Rd. Alpharetta	C,A	34°06'04" 84°22'17"	50	126	46	6	9/71	Ward	1,080	--	--
11GG5	Roger Hopper 185 Dorris Rd. Alpharetta	C	34°06'26" 84°21'24"	30	240	35	6	4/78	Virginia	1,020	--	--

T

Interview Form

Name: PETER T. KALLAY

Phone Number: Sam Buckles 770-387-4900 X 127 Date: May 8, 2007

Contact: Sam Buckles Time: 9 38 AM

Company: Georgia EPD Mountain District

Project: Roswell Cleaners & Coin Laundry

Re: Water Wells near Roswell Cleaners & Coin Laundry, 1013 Alpharetta St., Roswell

Are you responsible for assisting persons requesting water well searches in Fulton County, including Roswell I was referred to you by Brian in your Atlanta office.

Yes, I am. I looked at the area you were requesting information, 1013 Alpharetta Street, and I am not aware of any wells in that area other than those listed on the databases.

Are you aware of any wells other than those listed on the USGS and Georgia EPD databases

Yes, I am, but I do not know of any in that particular area.

If you ever need any additional information, please feel free to call me.

Thank you.

Interview Form

Name: PETER T. KALLAY

Phone Number: 404-362-2641

Date: 5-04-07

Contact: Brian

Time: 1 03

Company: Georgia EPD Mountain District

Project: Roswell Cleaners & Coin Laundry

Re: Know of any water wells in the area of Roswell Cleaners & Coin Laundry

Our office, the Mountain District office in Atlanta, was formerly responsible for handling water well information requests until about 2 years ago.

Are you aware of any water wells in the area of Roswell Cleaners and Coin Laundry, at 1013 Alpharetta Street in Roswell .

No, I am not aware of any water wells in that area, other than the wells in the computerized databases

Thank you.

ATTACHMENT I

ROSWELL AREA WATER WELL SURVEY

Georgia Department of Natural Resources
2 Martin Luther King Jr. Drive, SE, Suite 1462 East Atlanta, Georgia 30334
Noel Holcomb, Commissioner
Environmental Protection Division
Carol A. Couch, Ph.D., Director
Hazardous Waste Management Branch
404-657-8600

December 21, 2007
CERTIFIED MAIL
Return Receipt Requested

Mr. Richard E. Bowen
Property Owner
811 Serramonte Drive
Marietta, GA 30068

RE: Roswell Cleaners & Coin Laundry
1013 Alpharetta Street
Roswell, Fulton County, GA 30075
HSI # 10883

Dear Mr. Bowen:

The Georgia Environmental Protection Division (EPD) has reviewed your May 30, 2007 release notification for the above-referenced site and has listed it on the Hazardous Site Inventory pursuant to pursuant to Section 391-3-19-.05(1) of the Rules for Hazardous Site Response (available at www.gaepd.org).

Enclosed is a document entitled "Introduction to the Hazardous Site Inventory" that explains how sites are listed. Also enclosed is a printout of the data EPD used in the Reportable Quantity Screening Method that resulted in this site being listed on the Hazardous Site Inventory.

Although EPD will eventually identify all persons who may be responsible for this site and ask them to investigate and clean it up, you may proceed with those actions at any time.

If you have any questions or comments regarding this site, please contact Ms. Jessica McCarron at 404/657-8600.

Sincerely,

Carol A. Couch, Ph.D.
Director

Enclosures: (1) HSI site data printout
(2) Introduction to the HSI

File: HSI # 10883

Cc: Mr. Richard Wingate of Decker, Hallman, Barber & Briggs

S:\RDRIVE\JMcCarron\HSI\Roswell Cleaners\Listing Letter roswell cleaners.doc

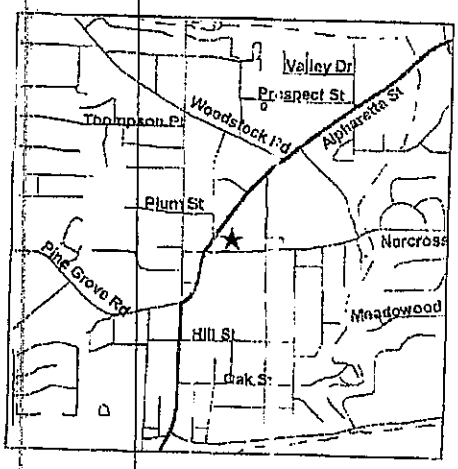
GEORGIA ENVIRONMENTAL PROTECTION DIVISION
HAZARDOUS SITE INVENTORY
July 1, 2007

Site Number: 10883
SITE SUMMARY

SITE NAME: Roswell Cleaners & Coin Laundry

LOCATION: 1013 Alpharetta Street
Roswell, Fulton County, GA 30075

Latitude: 34° 1' 33" N Longitude: 84° 21' 32" W



LAST KNOWN PROPERTY OWNER AND MAILING ADDRESS:
Richard E. Bowen
811 Serramonte Drive
Marietta, GA 30068

REGULATED SUBSTANCES RELEASED, AND THREATS TO HUMAN HEALTH AND ENVIRONMENT POSED BY THE RELEASE: This site has a known release of Vinyl chloride in groundwater at levels exceeding the reportable quantity. No human exposure via drinking water is suspected from this release. The nearest drinking water well is between 2 and 3 miles from the area affected by the release. Other substances in groundwater: Dichloroethylene, N.O.S.; Trichloroethene.

This site has a known release of Tetrachloroethene in soil at levels exceeding the reportable quantity. This site has unlimited access. The nearest resident individual is between 301 and 1000 feet from the area affected by the release. Other substances on site: Acetone; Benzene; Dichloroethylene, N.O.S.; Ethylbenzene; Naphthalene; Toluene; Trichloroethene; Xylenes.

STATUS OF CLEANUP ACTIVITIES: EPD has not yet directed the responsible parties to begin investigation or cleanup under the Hazardous Site Response Act for source materials, soil, and groundwater.

CLEANUP PRIORITY: The Director has designated this site as Class II.

GA EPD DIRECTOR'S DETERMINATION REGARDING CORRECTIVE ACTION: Pending

Site No.: 10883 Site Name: **Roswell Cleaners & Coin Laundry**

12/17/2007 15:40:52

Location: 1013 Alpharetta Street
Roswell
County: Fulton 30075
Parcel ID: 12-1902-0412-061-6

Lat 34 ° 1 ' 33 " N Lon 84 ° 21 ' 32 " W

Property Owner: Richard E. Bowen
811 Serramonte Drive
Marietta , GA 30068
Phone: (770) 565-1924

Contact Person: Richard E. Bowen
Property Owner

811 Serramonte Drive
Marietta , GA 30068
Phone: (770) 565-1924

Facility ow/op: William J. Gunn, Owner

Roswell Cleaners & Coin Laundry
1013 Alpharetta Street
Roswell , GA 30075
Phone: (770) 565-1924

EPA ID: GAD981216906
Entered HSI Database on : 12/05/2007
Corrective Action Site Class: 2 Cleanup Code: 1

OUTPUT FROM REPORTABLE QUANTITIES SCREENING METHOD

GROUNDWATER PATHWAY ***Pathway Score:*** ***10.16***

A. Known (45), Suspected (10), or Pot. Future (5): 45
1B.Higher (6), Average (3), or Lower (0) Susceptibility: 0
2B. Physical State [stable solid=0; liquid=3]: 0
C. Containment [very good=0; poor=3]: 0

SUBSTANCE: (CAS: 75014) Vinyl chloride
2D. Toxicity: 16 3D. Quantity: 4 -

1E. Exposure: 4 (If 1E>4 then 2E=16)
2E. Distance to well or spring: 1 (If 1E=0 then 2E=1)

ON-SITE EXPOSURE PATHWAY ***Pathway Score:*** ***20.74***

A. Access [none=0; unlimited=4]: 4
B. Known (25), suspected (15), or no known (0) release: 25
C. Quality of containment [very good=0; poor=5]: 3

SUBSTANCE: (CAS: 127184) Tetrachloroethene
2D. Toxicity: 4 3D. Quantity: 4 -

1E. Distance to resident [<300'=8; >1mile=1]: 6
2E. Sensitive Environment affected [yes=1]: 0

Site No.: 10883 Site Name: Roswell Cleaners & Coin Laundry

12/17/2007 15:40:52

Other substances in groundwater:

Casno	Chemical	GrndWtr	Soil
67641	Acetone		y
71432	Benzene		y
25323302	Dichloroethylene, N.O.S.		y
100414	Ethylbenzene		y
91203	Naphthalene		y
108883	Toluene		y
79016	Trichloroethene		y
1330207	Xylenes		y

INTRODUCTION TO THE HAZARDOUS SITE INVENTORY

The purpose of this introduction is to help people who are using the Hazardous Site Inventory (HSI) to understand what it is, how sites get on it, what happens at those sites, how sites get off, and what kind of information is available about sites listed on the HSI. This introduction should not be construed as a legal interpretation of either the Hazardous Site Response Act, O.C.G.A. § 12-8-96, *et seq.*, as amended, or the Rules for Hazardous Site Response, Chapter 391-3-19. For more information on either the Hazardous Site Inventory or the Hazardous Sites Response Program, please call (404) 657-8600.

Sites on the HSI are presented in several formats in this document. The COUNTY list has sites listed by county, the NAME list has sites arranged alphabetically by site name, the SITE NUMBER list has sites ordered by site number, and the SITE CLASS list has sites arranged alphabetically but grouped as either Class I, II, III, IV or V (see "What happens after a site is listed on the HSI?"). Following these lists are summaries for all sites, arranged by site number. Finally, a series of maps covering the entire state is provided which shows the location of all HSI sites by site number.

What is the Hazardous Site Inventory?

The Hazardous Site Inventory (HSI) is a list of sites in Georgia where there has been a known or suspected release of a regulated substance above a reportable quantity and which have yet to show they meet state clean-up standards found in the Rules for Hazardous Site Response. The HSI is compiled and published by the Georgia Environmental Protection Division (EPD). At least once each year, EPD will publish the HSI and send one copy to the clerk of the superior court of each county in Georgia. The clerk is required to keep the most current copy of the HSI where the deed records of the county are kept so that anyone may have ready access to it. The July 1, 2006 edition had 550 sites, and this July 1, 2007 edition adds 29 sites and removes 13 for a total of 566 sites.

How do sites get on the HSI?

When a release of a regulated substance is discovered in soil or groundwater, the property owner must determine if the Rules for Hazardous Site Response require notifcation to EPD about the release. If so, the property owner must submit a notification, and EPD determines if a release above a reportable quantity has occurred. EPD does this by using the Reportable Quantities Screening Method (RQSM). RQSM assigns numerical values to such factors as the toxicity, quantity, and physical state of the regulated substance released, how close the site is to nearby residents and drinking water wells, the degree to which the release is contained, the accessibility of the site, whether or not the release has resulted in exposure to nearby residents, and the presence of on-site sensitive environments. RQSM uses a mathematical equation to combine the numerical values for these factors into a single score for soil or groundwater. If this score is above a certain number for either soil or groundwater, a release exceeding a reportable quantity has occurred and the site is placed on the HSI. EPD may also place a site on the HSI if the site otherwise poses a threat to human health or the environment. A complete description of how EPD uses RQSM can be found in the document "Guidance Manual for the Reportable Quantities Screening Method" dated February 10, 1994, which is available from EPD upon request.

What kinds of sites are on this edition of the HSI?

One category of sites evaluated were those where the property owner filed a release notification with EPD. Notifications are evaluated using RQSM to determine if a release exceeding a reportable quantity exists at the site. If EPD determined that a reportable quantity exists, the site was placed on the HSI. If EPD had not decided to list a site as of May 15th the site will not be listed in that year's edition of the HSI.

Prior to the first publication of the HSI in 1994, EPD evaluated a second category of sites, those listed on the March 2, 1994 version of what is known as Wastelan. Wastelan is a report that the United States Environmental Protection Agency (USEPA) uses to summarize information contained in its main superfund database which is known as CERCLIS. The Wastelan report is a list of all sites discovered in Georgia that USEPA has been or will be investigating under the federal superfund program. If USEPA's investigation shows that a site on Wastelan is a high priority for cleanup under the federal superfund program, USEPA puts it on the National Priorities List (NPL). Sites that do not make it onto the NPL will not be cleaned up by USEPA under the federal superfund program unless they pose an imminent danger to human health and the environment; sites that pose an imminent danger may be cleaned up by USEPA through an emergency action. Only a small number of sites that appear on Wastelan will ever be placed on the NPL. In fact, of the 904 sites in Georgia on the March 2, 1994 Wastelan report, USEPA has placed only 15 on the NPL. This means hundreds of contaminated sites in Georgia will not be cleaned up by the USEPA under the federal superfund program. However, this does not mean that these sites do not pose a threat to human health or the environment. It simply means that USEPA has determined that they do not pose enough of a threat to be considered a priority for cleanup using resources under the federal superfund program.

The HSI also identifies properties or sites that are part of another site already listed on the HSI. A property or site can be sublisted as part of another site when EPD determines that a release discovered on that property is associated with the site that has already been listed on the HSI. These sublisted properties/sites are not separately listed or tallied in this document. Sublisted properties are identified at the end of the summary for the associated primary HSI site.

The discovery and listing of new sites on future editions of the HSI will be an ongoing process.

How often is the HSI published?

The HSI is published at least once a year each July 1st. EPD updates the HSI as needed to add or remove sites or to provide new information about sites as it becomes available. The listing of a site on the HSI, a change in the site's various designations on the HSI, or its removal can occur at any time throughout the year; the effective dates of such actions are not limited to the date of publication of the HSI.

What happens after a site is listed on the HSI?

Sites listed on the HSI are required to meet the state's clean-up standards for hazardous sites. The clean-up standards establish levels for regulated substances that are protective of human health and the environment under specific conditions.

The sites listed on the HSI are separated into five classes, which are described as follows:

- CLASS I. Sites that have resulted in known human exposure to regulated substances, that have sources of continuing releases, or that are causing serious environmental problems are designated on the HSI as Class I sites. These sites will be EPD's highest priority for corrective action. Persons responsible for these sites are required to perform corrective action and put a notice in the deed to their property. If a responsible party fails to perform corrective action as required, EPD may use the state hazardous waste trust fund to clean up the site and then recover the cost of the cleanup from the responsible party later. Class I sites retain that classification until they are cleaned up to meet applicable clean-up standards.

- CLASS II. For many sites listed on the HSI, further evaluation of the site must be done before EPD can decide whether corrective action is needed. These are known as Class II sites. Persons responsible for Class II sites are given an opportunity to voluntarily investigate and clean up their site and report their findings to EPD. The site is either removed from the HSI or reclassified as Class I or III, based on whether it meets the clean-up standards. While classified as Class II, sites are not designated as needing corrective action, so property owners do not immediately have to place notices on deeds and other property records. If a responsible party at a Class II site fails to do the required investigation, the site priority can be upgraded to Class I. The majority of sites on this edition of the HSI are Class II.

- CLASS III. Sites designated on the HSI as Class III sites are those that cannot meet residential clean-up standards but do meet alternative clean-up standards. These sites are designated as needing corrective action and the property owners are required to make the same deed notices as apply to Class I sites. These sites may require continued monitoring to make sure they continue to meet the appropriate standards. They will also require further corrective action before they can be used for residential purposes. Class III sites that meet the non-residential standards (Types 3 and 4) will be removed from the HSI once the property owner has filed a deed notice. Class III sites that can only meet the Type 5 standards remain on the HSI. Land use at sites that meet only the Type 5 standards is restricted, and the responsible party must provide long term monitoring and maintenance of the site.

- CLASS IV. These are sites where corrective action is already being conducted or has been completed under other federal or state authority. These sites are presumed to be in compliance with the Type 5 clean-up standards. They are designated as needing corrective action, remain on the HSI, and the property owner is required to file deed notices. If it is ever determined that the corrective action at a Class IV site does not protect human health or the environment, then the site may be redesignated from Class IV to Class I. If it can be certified that the site meets one of the other clean-up standards (Types 1-4), it can be reclassified and may be removed from the HSI.

- CLASS V. These are sites that have a known release that requires corrective action and are not in compliance with any of the risk reduction standards of Rule 391-3-19-.07, but corrective action is being performed in compliance with a corrective action plan approved by the Director which will bring the site into compliance with the risk reduction standards.

How does a site get off the HSI?

EPD may remove a site from the HSI if the applicable *clean-up standards are met*, except for sites that meet only the Type 5 clean-up standards. Sites may also be removed from the HSI if EPD determines that *a release exceeding a reportable quantity had not occurred at the time of the site's listing* on the HSI.

What information does the HSI provide?

Each site summary provides general information about the site including the name, the location, the tax parcel ID number, the property owner, a description of the regulated substances released at the site and the possible threats to human health or the environment that the release may pose. A small map indicating the approximate location of the site is also included. The listing also indicates the status of cleanup activities at the site, the cleanup priority assigned to the site, and whether EPD's Director has determined the site needs corrective action.

The site number is assigned by EPD only as a way of tracking a site or property through name changes, ownership changes, etc. The site number has no other significance. If a site number is missing, it simply means either that information about the missing site was entered into the database and later removed before publication of the HSI, or that the site has been removed from the HSI prior to publication.

A note about the maps and parcel numbers listed in the HSI

The maps provided herein are included solely to provide the general location of the site. The maps are not intended to provide precise information and are not drawn to scale. They are derived from information from several different sources and their accuracy cannot be guaranteed. While we have attempted to verify the information submitted, all of the maps have not been field verified.

The tax parcel identification numbers are also not guaranteed to be correct. These numbers are derived from several different sources, including information submitted to EPD from the property owners or other parties responsible for the sites. The numbers are provided to help find the general location of the sites on the maps located in the office of the tax assessor or appraiser in the county in which the land lies.

The tax parcel identification number or numbers shown in the HSI may not be identical to the inventory or tax account numbers the county may assign to the property. We have simply attempted to provide the appropriate map number or designation, along with the appropriate reference numbers or markings for the property as it appears on that map. These maps and parcel numbers are generated by the individual counties and are subject to change at any time without EPD being aware of these changes.

The maps and tax parcel identification numbers are not intended to define the exact boundaries of the "site". Any property which is affected by a release exceeding a reportable quantity is part of the HSI site, regardless of whether such property is depicted on a map or listed in the HSI by tax parcel identification number.

Where can I get more information?

Additional information regarding the Hazardous Sites Response Program, the Rules for Hazardous Site Response and an electronic version of the HSI can be found on the Environmental Protection Division web site at www.gaepd.org. If you would like more information about a site listed on the HSI, please contact the Hazardous Sites Response Program at (404) 657-8600.

Hazardous Sites Response Program
Document Submittal Format

All documents more than 25 pages in length shall be submitted as one paper copy and two compact disc (CD) copies with the documents in searchable (i.e., tagged) Portable Document Format (PDF). A signed certification page must be included in the CD copies. The certification page states that the electronic copy is complete, identical to the paper copy, and virus free.

All documents currently in electronic format should be converted into the searchable PDF format. All documents not available electronically and pages that contain signatures, initials, or other information not in the electronic copy should be scanned into a searchable PDF format including the signed certification page. Scanning should be at 200 dpi with any documents requiring color being scanned in color.

The document should be broken down into multiple searchable PDF files along the following guidelines with the file name referenced in the table of content.

Table of Contents
Signature / Certification pages
Main body of document
Each Attachment (Appendices, Tables, Figures, Reports, etc.)

The CDs shall be enclosed in a jewel case. The CD shall be labeled with the following information written on the CD in indelible ink or affixed to the CD with an adhesive CD label.

Site Name
Site Address
HSI Number
City
County
Document Name
Document Date

APPENDIX C

GROUNDWATER ANALYTICAL REPORT

ACL

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Laboratory Report

ACL Project #: **68896**

Client Proj #: REB-2415 / Roswell Cleaners

Prepared For:

Atlanta Environmental Consultants
3440 Blue Springs Rd.
Suite 503
Kennesaw, GA 30144-0000

Attention: Mr. Peter Kallay

Report Date: 03/17/2016

This report contains 10 pages.
(including this cover page and chain of custody)

John Andros
Lab Manager

ACCREDITED IN ACCORDANCE WITH

Advanced Chemistry Labs is a woman-owned, small business concern.

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Explanation of Symbols and Abbreviations

Listed below are common symbols and abbreviations typically used in reporting technical data:

PQL	Practical Quantitation Limit	MDL	Method Detection Limit
BQL	Below Quantitation Limit	BDL	Below Method Detection Limit
MPN	Most Probable Number	TNTC	Too Numerous To Count
NTU	Nephelometric Turbidity Units	BTU	British Thermal Units
°C	Degrees Centigrade	°F	Degrees Fahrenheit
µmhos/cm	micromhos/cm	cfu	Colony Forming Unit
DF	Dilution Factor	meq	milliequivalents
kg	kilogram(s)	g	gram(s)
mg	milligram(s)	µg	microgram(s)
l or L	liter(s)	ml or mL	milliliter(s)
µl or µL	microliter(s)	m^3	cubic meter(s)
lb	pound(s)	ft^3	cubic foot(feet)
ft	foot(feet)	su	Standard Units
<	Less than	>	Greater than

mg/L, mg/kg — Units of concentration in milligrams per liter for liquids and milligrams per kilogram for solids. Also referred to as parts per million or "ppm" when the assumption is made that the specific gravity or density is one (1 g/mL).

µg/L, µg/kg — Units of concentration in micrograms per liter for liquids and micrograms per kilogram for solids. Also referred to as parts per billion or "ppb" when the assumption is made that the specific gravity or density is one (1 g/mL).

wt % — Units of concentration expressed on a weight/weight basis (e.g. grams per 100 grams).

Surrogate — Compound(s) added by the laboratory for quality control monitoring.

mg/kg,dw — Units of concentration in milligrams per kilogram (dry weight basis).

Data Qualifiers:

B — Analyte was also detected in the method blank
E — Estimated value - analyte was detected at concentration greater than upper calibration limit
F — Estimated value - analyte should have been tested as a field parameter
H — Estimated value - sample was analyzed beyond the accepted holding time
J — Estimated value - analyte was detected < PQL and ≥ MDL
L — The batch-specific LCS and/or LCSD was not within lab control limits for this analyte
M — The batch-specific MS and/or MSD was not within lab control limits for this analyte
R — The RPD between batch-specific sample/dup or MS/MSD was not within lab control limits for this analyte
S — The surrogate recovery was not within quality control limits
Z — Laboratory specific qualifier – refer to case narrative
* — Performed in strict accordance with the procedures and controls of the ACL quality system, but not currently in the NELAC list of certified analytes/methods

Solid samples (i.e. soil, sludge, solid waste) are reported on a wet weight basis unless otherwise noted. Estimated uncertainty values are available upon request.

Representation and Limitation of Liability – The accuracy of all analytical results for samples begins as it is received by the laboratory. The integrity of the sample begins at the time it is placed in the possession of authorized ACL personnel. All other warranties, expressed or implied, are disclaimed. Liability is limited to the cost of the analysis.

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Client: Atlanta Environmental Consultants
3440 Blue Springs Rd.
Suite 503
Kennesaw, GA 30144-0000

Contact: Mr. Peter Kallay

Client Proj #: REB-2415 / Roswell Cleaners
ACL Project #: 68896
Date Received: 02/25/2016
Date Reported: 03/17/2016

Volatile Organics (8260B)

Sample ID: MW-1
ACL Sample #: 309053
Units: µg/L

Matrix: Water
Date Sampled: 02/25/2016 9:15
Date Prepared:
Date Analyzed: 02/26/2016
Analyst: JG

Analyte	Result	PQL	Analyte	Result	PQL
Acetone	BQL	100	1,3-Dichloropropane	BQL	5.0
Acrolein	BQL	50	2,2-Dichloropropane	BQL	5.0
Acrylonitrile	BQL	50	1,1-Dichloropropene	BQL	5.0
Benzene	BQL	5.0	cis-1,3-Dichloropropene	BQL	5.0
Bromobenzene	BQL	5.0	trans-1,3-Dichloropropene	BQL	5.0
Bromochloromethane	BQL	5.0	Ethylbenzene	BQL	5.0
Bromodichloromethane	BQL	5.0	Hexachlorobutadiene	BQL	5.0
Bromoform	BQL	5.0	2-Hexanone	BQL	50
Bromomethane	BQL	10	Isopropylbenzene	BQL	5.0
2-Butanone	BQL	100	p-Isopropyltoluene	BQL	5.0
n-Butylbenzene	BQL	5.0	4-Methyl-2-pentanone	BQL	50
sec-Butylbenzene	BQL	5.0	Methylene chloride	BQL	5.0
tert-Butylbenzene	BQL	5.0	Naphthalene	BQL	5.0
Carbon disulfide	BQL	5.0	n-Propylbenzene	BQL	5.0
Carbon tetrachloride	BQL	5.0	Styrene	BQL	5.0
Chlorobenzene	BQL	5.0	1,1,1,2-Tetrachloroethane	BQL	5.0
Chloroethane	BQL	10	1,1,2,2-Tetrachloroethane	BQL	5.0
2-Chloroethylvinyl ether	BQL	10	Tetrachloroethene	BQL	5.0
Chloroform	BQL	5.0	Toluene	BQL	5.0
Chloromethane	BQL	10	1,2,3-Trichlorobenzene	BQL	5.0
2-Chlorotoluene	BQL	5.0	1,2,4-Trichlorobenzene	BQL	5.0
4-Chlorotoluene	BQL	5.0	1,1,1-Trichloroethane	BQL	5.0
1,2-Dibromo-3-chloropropane	BQL	5.0	1,1,2-Trichloroethane	BQL	5.0
Dibromochloromethane	BQL	5.0	Trichloroethene	BQL	5.0
1,2-Dibromoethane	BQL	5.0	Trichlorofluoromethane	BQL	5.0
Dibromomethane	BQL	5.0	1,2,3-Trichloropropane	BQL	5.0
1,2-Dichlorobenzene	BQL	5.0	1,2,4-Trimethylbenzene	BQL	5.0
1,3-Dichlorobenzene	BQL	5.0	1,3,5-Trimethylbenzene	BQL	5.0
1,4-Dichlorobenzene	BQL	5.0	Vinyl acetate	BQL	50
Dichlorodifluoromethane	BQL	10	Vinyl chloride	BQL	2.0
1,1-Dichloroethane	BQL	5.0	m,p-Xylene	BQL	10
1,2-Dichloroethane	BQL	5.0	o-Xylene	BQL	5.0
1,1-Dichloroethene	BQL	5.0			
cis-1,2-Dichloroethene	BQL	5.0			
trans-1,2-Dichloroethene	BQL	5.0			
1,2-Dichloropropane	BQL	5.0			

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Client: Atlanta Environmental Consultants
3440 Blue Springs Rd.
Suite 503
Kennesaw, GA 30144-0000

Contact: Mr. Peter Kallay

Client Proj #: REB-2415 / Roswell Cleaners
ACL Project #: 68896
Date Received: 02/25/2016
Date Reported: 03/17/2016

Volatile Organics (8260B)

Sample ID: MW-5
ACL Sample #: 309054
Units: µg/L

Matrix: Water
Date Sampled: 02/25/2016 9:45
Date Prepared:
Date Analyzed: 02/26/2016
Analyst: JG

Analyte	Result	PQL	Analyte	Result	PQL
Acetone	BQL	100	1,3-Dichloropropane	BQL	5.0
Acrolein	BQL	50	2,2-Dichloropropane	BQL	5.0
Acrylonitrile	BQL	50	1,1-Dichloropropene	BQL	5.0
Benzene	BQL	5.0	cis-1,3-Dichloropropene	BQL	5.0
Bromobenzene	BQL	5.0	trans-1,3-Dichloropropene	BQL	5.0
Bromochloromethane	BQL	5.0	Ethylbenzene	BQL	5.0
Bromodichloromethane	BQL	5.0	Hexachlorobutadiene	BQL	5.0
Bromoform	BQL	5.0	2-Hexanone	BQL	50
Bromomethane	BQL	10	Isopropylbenzene	BQL	5.0
2-Butanone	BQL	100	p-Isopropyltoluene	BQL	5.0
n-Butylbenzene	BQL	5.0	4-Methyl-2-pentanone	BQL	50
sec-Butylbenzene	BQL	5.0	Methylene chloride	BQL	5.0
tert-Butylbenzene	BQL	5.0	Naphthalene	BQL	5.0
Carbon disulfide	BQL	5.0	n-Propylbenzene	BQL	5.0
Carbon tetrachloride	BQL	5.0	Styrene	BQL	5.0
Chlorobenzene	BQL	5.0	1,1,1,2-Tetrachloroethane	BQL	5.0
Chloroethane	BQL	10	1,1,2,2-Tetrachloroethane	BQL	5.0
2-Chloroethylvinyl ether	BQL	10	Tetrachloroethene	BQL	5.0
Chloroform	BQL	5.0	Toluene	BQL	5.0
Chloromethane	BQL	10	1,2,3-Trichlorobenzene	BQL	5.0
2-Chlorotoluene	BQL	5.0	1,2,4-Trichlorobenzene	BQL	5.0
4-Chlorotoluene	BQL	5.0	1,1,1-Trichloroethane	BQL	5.0
1,2-Dibromo-3-chloropropane	BQL	5.0	1,1,2-Trichloroethane	BQL	5.0
Dibromochloromethane	BQL	5.0	Trichloroethene	BQL	5.0
1,2-Dibromoethane	BQL	5.0	Trichlorofluoromethane	BQL	5.0
Dibromomethane	BQL	5.0	1,2,3-Trichloropropane	BQL	5.0
1,2-Dichlorobenzene	BQL	5.0	1,2,4-Trimethylbenzene	BQL	5.0
1,3-Dichlorobenzene	BQL	5.0	1,3,5-Trimethylbenzene	BQL	5.0
1,4-Dichlorobenzene	BQL	5.0	Vinyl acetate	BQL	50
Dichlorodifluoromethane	BQL	10	Vinyl chloride	BQL	2.0
1,1-Dichloroethane	BQL	5.0	m,p-Xylene	BQL	10
1,2-Dichloroethane	BQL	5.0	o-Xylene	BQL	5.0
1,1-Dichloroethene	BQL	5.0			
cis-1,2-Dichloroethene	BQL	5.0			
trans-1,2-Dichloroethene	BQL	5.0			
1,2-Dichloropropane	BQL	5.0			

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Contact: Mr. Peter Kallay

Client Proj #: REB-2415 / Roswell Cleaners
ACL Project #: 68896
Date Received: 02/25/2016
Date Reported: 03/17/2016

Volatile Organics (8260B)

Sample ID: MW-3
ACL Sample #: 309055
Units: µg/L

Matrix: Water
Date Sampled: 02/25/2016 10:10
Date Prepared:
Date Analyzed: 02/26/2016
Analyst: JG

Analyte	Result	PQL	Analyte	Result	PQL
Acetone	BQL	100	1,3-Dichloropropane	BQL	5.0
Acrolein	BQL	50	2,2-Dichloropropane	BQL	5.0
Acrylonitrile	BQL	50	1,1-Dichloropropene	BQL	5.0
Benzene	BQL	5.0	cis-1,3-Dichloropropene	BQL	5.0
Bromobenzene	BQL	5.0	trans-1,3-Dichloropropene	BQL	5.0
Bromochloromethane	BQL	5.0	Ethylbenzene	BQL	5.0
Bromodichloromethane	BQL	5.0	Hexachlorobutadiene	BQL	5.0
Bromoform	BQL	5.0	2-Hexanone	BQL	50
Bromomethane	BQL	10	Isopropylbenzene	BQL	5.0
2-Butanone	BQL	100	p-Isopropyltoluene	BQL	5.0
n-Butylbenzene	BQL	5.0	4-Methyl-2-pentanone	BQL	50
sec-Butylbenzene	BQL	5.0	Methylene chloride	BQL	5.0
tert-Butylbenzene	BQL	5.0	Naphthalene	BQL	5.0
Carbon disulfide	BQL	5.0	n-Propylbenzene	BQL	5.0
Carbon tetrachloride	BQL	5.0	Styrene	BQL	5.0
Chlorobenzene	BQL	5.0	1,1,1,2-Tetrachloroethane	BQL	5.0
Chloroethane	BQL	10	1,1,2,2-Tetrachloroethane	BQL	5.0
2-Chloroethylvinyl ether	BQL	10	Tetrachloroethene	BQL	5.0
Chloroform	BQL	5.0	Toluene	BQL	5.0
Chloromethane	BQL	10	1,2,3-Trichlorobenzene	BQL	5.0
2-Chlorotoluene	BQL	5.0	1,2,4-Trichlorobenzene	BQL	5.0
4-Chlorotoluene	BQL	5.0	1,1,1-Trichloroethane	BQL	5.0
1,2-Dibromo-3-chloropropane	BQL	5.0	1,1,2-Trichloroethane	BQL	5.0
Dibromochloromethane	BQL	5.0	Trichloroethene	BQL	5.0
1,2-Dibromoethane	BQL	5.0	Trichlorofluoromethane	BQL	5.0
Dibromomethane	BQL	5.0	1,2,3-Trichloropropane	BQL	5.0
1,2-Dichlorobenzene	BQL	5.0	1,2,4-Trimethylbenzene	BQL	5.0
1,3-Dichlorobenzene	BQL	5.0	1,3,5-Trimethylbenzene	BQL	5.0
1,4-Dichlorobenzene	BQL	5.0	Vinyl acetate	BQL	50
Dichlorodifluoromethane	BQL	10	Vinyl chloride	BQL	2.0
1,1-Dichloroethane	BQL	5.0	m,p-Xylene	BQL	10
1,2-Dichloroethane	BQL	5.0	o-Xylene	BQL	5.0
1,1-Dichloroethene	BQL	5.0			
cis-1,2-Dichloroethene	12	5.0			
trans-1,2-Dichloroethene	BQL	5.0			
1,2-Dichloropropane	BQL	5.0			

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Phone: (770) 409-1444
Fax: (770) 409-1844
e-mail: acl@acl-labs.net

3039 Amwiler Road • Suite 100 • Atlanta, GA 30360
P.O. Box 88610 • Atlanta, GA 30356
www.acl-labs.com

Client: Atlanta Environmental Consultants
3440 Blue Springs Rd.
Suite 503
Kennesaw, GA 30144-0000

Contact: Mr. Peter Kallay

Client Proj #: REB-2415 / Roswell Cleaners
ACL Project #: 68896
Date Received: 02/25/2016
Date Reported: 03/17/2016

Volatile Organics (8260B)

Sample ID: MW-6D
ACL Sample #: 309056
Units: µg/L

Matrix: Water
Date Sampled: 02/25/2016 10:35
Date Prepared:
Date Analyzed: 02/26/2016
Analyst: JG

Analyte	Result	PQL	Analyte	Result	PQL
Acetone	BQL	100	1,3-Dichloropropane	BQL	5.0
Acrolein	BQL	50	2,2-Dichloropropane	BQL	5.0
Acrylonitrile	BQL	50	1,1-Dichloropropene	BQL	5.0
Benzene	BQL	5.0	cis-1,3-Dichloropropene	BQL	5.0
Bromobenzene	BQL	5.0	trans-1,3-Dichloropropene	BQL	5.0
Bromochloromethane	BQL	5.0	Ethylbenzene	BQL	5.0
Bromodichloromethane	BQL	5.0	Hexachlorobutadiene	BQL	5.0
Bromoform	BQL	5.0	2-Hexanone	BQL	50
Bromomethane	BQL	10	Isopropylbenzene	BQL	5.0
2-Butanone	BQL	100	p-Isopropyltoluene	BQL	5.0
n-Butylbenzene	BQL	5.0	4-Methyl-2-pentanone	BQL	50
sec-Butylbenzene	BQL	5.0	Methylene chloride	BQL	5.0
tert-Butylbenzene	BQL	5.0	Naphthalene	BQL	5.0
Carbon disulfide	BQL	5.0	n-Propylbenzene	BQL	5.0
Carbon tetrachloride	BQL	5.0	Styrene	BQL	5.0
Chlorobenzene	BQL	5.0	1,1,1,2-Tetrachloroethane	BQL	5.0
Chloroethane	BQL	10	1,1,2,2-Tetrachloroethane	BQL	5.0
2-Chloroethylvinyl ether	BQL	10	Tetrachloroethene	BQL	5.0
Chloroform	BQL	5.0	Toluene	BQL	5.0
Chloromethane	BQL	10	1,2,3-Trichlorobenzene	BQL	5.0
2-Chlorotoluene	BQL	5.0	1,2,4-Trichlorobenzene	BQL	5.0
4-Chlorotoluene	BQL	5.0	1,1,1-Trichloroethane	BQL	5.0
1,2-Dibromo-3-chloropropane	BQL	5.0	1,1,2-Trichloroethane	BQL	5.0
Dibromochloromethane	BQL	5.0	Trichloroethene	BQL	5.0
1,2-Dibromoethane	BQL	5.0	Trichlorofluoromethane	BQL	5.0
Dibromomethane	BQL	5.0	1,2,3-Trichloropropane	BQL	5.0
1,2-Dichlorobenzene	BQL	5.0	1,2,4-Trimethylbenzene	BQL	5.0
1,3-Dichlorobenzene	BQL	5.0	1,3,5-Trimethylbenzene	BQL	5.0
1,4-Dichlorobenzene	BQL	5.0	Vinyl acetate	BQL	50
Dichlorodifluoromethane	BQL	10	Vinyl chloride	BQL	2.0
1,1-Dichloroethane	BQL	5.0	m,p-Xylene	BQL	10
1,2-Dichloroethane	BQL	5.0	o-Xylene	BQL	5.0
1,1-Dichloroethene	BQL	5.0			
cis-1,2-Dichloroethene	BQL	5.0			
trans-1,2-Dichloroethene	BQL	5.0			
1,2-Dichloropropane	BQL	5.0			

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Client Proj #: REB-2415 / Roswell Cleaners
ACL Project #: 68896
Date Received: 02/25/2016
Date Reported: 03/17/2016

Volatile Organics (8260B)

Sample ID: MW-2
ACL Sample #: 309057
Units: µg/L

Matrix: Water
Date Sampled: 02/25/2016 11:05
Date Prepared:
Date Analyzed: 02/26/2016
Analyst: JG

Analyte	Result	PQL	Analyte	Result	PQL
Acetone	BQL	100	1,3-Dichloropropane	BQL	5.0
Acrolein	BQL	50	2,2-Dichloropropane	BQL	5.0
Acrylonitrile	BQL	50	1,1-Dichloropropene	BQL	5.0
Benzene	BQL	5.0	cis-1,3-Dichloropropene	BQL	5.0
Bromobenzene	BQL	5.0	trans-1,3-Dichloropropene	BQL	5.0
Bromochloromethane	BQL	5.0	Ethylbenzene	BQL	5.0
Bromodichloromethane	BQL	5.0	Hexachlorobutadiene	BQL	5.0
Bromoform	BQL	5.0	2-Hexanone	BQL	50
Bromomethane	BQL	10	Isopropylbenzene	BQL	5.0
2-Butanone	BQL	100	p-Isopropyltoluene	BQL	5.0
n-Butylbenzene	BQL	5.0	4-Methyl-2-pentanone	BQL	50
sec-Butylbenzene	BQL	5.0	Methylene chloride	BQL	5.0
tert-Butylbenzene	BQL	5.0	Naphthalene	BQL	5.0
Carbon disulfide	BQL	5.0	n-Propylbenzene	BQL	5.0
Carbon tetrachloride	BQL	5.0	Styrene	BQL	5.0
Chlorobenzene	BQL	5.0	1,1,1,2-Tetrachloroethane	BQL	5.0
Chloroethane	BQL	10	1,1,2,2-Tetrachloroethane	BQL	5.0
2-Chloroethylvinyl ether	BQL	10	Tetrachloroethene	26	5.0
Chloroform	BQL	5.0	Toluene	BQL	5.0
Chloromethane	BQL	10	1,2,3-Trichlorobenzene	BQL	5.0
2-Chlorotoluene	BQL	5.0	1,2,4-Trichlorobenzene	BQL	5.0
4-Chlorotoluene	BQL	5.0	1,1,1-Trichloroethane	BQL	5.0
1,2-Dibromo-3-chloropropane	BQL	5.0	1,1,2-Trichloroethane	BQL	5.0
Dibromochloromethane	BQL	5.0	Trichloroethene	BQL	5.0
1,2-Dibromoethane	BQL	5.0	Trichlorofluoromethane	BQL	5.0
Dibromomethane	BQL	5.0	1,2,3-Trichloropropane	BQL	5.0
1,2-Dichlorobenzene	BQL	5.0	1,2,4-Trimethylbenzene	BQL	5.0
1,3-Dichlorobenzene	BQL	5.0	1,3,5-Trimethylbenzene	BQL	5.0
1,4-Dichlorobenzene	BQL	5.0	Vinyl acetate	BQL	50
Dichlorodifluoromethane	BQL	10	Vinyl chloride	BQL	2.0
1,1-Dichloroethane	BQL	5.0	m,p-Xylene	BQL	10
1,2-Dichloroethane	BQL	5.0	o-Xylene	BQL	5.0
1,1-Dichloroethene	BQL	5.0			
cis-1,2-Dichloroethene	BQL	5.0			
trans-1,2-Dichloroethene	BQL	5.0			
1,2-Dichloropropane	BQL	5.0			

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Contact: Mr. Peter Kallay

Client Proj #: REB-2415 / Roswell Cleaners
ACL Project #: 68896
Date Received: 02/25/2016
Date Reported: 03/17/2016

Volatile Organics (8260B)

Sample ID: MW-4
ACL Sample #: 309058
Units: µg/L

Matrix: Water
Date Sampled: 02/25/2016 11:40
Date Prepared:
Date Analyzed: 02/26/2016
Analyst: JG

Analyte	Result	PQL	Analyte	Result	PQL
Acetone	BQL	100	1,3-Dichloropropane	BQL	5.0
Acrolein	BQL	50	2,2-Dichloropropane	BQL	5.0
Acrylonitrile	BQL	50	1,1-Dichloropropene	BQL	5.0
Benzene	BQL	5.0	cis-1,3-Dichloropropene	BQL	5.0
Bromobenzene	BQL	5.0	trans-1,3-Dichloropropene	BQL	5.0
Bromochloromethane	BQL	5.0	Ethylbenzene	BQL	5.0
Bromodichloromethane	BQL	5.0	Hexachlorobutadiene	BQL	5.0
Bromoform	BQL	5.0	2-Hexanone	BQL	50
Bromomethane	BQL	10	Isopropylbenzene	BQL	5.0
2-Butanone	BQL	100	p-Isopropyltoluene	BQL	5.0
n-Butylbenzene	BQL	5.0	4-Methyl-2-pentanone	BQL	50
sec-Butylbenzene	BQL	5.0	Methylene chloride	BQL	5.0
tert-Butylbenzene	BQL	5.0	Naphthalene	BQL	5.0
Carbon disulfide	BQL	5.0	n-Propylbenzene	BQL	5.0
Carbon tetrachloride	BQL	5.0	Styrene	BQL	5.0
Chlorobenzene	BQL	5.0	1,1,1,2-Tetrachloroethane	BQL	5.0
Chloroethane	BQL	10	1,1,2,2-Tetrachloroethane	BQL	5.0
2-Chloroethylvinyl ether	BQL	10	Tetrachloroethene	43	5.0
Chloroform	BQL	5.0	Toluene	BQL	5.0
Chloromethane	BQL	10	1,2,3-Trichlorobenzene	BQL	5.0
2-Chlorotoluene	BQL	5.0	1,2,4-Trichlorobenzene	BQL	5.0
4-Chlorotoluene	BQL	5.0	1,1,1-Trichloroethane	BQL	5.0
1,2-Dibromo-3-chloropropane	BQL	5.0	1,1,2-Trichloroethane	BQL	5.0
Dibromochloromethane	BQL	5.0	Trichloroethene	50	5.0
1,2-Dibromoethane	BQL	5.0	Trichlorofluoromethane	BQL	5.0
Dibromomethane	BQL	5.0	1,2,3-Trichloropropane	BQL	5.0
1,2-Dichlorobenzene	BQL	5.0	1,2,4-Trimethylbenzene	BQL	5.0
1,3-Dichlorobenzene	BQL	5.0	1,3,5-Trimethylbenzene	BQL	5.0
1,4-Dichlorobenzene	BQL	5.0	Vinyl acetate	BQL	50
Dichlorodifluoromethane	BQL	10	Vinyl chloride	BQL	2.0
1,1-Dichloroethane	BQL	5.0	m,p-Xylene	BQL	10
1,2-Dichloroethane	BQL	5.0	o-Xylene	BQL	5.0
1,1-Dichloroethene	BQL	5.0			
cis-1,2-Dichloroethene	130	5.0			
trans-1,2-Dichloroethene	BQL	5.0			
1,2-Dichloropropane	BQL	5.0			

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Sample Log-in Checklist

Client Name: Atlanta Environmental Consultants

ACL Project Number: **68896**

Cooler Check

	Yes	No		Yes	No
Ice Present?	☑	☐	Evidence Tape Present?	☐	☑
Temperature	4 °C		Evidence Tape Intact?	☐	☑

For coolers with a temperature greater than 6°C or with a damaged evidence seal, the bottles affected are identified below.

	Yes	No
Chain-of-Custody Form Included?	☑	☐
Field Sampling Sheet Included?	☐	☑

Cooler Shipping and Receipt

Shipping Method: Delivered by Customer

Tracking Number:

Receipt Date: 2/25/2016

Receipt Time: 2:25 PM

Bottle Check

Acid Preserved Sample (pH Check): pH<2? Yes
(pH for VO vials to be checked upon analysis)

Base Preserved Samples (pH Check): pH>12? N/A

Chlorine Check (Positive, Negative, N/A): N/A

Condition of Containers:

	Yes	No
Evidence Tape Present on Bottles?	☐	☑
Evidence Tape Intact?	☐	☑
Loose Caps?	☐	☑
Broken Bottles?	☐	☑

Cooler Unpacked/Checked By: JA

Logged In By: JA

Log-in Date: 2/25/2016

Comments (if any):

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CHAIN-OF-CUSTODY RECORD

Company Name: ATLANTA ENVIRON. CONSULTANTS
Phone #: 770-529-0386
Fax #: 770-627-5758
Address: 3480 BLUE SPRINGS RD #503 KENNESAW, GA 30144
Site Location: ROSWELL CLEANERS
Project Manager: PETER T. KALLAY
Project #: REB-2415 (RC)
Project Name: Roswell Cleaners CSR
Sampler Name (Print): PETER T. KALLAY

I attest that the proper field sampling procedures were used during the collection of these samples.

ANALYSIS REQUEST

Field Sample ID	# of Containers	Matrix: Water	Soil	Air	Sludge	Product	Other	Method Preserved: HCl	$NaHSO_4$	H_2SO_4	HNO_3	NaOH	None	Sampling: Date	Time	Grab	Comp	EPA METHOD 8260	Remarks
MW-1	2	✓						✓						2/25	9:15	✓	✓	✓	
MW-5	2	✓						✓							9:45	✓	✓	✓	
MW-3	2	✓						✓							10:10	✓	✓	✓	
MW-60	2	✓						✓							10:35	✓	✓	✓	
MW-2	2	✓						✓							11:05	✓	✓	✓	
MW-4	2	✓						✓							11:40	✓	✓	✓	

Special Detection Limits: GA EPD

Remarks:

TAT: Next Bus. Day ☐ 2nd Bus. Day ☐ 3rd Bus. Day ☐ Normal ☑

Special Handling: ACL Contract ____ Quote # ____ P.O. ____

Special Reporting Requirements: Fax ☑

Lab Use Only: ACL Project #: 68896

Cooler Temp.: 4 °C

QA/QC Level: Level 1 ☐ Level 2 ☐ Other ☐ ____

CUSTODY RECORD

	Date	Time	
Relinquished by Sampler:	02/25/16	2:25	Received by:
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date: 02/25/16	Time: 14:25	Received by Laboratory: John Anders

APPENDIX D

SOIL BORING LOGS

aec

Atlanta Environmental Consultants, LLC

Field Representative: Peter T Kallay, P.E.
Project #: REB-1060
Driller: Betts Environ. Recovery
Boring #: B-1
Date: 3-19-07
Crew: Sam Conner, Roscoe Pasc
Daniel Conrady

Depth From	Depth to	Soil Description and Remarks	Time	Type	First 6"	Sec 6"	Third 6"	Rec.	PID/ FID
0	0.25	Asphalt Pavement							
.25	1	Gravel FILL							
1	14	Red-brown clayey SILT with some mica, some bits of asphalt FILL low plasticity, damp, no odor increasing moisture content with depth. Increasing odor (slight) with depth.	9:40	SPT	1	2	2		0
10			9:50	SPT	1	1	2		0
15			10:00	SPT	3	3	4		4.
14	15	FILL;Native Soil Interface							
14	18	Brown clayey SILT with some sand more micaceous than fill. damp. no odor. low plasticity some vegetation and roots							
20	22	Grey clayey SILT, low plasticity moist. no odor.	10:10	SPT	1	1	2		2.4
25	27	Tan-brown, beige, black stratified sandy SILT, very micaceous, damp. no odor.	10:20	SPT	5	16	27		0
30		Same as above, but wet, saturated	10:25	SPT	7	10	9		0
		BORING TERMINATED AT 35 Ft							

Method: Hollow Stem Auger
Auger [X] Size 6 1/4 OD
Wash [ ] Size ____ OD
Core [ ] Size ____ OD
Casing Size: ____
UD Samples: ____
Water Loss: ____ Gallons

Weather: Clear, sunny, mild
Non Drilling Time: ____
Water Level: ____
Borehole Depth: 35 feet
Date Completed: 3-19-07

aec

Atlanta Environmental Consultants, LLC

Field Representative: Peter T Kallay
Project #: REB-1060
Driller: Betts Environ. Recovery
Boring #: B-2
Date: 3-19-07
Crew: Sam, Roscoe, Daniel

Depth From	Depth to	Soil Description and Remarks	Time	Type	First 6"	Sec 6"	Third 6"	Rec.	PID/ FID
0	.25	ASPHALT PAVEMENT							
.25	1	Gravel. FILL							
1	12	Red-brown clayey SILT with some sand, some mica. low plasticity							
5		FILL. Some dark grey to black clumps of soil mixed with red-brown soil around 10 ft deep damp. No odor near ground surface increasing odor with depth	1:00	SPT	2	4	4		32.3
10		odor was not recognizable.	1:15	SPT	2	6	6	2009.	
		FIL;Native soil interface at 12 feet							
15	17	Tan-brown, beige, and black stratified sandy SILT, very micaceous. damp. no odor.	1:25	SPT	4	9	10		73.
20	22	same as above, with a lot of mica damp. no odor	1:35	SPT	4	7	8		63.6
25	27	same as above, with a lot of mica damp. no odor.	1:50	SPT	21	72	50:1¼		30.1
30	32	as above, but very micaceous, and a more uniform golden brown color wet. no odor	2:10	SPT	7	16	20		60.5
		BORING TERMINATED AT 35 FEET							

Method: Hollow Stem Auger
Auger [X] Size 6 1/4 OD
Wash [ ] Size ____ OD
Core [ ] Size ____ OD
Casing Size: ____
UD Samples: ____
Water Loss: ____ Gallons

Weather: Clear, sunny, mild
Non Drilling Time: ____
Water Level: ____
Borehole Depth: 35 feet
Date Completed: 3-19-07

SOIL BORING LOG

acc

Atlanta Environmental Consultants, LLC

Field Representative: Peter T Kalley
Project #: REB-1060
Driller: Betts Environ. Recovery
Boring #: B-3
Date: 3-19-07
Crew: Same, Roscoe, Daniel

Depth From	Depth to	Soil Description and Remarks	Time	Type	First 6"	Sec 6"	Third 6"	Rec.	PID/ FID
0	.25	Asphalt Pavement							
.25	1	Gravel, crushed rock. FILL							
1	10	Red-brown clayey SILT with some mica. FILL			2	3	3		0.3
5		low plasticity. damp. no odor.	9:40	SPT					
10	12	Grey-brown clayey SILT with some mica. damp. no odor.	9:50	SPT	1	2	6		1.8
15	17	same as above. damp. no odor.	2:55	SPT	2	4	6		1.5
20	22	Mostly red to ~~reddish-brown~~ and light grey silty CLAY. moist no odor. poor recovery	3:05	SPT	3	5	5		1.2
25	27	Light grey to tan silty CLAY highly plasctic. wet. no odor.	3:20	SPT	1	1	1		0.7
30	32	same as above. wet no odor							
		BORING TERMINATED AT 35 FEET							

Method: Hollow Stem Auger
Auger [X] Size 6 1/4 OD
Wash [ ] Size ____ OD
Core [ ] Size ____ OD
Casing Size: ____
UD Samples: ____
Water Loss: ____ Gallons

Weather: Clear, sunny, mild
Non Drilling Time: ____
Water Level: ____
Borehole Depth: 35 feet
Date Completed: 3-19-07

aec SOIL BORING LOG

Atlanta Environmental Consultants

Field Rep.	Peter T. Kallay, P.E.	Boring No.	MW-1
Project No.	REB-2401, 1013 Alpharetta St., Roswell, GA	Date	August 25, 2008
Driller	Betts Environmental Recovery	Crew	Sam Conner, Jason Allwood, Paul Summers

Depth From	Depth To	Soil Description	Time	Type	1st 6"	2nd 6"	3rd 6"	Recovery	PID/FID
		Surface: Asphalt Pavement	9:30						
0.25	2	Red-brown SILT with some clay and some sand.	9:45	HA					3.3
		Damp, no odor, lumpy, some hard lumps. FILL							
2	5	same as above, except some black organic	9:55	HA					0.8
		matter is present; some beige mottling was							
		observed. Damp, no odor. FILL							
5	7	Black, dark grey, light grey and red-brown	10:30	SPT	3	3	3	3	0.4
		mottled clayey SILT. Damo, slighr odor of						45%	
		aged sewage. FILL							
7	10	Red-brown clayey SILT with a little mica.	10:40	SPT	4	6	14	14	0.3
11	15	Underlain by nearly horizontally stratified thin							
		brown, dark brown, tan and beige layers, foliated,							
		with some mica, clayey SILT. Damp, no odor							
15	20	Same as above, but red-brown and tan colors	10:50	SPT	7	7	8	9	0.2
		predominate. Damp, no odor.							
20	25	Same as above, but there are more black and	10:55	SPT	11	12	21	28	0.1
		dark brown layers.							
25		Same as above, but red, black, brown, tan and	11:05	SPT	4	6	8	9	0.1
		beige layers are curved, almost as if							
		conchoidal. Moist, no odor.							
		BORING TERMINATED at 35 feet							

Method: Hollow-Stem Augers

Auger [X] Size 6 1/4 OD

Wash [ ] Size _____ OD

Core [ ] Size _____ OD

Casing Size: 2"

Undisturbed SPT _____

Water Loss _____ Gallons

Weather Cloudy, overcast, light rain

Standby Time _____

Water Level 25 feet

Borehole Depth 35 feet

Date Completed 8/25/2008

aec SOIL BORING LOG

Atlanta Environmental Consultants

Field Rep.	Peter T. Kallay, P.E.	Boring No.	MW-2
Project No.	REB-2401, 1013 Alpharetta St., Roswell, GA	Date	August 25, 2008
Driller	Betts Environmental Recovery	Crew	Sam Conner, Jason Allwood, Paul Summers

Depth From	Depth To	Soil Description	Time	Type	1st 6"	2nd 6"	3rd 6"	Reco-very	PID/ FID
		Surface: Asphalt Pavement	11:45						
0.25	2	Reddish-brown SILT with some clay and sand.	11:50	HA					1.1
		Damp, no odor. FILL							1.2
2	10	Same as above, damp, no odor. FILL	11:55	SPT	1	1	1	1	1.0
								45%	
10	15	Same as above, moist to wet, no odor. FILL	12:00	SPT	1	1	1	1	1.1
								100%	
15	16	Brown clayey SILT, more clayey than above	12:05	SPT	4	4	4	4	0.6
		wet, no odor. FILL						35%	
16	19	Quartz rocks, brown sandy SILT.							
19	20	Dk brown topsoil, moist to wet, no odor							
20	25	Green-grey silty CLAY, plastic.	12:15	SPT	1	2	1	2	0.3
		moist to wet, no odor (except topsoil odor)						70%	
25	30	Mottled tan, beige, brown sandy SILT with some							
		quartz gravel. Very loose and crumbly.	12:25	SPT	4	5	8	6	0.8
		Moist, no odor.						85%	
30	35	Same as above, but there are more black and	12:30	SPT	5	6	10	10	0.4
		dark brown layers. Moist to wet, no odor.							
35		Brown to red-brown SILT with a little clay and	12:45	SPT	4	5	6	5	0.2
		mica. Very loose and crumbly. Some gravel.							
		Wet, no odor.							
		BORING TERMINATED at 35 feet							

Method: Hollow-Stem Augers

Auger [X] Size 6 1/4 OD

Wash [ ] Size _____ OD

Core [ ] Size _____ OD

Casing Size: 2"

Undisturbed S SPT

Water Loss _____ Gallons

Weather ___ Partly Cloudy, rain earlier, warm

Standby Time _____.

Water Level _____ 25 feet

Borehole Depth ___ 35 feet

Date Completed___ 8/25/2008

aec SOIL BORING LOG

Atlanta Environmental Consultants

Field Rep.	Peter T. Kallay, P.E.	Boring No.	MW-3
Project No.	REB-2401, 1013 Alpharetta St., Roswell, GA	Date	August 25, 2008
Driller	Betts Environmental Recovery	Crew	Sam Conner, Jason Allwood, Paul Summers

Depth From	Depth To	Soil Description	Time	Type	1st 6"	2nd 6"	3rd 6"	Reco-very	PID/ FID
		Surface: Asphalt Pavement	1:25						
0.25	2	Red-brown silty CLAY, damp, no odor.	1:35	HA					0.4
		FILL							
2	5	Same as above, damp, no odor. FILL	1:40	HA					0.5
5	6	Same as above, damp, no odor.	1:45	SPT	1	3	5	6	0.3
6	10	Beige uniform grain size fine SAND with no						65%	
		fines. Damp. No odor. FILL							
10	15	Tan, beige, light brown fine SAND with a slight	1:55	SPT	4	14	16	22	0.3
		greenish cast. Very loose and crumbly.							
		Damp. No odor. FILL							
15	20	red-brown, tan, beige and various shades of	2:05	SPT	4	18	16	27	0.8
		brown layers sandy SILT. Damp, no odor.							
20	25	Same as above, but layers are mostly medium	2:20	SPT	15	23	27	35	0.7
		brown, grey and beige. Damp to moist. No odor.							
25	30	Same as above, moist, no odor.	2:30	SPT	6	7	7	8	0.4
30	35	Same as above, wet, no odor.	2:45						
		BORING TERMINATED at 35 feet							

Method: Hollow-Stem Augers

Auger [X] Size 6 1/4 OD

Wash [ ] Size _____ OD

Core [ ] Size _____ OD

Casing Size: 2"

Undisturbed S SPT

Water Loss _____ Gallons

Weather ___ Cloudy, overcast, light rain, .

Standby Time _____.

Water Level _____ 25 feet

Borehole Depth ___ 35 feet

Date Completed___ 8/25/2008

aec SOIL BORING LOG

Atlanta Environmental Consultants

Field Rep.	Peter T. Kallay, P.E.	Boring No.	MW-4
Project No.	REB-2401, 1013 Alpharetta St., Roswell, GA	Date	August 26, 2008
Driller	Betts Environmental Recovery	Crew	Sam Conner, Jason Allwood

Depth From	Depth To	Soil Description	Time	Type	1st 6"	2nd 6"	3rd 6"	Reco-very	PID/ FID
		Surface: Asphalt Pavement	10:00						
0.25	1	Grey to beige sandy GRAVEL Dry, no odor	10:30	HA					1.3
		FILL							
1	5	Red-brown clayey SILT with some sand and	10:45	HA					3.3
		some mica. Damp, no odor, but slight odor							
		noticeable with depth. FILL							
5	10	brown and red-brown clayey SILT with clumps of	10:55	SPT	1	2	3	4	181
		black soil around 10 feet. Damp, solvent odor						90%	
10	12	Same as above, damp, solvent odor FILL	11:00	SPT	2	4	6	7	778
12	15	tan, brown, beige horizontally stratified						100%	
		sandy SILT							
15	20	tan-brown, beige and black layered sandy SILT	11:10	SPT	2	3	5	5	849
		Damp, solvent odor						90%	
20	25	Same as above, with a lot of mica, horizontally	11:25	SPT	6	5	4	4	36.5
		stratified. Damp, strong solvent odor.						65%	
25	30	Same as above, but layers are predominantly	11:40	SPT	6	4	5	5	34.4
		brown, beige and red. moist, slight odor						55%	
30	35	Same as above, wet, slight odor	11:55						
		BORING TERMINATED at 35 feet							

Method: Hollow-Stem Augers

Auger [X] Size 6 1/4 OD

Wash [ ] Size _____ OD

Core [ ] Size _____ OD

Casing Size: 2"

Undisturbed S SPT

Water Loss _____ Gallons

Weather Cloudy, overcast, light rain, .

Standby Time _____.

Water Level 25 feet

Borehole Depth 35 feet

Date Completed 8/26/2008

aec SOIL BORING LOG

Atlanta Environmental Consultants

Field Rep.	Peter T. Kallay, P.E.	Boring No.	MW-5
Project No.	REB-2401, 1013 Alpharetta St., Roswell, GA	Date	April 16, 2012
Driller	Betts Environmental Recovery	Crew	Jason Allwood, Paul Summers, Sam Conner

Depth From	Depth To	Soil Description	Time	Type	1st 6"	2nd 6"	3rd 6"	Reco-very	PID/ FID
0	0.25	Surface: Asphalt Pavement	2:50						
0.25	1	Red-brown sandy SILT, damp, no odor. FILL	2:55	CUT					0.2
		(Rig Shut down. Pin was bad. Replacement pin was procured and installed)							
5	6	Red-brown with tan streaks sandy SILT with some clay, some mica, moist, no odor. FILL	5:40	SPT	1	2	5		1.2
10	11	Same as above. FILL. Underlain by white and tan silty SAND with a few black specks. Sand has mixed grain sizes, some mica, moist, no odor	5:50	SPT	15	29	30		0.3
15	16	White and tan horizontally stratified SILT, very micaceous, underlain by brown, beige and lt grey 1-2" layers of silty SAND, micaceous of varying grain sizes. Moist. No odor.	6:05	SPT	7	7	8		0.4
20	21	Tan, beige, lt brown fine SILT, horizontally stratified with some mica. Moist, slight undetermined odor.	6:15	SPT	7	8	8		1.1
25	26	Grey, black and tan fine SILT, micaceous, horizontally stratified at 20 deg. Dip. Wet. no odor.	6:20	SPT	6	12	22		0.1
30	31	White, tan, silver, black and grey mottled SILT with some mica. Various colors predominate every few inches. Horizontally stratified with 20 deg. Dip. Wet, saturated. No odor.	6:35	SPT	12	9	10		0.3
		BORING TERMINATED at 35 feet							

Method: Hollow-Stem Augers

Auger [X] Size 6 1/4 OD

Wash [ ] Size _____ OD

Core [ ] Size _____ OD

Casing Size: 2"

Undisturbed S SPT

Water Loss _____ Gallons

Weather Cloudy, warm, breezy.

Standby Time _____

Water Level 26 feet

Borehole Depth 35 feet

Date Completed 0/16/2012

aec SOIL BORING LOG

Atlanta Environmental Consultants

Field Rep.	Peter T. Kallay, P.E.	Boring No.	B-4B Located close to MW-4
Project No.	REB-2411, 1013 Alpharetta St., Roswell, GA	Date	March 14, 2013
Driller	Midway Drilling Services	Crew	Casey Collins and Lee Collins

Depth From	Depth To	Soil Description	Time	Type	1st 6"	2nd 6"	3rd 6"	Reco-very	PID/ FID
0	0.25	Surface: Asphalt Pavement	2:50						
0.25	0.5	Grey sand and Gravel FILL	2:55	CUT					9.5
0.5	5	Red-brown silty CLAY, damp, no odor FILL	3:00	CUT					7.1
5	7	Red-brown silty CLAY with clumps of beige to light grey silty sand. Damp, slight nondescript odor. Firm. FILL	3:10	SPT	3	4	4		30.2
10	12	Red-brown silty CLAY underlain by a thin layer of decomposing vegetation, underlain by conchoidally stratified thin brown, beige, tan and grey layers of sabdy SILT with inclusions of beige and grey sand and gravel. Some mica. damp, mixed compounds odors, indefinite. Stiff.	3:20	SPT	3	6	7		4,361
15	17	conchoidally stratified thin brown, beige, tan and grey layers of sabdy SILT with inclusions of beige and grey sand and gravel. Some mica. damp, mixed compounds odors, indefinite. Stiff.	3:35	SPT	4	3	6		86.6
		BORING TERMINATED at 15 FEET (sampled to 17')							

Method: Hollow-Stem Augers

Auger [X] Size 6 1/4 OD

Wash [ ] Size _____ OD

Core [ ] Size _____ OD

Casing Size: 2"

Undisturbed S SPT

Water Loss _____ Gallons

Weather ___ cloudy, cold

Standby Time _____

Water Level _____ N/A

Borehole Depth ___ 15 feet

Date Completed___ 3/14/2013

aec SOIL BORING LOG

Atlanta Environmental Consultants

Field Rep.	Peter T. Kallay, P.E.	Boring No.	B-6 Located east of MW-4
Project No.	REB-2411, 1013 Alpharetta St., Roswell, GA	Date	March 14, 2013
Driller	Midway Drilling Services	Crew	Casey Collins and Lee Collins

Depth From	Depth To	Soil Description	Time	Type	1st 6"	2nd 6"	3rd 6"	Reco-very	PID/ FID
0	0.25	Surface: Asphalt Pavement	10:05						
0.25	0.5	Black crushed rock and gravel FILL	10:10	CUT					4.1
0.5	5	Brown clayey SILT w/gravel, damp, no odor FILL	10:15	CUT					3.7
		Underlain by red-brown silty CLAY.damp to moist.							
5	7	Tan, brown, red silty, sandy CLAY with gravel.	10:20	SPT	6	6	7	90%	3.3
		Gravels are black to dark grey.							
		Damp, no odor. FILL.							
10	12	Same as above, but with more grey sand and	10:30	SPT	5	6	8	75%	6.6
		gravel included in reddish brown silty CLAY							
		Damp, no odor. FILL.							
		and grey layers of sabdy SILT with inclusions							
15	17	Brown and various shades of tan, grey, beige,	10:40	SPT	17	18	23	80%	7.9
		and black conchoidally stratified							
		clayer SILT with mica. Appears to be							
		partially weathered rock.							
		Damp, no odor.							
		BORING TERMINATED at 15 FEET							
		(sampled to 17')							

Method: Hollow-Stem Augers

Auger [X] Size 6 1/4 OD

Wash [ ] Size _____ OD

Core [ ] Size _____ OD

Casing Size: 2"

Undisturbed S SPT

Water Loss _____ Gallons

Weather ___ Clear, cool, light breeze

Standby Time _____

Water Level _____ N/A

Borehole Depth ___ 15 feet

Date Completed___ 3/14/2013

aec SOIL BORING LOG

Atlanta Environmental Consultants

Field Rep.	Peter T. Kallay, P.E.	Boring No.	B-7 Located south of MW-4
Project No.	REB-2411, 1013 Alpharetta St., Roswell, GA	Date	March 14, 2013
Driller	Midway Drilling Services	Crew	Casey Collins and Lee Collins

Depth From	Depth To	Soil Description	Time	Type	1st 6"	2nd 6"	3rd 6"	Reco-very	PID/ FID
0	0.25	Surface: Asphalt Pavement	10:55						
0.25	0.5	Black sand and gravel FILL		CUT					4.0
0.5	5	Red-brown sandy CLAY	11:00	CUT					4.9
		damp, no odor. FILL.							
5	7	beige and grey meadium to coarse grained	11:05	SPT	4	5	4	85%	3.6
		SAND with mica, underlain by red silty CLAY,							
		decomposing grey vegetation, damp, no odor. FILL							
		stiff. Damp.							
10	12	Grey silty CLAY with some sand.	11:10	SPT	4	5	7	80%	1,938
		damp, nondescript chemical odor.							
		Damp, no odor. FILL.							
		stiff							
15	17	Grey silty CLAY, has a nondescript	11:15	SPT	3	4	3	80%	4,361
		chemical odor. Damp.							
		underlain by red silty CLAY,							
		Damp, no odor. Firm.							
		BORING TERMINATED at 15 FEET							
		(sampled to 17')							

Method: Hollow-Stem Augers

Auger [X] Size 6 1/4 OD

Wash [ ] Size _____ OD

Core [ ] Size _____ OD

Casing Size: 2"

Undisturbed S SPT

Water Loss _____ Gallons

Weather ___ Clear, cool, light breeze

Standby Time _____

Water Level _____ N/A

Borehole Depth ___ 15 feet

Date Completed___ 3/14/2013

aec SOIL BORING LOG

Atlanta Environmental Consultants

Field Rep.	Peter T. Kallay, P.E.	Boring No.	B-8 Located west of MW-4
Project No.	REB-2411, 1013 Alpharetta St., Roswell, GA	Date	March 14, 2013
Driller	Midway Drilling Services	Crew	Casey Collins and Lee Collins

Depth From	Depth To	Soil Description	Time	Type	1st 6"	2nd 6"	3rd 6"	Reco-very	PID/ FID
0	0.25	Surface: Asphalt Pavement	12:00						
0.25	0.5	Grey crushed rock and sand		CUT					6.6
0.5	5	Red silty CLAY, damp to moist. No odor. FILL. Stiff.	12:05	CUT					3.5
5	7	Grey, red, and brown silty CLAY with black and red inclusions. Damp to moist. no odor. FILL. Stiff.	12:10	SPT	4	4	5	80%	6.1
10	12	Grey, red, and brown silty CLAY with black and red inclusions. Some gravel. Damp to moist. slight odor. FILL. Stiff.	12:20	SPT	5	7	8	85%	182
15	17	Grey, red, and brown silty CLAY with black and red inclusions. Some gravel. Damp to moist. slight odor. FILL. Firm.	12:30	SPT	3	3	5	80%	14.8
		BORING TERMINATED at 15 FEET (sampled to 17')							

Method: Hollow-Stem Augers

Auger [X] Size 6 1/4 OD

Wash [ ] Size _____ OD

Core [ ] Size _____ OD

Casing Size: 2"

Undisturbed S SPT

Water Loss _____ Gallons

Weather Clear, cool, light breeze

Standby Time _____

Water Level N/A

Borehole Depth 15 feet

Date Completed 3/14/2013

aec SOIL BORING LOG

Atlanta Environmental Consultants

Field Rep.	Peter T. Kallay, P.E.	Boring No.	B-9 Located in front of bldg.
Project No.	REB-2411, 1013 Alpharetta St., Roswell, GA	Date	March 14, 2013
Driller	Midway Drilling Services	Crew	Casey Collins and Lee Collins

Depth From	Depth To	Soil Description	Time	Type	1st 6"	2nd 6"	3rd 6"	Reco-very	PID/ FID
0	0.25	Surface: Asphalt Pavement	1:15						
0.25	0.5	Grey-black sand, crushed rock. FILL.	1:20	CUT					1.0
0.5	5	Red silty silty CLAY, damp to moist. No odor. FILL. Firm.	1:25	CUT					1.1
5	7	Grey CLAY, dense, in clumps, dry to damp. No odor. FILL. Firm.	1:35	SPT	3	3	4	30%	3.3
10	12	Brown, grey, beige clayey SILT; decomposing vegetation layer, mostly grass; black SILT with clay, sand and gravel. Topsoil. damp, no odor. Stiff.	1:45	SPT	5	7	7	75%	4.5
15	17	grey clayey SILT. Crumbles easily; very little cohesion. Damp, no odor. Firm	1:55	SPT	3	2	3	75%	3.5
		BORING TERMINATED at 15 FEET (sampled to 17')							

Method: Hollow-Stem Augers

Auger [X] Size 6 1/4 OD

Wash [ ] Size _____ OD

Core [ ] Size _____ OD

Casing Size: 2"

Undisturbed S SPT

Water Loss _____ Gallons

Weather ___ partly cloudy, cold

Standby Time _____

Water Level _____ N/A

Borehole Depth ___ 15 feet

Date Completed___ 3/14/2013

aec SOIL BORING LOG

Atlanta Environmental Consultants

Field Rep.	Peter T. Kallay, P.E.	Boring No.	B-10 Located south of B-7.
Project No.	REB-2411, 1013 Alpharetta St., Roswell, GA	Date	March 14, 2013
Driller	Midway Drilling Services	Crew	Casey Collins and Lee Collins

Depth From	Depth To	Soil Description	Time	Type	1st 6"	2nd 6"	3rd 6"	Reco-very	PID/ FID
0	0.25	Surface: Asphalt Pavement	2:00						
0.25	0.5	black to grey-black crushed rock, sand. FILL.	2:05	CUT					1.4
0.5	5	red-brown silty CLAY damp. Slight nondescript odor. FILL. Soft.	2:15	CUT					1.9
5	7	Brown, beige, and tan silty CLAY. Soil is mostly in clumps. Underlain by sandy SILT. damp. No odor. FILL. Sift.	2:25	SPT	1	0	1	75%	0.9
10	12	Red-brown silty CLAY damp to moist. No odor. FILL. Soft.	2:35	SPT	2	2	3	80%	0.9
15	17	Brown and beige silty CLAY in clumps. moist. Nondescript odor. FILL. Soft.	2:45	SPT	3	4	4	75%	8.9
		BORING TERMINATED at 15 FEET (sampled to 17')							

Method: Hollow-Stem Augers

Auger [X] Size 6 1/4 OD

Wash [ ] Size _____ OD

Core [ ] Size _____ OD

Casing Size: 2"

Undisturbed S SPT

Water Loss _____ Gallons

Weather ___ partly cloudy, cold

Standby Time _____

Water Level _____ N/A

Borehole Depth ___ 15 feet

Date Completed___ 3/14/2013

aec SOIL BORING LOG

Atlanta Environmental Consultants

(Note: B-DW was completed as MW-6; this boring was named B-DW to avoid confusion with B-6)

Field Rep. Bob Kilman and Peter T. Kallay, P.E.
Project No. REB-2411, 1013 Alpharetta St., Roswell, GA
Driller Kilman Bros. Inc.

Boring No. B-DW Located north of MW-3
Date Óctober 10, 2013
Crew Bob Kilman, Marcil Pacilli, David Oliver and Jorge Ortega

Depth From	Depth To	Soil Description	Time	Type	1st 6"	2nd 6"	3rd 6"	Reco-very	PID/ FID
0	0.25	Surface: Asphalt Pavement							
0.25	5	Red-brown sandy SILT with some clay, with mica damp, no odor. FILL		CUT					0.9
5	10	Red-brown sandy SILT with a little clay, with mica damp, no odor. FILL		SPT	6	7	7		0.4
10	15	Tan, beige and brown sandy SILT with mica. damp, no odor. FILL		SPT	7	10	14		0.6
15	20	Red-brown, tan, beige and other shades of sandy SILT. damp, no odor.		SPT	16	16	10		0.5
20	25	As above, but with more grey layers. moist, no odor		SPT	7	8	9		0.4
25	30	Brown and various shades of tan, grey, beige, and black conchoidally stratified clayer SILT with mica. Appears to be		SPT	12	14	23		0.6
30	35	partially weathered rock. Damp, no odor.		SPT	4	7	11		0.5
35	40			SPT	12	12	15		0.2
40	45			SPT	30	14	14		0.6
45	50			SPT	23	20	18		0.5
		CONTINUED ON THE NEXT PAGE							

Method: Hollow-Stem Augers
Auger [X] Size 6 1/4 OD
Wash [ ] Size _____ OD
Core [ ] Size _____ OD
Casing Size: 2"
Undisturbed S SPT
Water Loss N/A

Weather Clear, mild, calm
Standby Time N/A
Water Level N/A
Borehole Depth 71 feet
Date Completed Óctober 10, 2013

aec SOIL BORING LOG

Atlanta Environmental Consultants

(Note: B-DW was completed as MW-6; this boring was named B-DW to avoid confusion with B-6)

Field Rep. Bob Kilman and Peter T. Kallay, P.E.
Project No. REB-2411, 1013 Alpharetta St., Roswell, GA
Driller Kilman Bros. Inc.

Boring No. B-DW Located north of MW-3
Date October 10, 2013
Crew Bob Kilman, Marcil Pacilli, David Oliver and Jorge Ortega

Depth From	Depth To	Soil Description	Time	Type	1st 6"	2nd 6"	3rd 6"	Recovery	PID/FID
50	55	Tan micaceous sandy SILT. Wet, no odor		SPT	15	23	35		0.6
		Coarse sands.							
55	60	Red micaceous sandy SILT. Wet. No odor.		SPT	12	14	14		0.5
60	65	Brown micaceous sandy SILT		SPT	20	26	35		0.5
		Wet. No odor.							
65	70	Tan sandy SILT with coarse particles and		SPT	20	50/1in.			0.8
		rock fragments. Wet, no odor.							
70	71	Same as above.							
		Wet. No odor.							
		AUGER REFUSAL ON ROCK at 71 FEET							

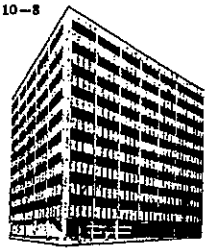
Method: Hollow-Stem Augers
Auger [X] Size 6 1/4 OD
Wash [ ] Size _____ OD
Core [ ] Size _____ OD
Casing Size: 2"
Undisturbed S SPT
Water Level 19.53 Feet.

Weather Clear, mild, calm
Standby Time N/A
Water Level N/A
Borehole Depth 71 feet Well Depth: 70 ft
Date Completed October 10, 2013

APPENDIX E

WARRANTY DEED
AND SURVEY

Form 10—S



GEORGIA STATE OFFICE
TITLE BUILDING
ATLANTA, GEORGIA 30303

78-6-233

Lawyers Title Insurance Corporation

ATLANTA BRANCH OFFICE

WARRANTY DEED

2650261

STATE OF GEORGIA COUNTY OF FULTON

THIS INDENTURE, Made the 3rd day of July, in the year one thousand nine hundred seventy eight, between

E. R. McFARLAND and W. M. McFARLAND

of the County of Fulton, and State of Georgia, as party or parties of the first part, hereinafter called Grantor, and

RICHARD E. BOWEN

as party or parties of the second part, hereinafter called Grantee (the words "Grantor" and "Grantee" to include their respective heirs, successors and assigns where the context requires or permits).

WITNESSETH that: Grantor, for and in consideration of the sum of TEN DOLLARS AND OTHER VALUABLE CONSIDERATION ($10.00) DOLLARS in hand paid at and before the sealing and delivery of these presents, the receipt whereof is hereby acknowledged, has granted, bargained, sold, aliened, conveyed and confirmed, and by these presents does grant, bargain, sell, alien, convey and confirm unto the said Grantee,

All that tract or parcel of land lying and being in Land Lot 412, 1st District, 2nd Section, within the City of Roswell, Fulton County, Georgia, and being more particularly described as follows:

To Find the True Point of Beginning, commence at a point on the northerly side of Norcross Street, having a 40 foot right-of-way, said point being located 344.6 feet east, as measured along the northerly side of Norcross Street from the intersection thereof with Alpharetta Street, having a 80 foot right-of-way; running thence north 7 degrees 20 minutes east 192.3 feet to an iron pin found and THE TRUE POINT OF BEGINNING; running thence north 7 degrees 20 minutes east along property now or formerly owned by J. E. Wright 211.9 feet to an iron pin found; running thence south 88 degrees 51 minutes east 100.0 feet to an iron pin found; running thence south 0 degree 29 minutes east along property now or formerly owned by Joseph E. Mansell 220.0 feet to an iron pin set; running thence north 84 degrees 49 minutes west along property now or formerly owned by Carter S. Rose, Jr. and Leo M. Mack, Jr., 129.8 feet to an iron pin found and the Point of Beginning according to survey for Richard E. Bowen by Bates-Long & Associates, R.L.S., dated June 27, 1978.

Fulton County, Georgia
Real Estate Transfer Tax
Paid $ 175.00
Date August 18, 1978
Barbara J. Price
Clerk, Superior Court
By: Brenda Conley
Deputy Clerk

GEORGIA, Fulton County, Clerk's Office Superior Court
Filed & Recorded, AUG 18 1978 at 9:57A M., Barbara J. Price CLERK

TO HAVE AND TO HOLD the said tract or parcel of land, with all and singular the rights,

WARRANTY DEED

FROM

TO

GEORGIA, Fulton County.

Clerk's Office, Superior Court

Filed for Record ..... day

of AUG 18 1978 19.....,

at 9:57 A.M., and Recorded in Deed

Book 7031 Folio 381

AUG 18 1978

....., 19.....

Barbara J. Price CLERK, Clerk.

Lawyers Title

Insurance Corporation

A Stock Company

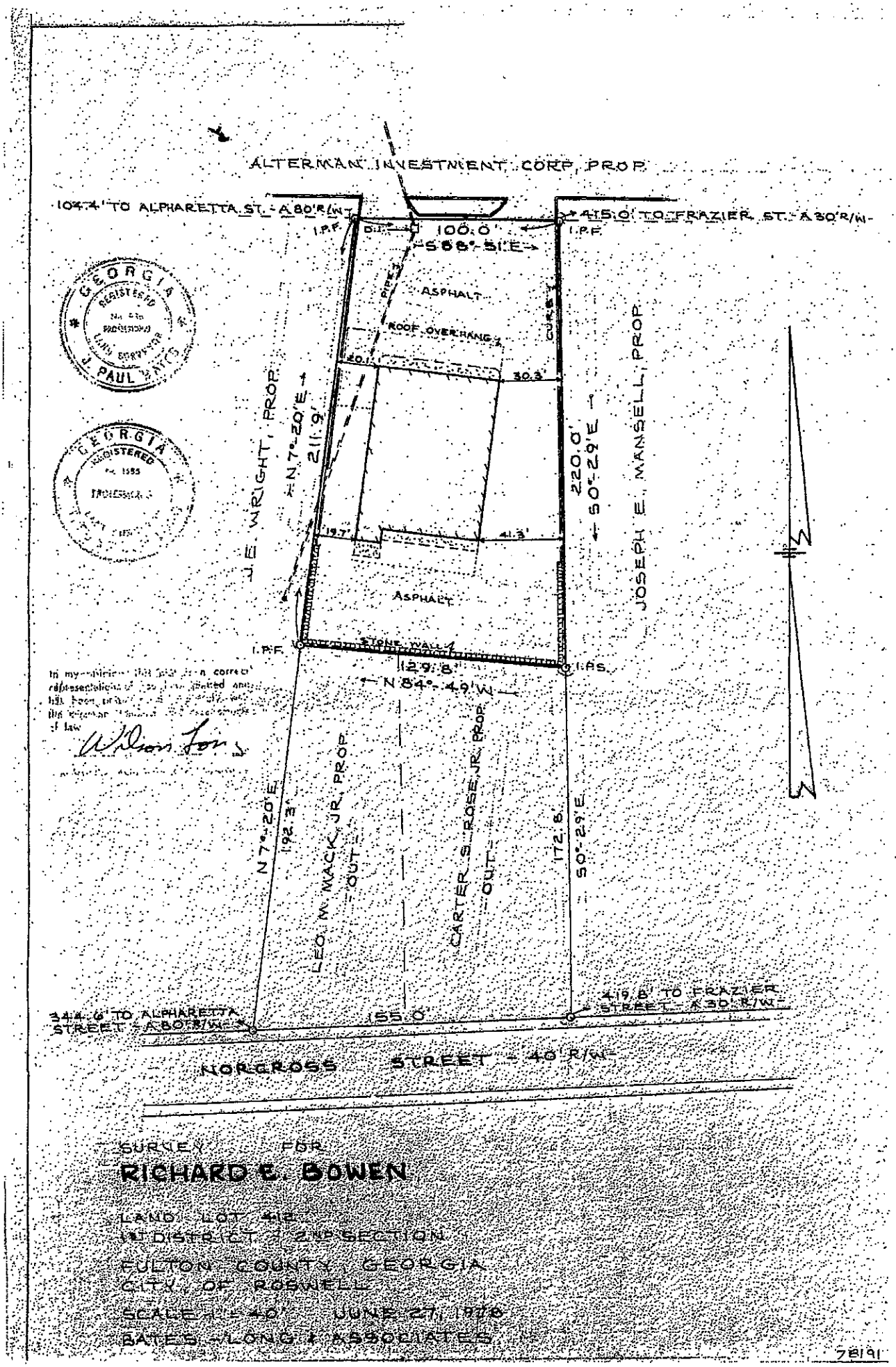
Home Office ~ Richmond, Virginia

ATLANTA BRANCH OFFICE

TITLE BUILDING

ATLANTA, GEORGIA

LARRY W. CHESTER
ATTORNEY AT LAW
P. O. BOX [illegible]
ROSWELL, GA. 30075
993-1601



In my opinion this plat is a correct representation of the land platted and has been prepared in conformity with the requirements of law.

Wilson Lord

SURVEY FOR

RICHARD E. BOWEN

LAND LOT 412
1ST DISTRICT, 2ND SECTION
FULTON COUNTY, GEORGIA
CITY OF ROSWELL
SCALE 1" = 40' JUNE 27, 1978
BATES, LONG & ASSOCIATES

78191

APPENDIX F

JOHNSON AND ETTINGER
VAPOR INTRUSION MODELING

EPA United States Environmental Protection Agency

EPA On-line Tools for Site Assessment Calculation – PCE

Screening Level Implementation of the Johnson and Ettinger Vapor Intrusion Model

Reverse Calculation of Target Media Concentrations

Forward Calculation full uncertainty analysis

Background

Migration of volatile chemicals from the subsurface into overlying buildings is called vapor intrusion (VI). Volatile organic chemicals in contaminated soils or groundwater can emit vapors, which may migrate through subsurface soils and may enter the indoor air of overlying buildings. Building depressurization may cause these vapors to enter the home through cracks in the foundation. Depressurization can be caused by a combination of wind effects and stack effects, which are the result of heating within the building and/or mechanical ventilation. In extreme cases, the vapors may accumulate in dwellings to levels that may pose near-term safety hazards, such as explosion. Typically, however, vapor concentrations are present at low levels, to which long-term exposure may pose increased risk for chronic health effects.

This on-line calculator implements the Johnson and Ettinger (J&E) (Johnson and Ettinger, 1991) simplified model to evaluate the vapor intrusion pathway into buildings. This J&E model replicates the implementation that the US EPA Office of Solid Waste and Emergency Response (OSWER) used in developing its draft vapor intrusion guidance, but includes a number of enhancements that are facilitated by web implementation: temperature dependence of Henry's Law Constants, automatic sensitivity analysis of certain parameters, and others described on the background page.

The results you obtain from this OnSite implementation of the Johnson and Ettinger model may differ from other versions of the Johnson & Ettinger Model. In addition to the OSWER implementation that was used for the draft vapor intrusion guidance, EPA Office of Emergency Response and Remediation (OERR) distributes a set of spreadsheet implementations of the model. The differences among these implementations is described in detail on the results page. Beyond these differences the on-line version includes a simplified uncertainty analysis the other implementations lack.

Click For an Example

Enter Site Name (optional):	Roswell Cleaners		
What type of building are you investigating?		Slab-on-Grade ▼	
What is your contaminant of concern (COC)?		Tetrachloroethylene ▼	
What type of soil is beneath the building at your site?		Loam ▼	
What is the average soil/ground water temperature?		25	Celsius ▼
What is the depth to the contamination from the foundation?(L_T)		7	meters ▼
This value can change by +/-		0.25	meters ▼

Chemical Properties

CAS Number			127184		
Molecular Weight **(MW)**			165.83	[g/mole]	
Henry's Law Constant at ground water temperature **(H)**			0.7502584	[unitless]	
Free-Air Diffusion Coefficient **(D_a)**			7.200e-2	[cm^2/s]	
Diffusivity in Water **(D_w)**			8.200e-6	[cm^2/s]	
Unit Risk Factor **(URF)**			3.00e-6	[$(\mu g/m^3)^{-1}$]	
Reference Concentration **(RfC)**			0.	[mg/m^3]	

Soil Properties

Total Porosity **(n)**			0.399	[unitless]	
Unsaturated Zone Moisture Content **(θ_w)**	Low 0.0610	Best Estimate	0.148	High 0.240	[unitless]
Capillary Zone Moisture Content at Air-Entry Pressure **($\theta_{w,cap}$)**			0.332	[unitless]	
Height of Capillary Zone **(CZ_h)**			0.375	[m]	
Soil-gas Flow Rate Into the Building **(Q_{soil})**			5.00	[L/min]	

Building Properties

Air Exchange Rate **(E_B)**	1.00	[hr^{-1}]	
Building Mixing Height **(H_B)**	3.00	[m]	
Building Footprint Area **(F_B)**	440.0	[m^2]	
Subsurface Foundation Area **(A_B)**	440.0	[m^2]	
Building Crack Ratio **(η)**	0.00038	[unitless]	
Building Foundation Slab Thickness **(L_{crack})**	0.300	[m]	

Exposure Parameters

Exposure Duration for Carcinogens **(ED_c)**	30	[years]

Exposure Frequency for Carcinogens (EF_c)	350	[days/year]
Averaging Time for Carcinogens (AT_c)	70	[years]
Exposure Duration for Non-Carcinogens (ED_{nc})	30	[years]
Exposure Frequency for Non-Carcinogens (EF_{nc})	365	[days/year]
Averaging Time for Non-Carcinogens (AT_{nc})	30	[years]
Target Hazard Quotient (THQ)	1	[unitless]

CALCULATE RESULTS

RESULTS

Unsaturated Zone Effective Diffusion Coefficient (D_{eff})	0.004532	[cm^2/s]
Unsaturated + Capillary Zone Effective Diffusion Coefficient (D^T_{eff})	0.0008767	[cm^2/s]

"A" Parameter for Soil Gas	7.770e-5	Based on parameter analysis: Advection is the dominant mechanism across foundation. Diffusion through soil is the overall rate-limiting process for groundwater to indoor-air pathway.
"A" Parameter for Groundwater	1.503e-5	
"B" Parameter	329.9	
"C" Parameter	2.273e-4	

Soil Gas Attenuation Factor (α_{SG})	5.790e-5
Groundwater Attenuation Factor (α_{GW})	1.410e-5

Risk Factor = 1 x 10-6

Target Concentrations at this Risk Factor are based on CANCER risk

Target Indoor Air Concentration = 0.8111 [$\mu g/m^3$] or 0.1197 [ppbv]

	RANGE OF CONCENTRATIONS BASED ON SENSITIVITY OF SOIL TYPE AND CONTAMINATION DEPTH									
Target Media	Less Protective[1]			Best Estimate			More Protective[2]			
Soil Gas	5.299e4	[$\mu g/m^3$]	7818. [ppbv]	1.401e4	[$\mu g/m^3$]	2067. [ppbv]	7306.	[$\mu g/m^3$]	1078.	[ppbv]
Groundwater	126.0 [µg/L]			76.69 [µg/L]			68.22 [µg/L]			

[1] "Less Protective" concentrations produced with HIGHEST moisture content and DEEPEST depth to contamination.

[2] "More Protective" concentrations produced with LOWEST moisture content and SHALLOWEST depth to contamination.

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WCMS
Last updated on 2/23/2016

TARGET MEDIA CONCENTRATION RESULTS – PCE

Screening-Level Johnson and Ettinger Model

Site Name: Roswell Cleaners
Report Date: Sun May 29 2016 13:01:38 GMT-0500 (Central Daylight Time)
Report Generated From: https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite.htm
Depth to contamination from bottom of foundation: 7m +/- 0.25m
Average ground water temperature: 25C

CHEMICAL PROPERTIES
Chemical of Concern: Tetrachloroethylene CAS Number: 127184
Molecular Weight: 165.83[g/mole] Henrys Constant: 0.7502584[unitless]
Diffusivity in Air: 7.200e-2[cm^2/sec] Diffusivity in Water: 8.200e-6[cm^2/sec]
Unit Risk Factor: 0.000003[$(\mu g/m^3)^{-1}$] Reference Concentration: 0[mg/m^3]

SOIL PROPERTIES
Soil Type: Loam Total Porosity: 0.399
Unsaturated Zone Moisture Content:
low= 0.061 best estimate= 0.148 high= 0.24
Capillary Zone Moisture Content: 0.332 Height of Capillary Rise: 0.375[m]
Soil-Gas Flow Rate into Building: 5 [L/min]

BUILDING PROPERTIES
Building Type: Slab-on-Grade Air Exchange Rate: 1[hr^{-1}]
Building Mixing Height: 3[m] Building Footprint Area: 440[m^2]
Subsurface Foundation Area: 440[m^2] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.3[m]

EXPOSURE PARAMETERS
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 365 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]
Risk Factor for carcinogens: 1E-6 Target Hazard Quotient for non-carcinogens: 1

JOHNSON & ETTINGER SIMULATION RESULTS
Effective Diffusion Coefficients:
Unsaturated Zone(D_{eff}): 0.004532[cm^2/s]
Unsaturated Zone + Capillary Zone (D^T_{eff}): 0.0008767[cm^2/s]

Soil Gas Attenuation Factor (α_{SG}): 0.0000579
Ground Water Attenuation Factor (α_{GW}): 0.0000141
Target Concentrations are based on CANCER risk.
Target Indoor Air Concentration: 0.8111[$\mu g/m^3$] or 0.1197[ppbv]

[1]Less Protective Target Concentrations
Soil Gas: 5.299e4[$\mu g/m^3$] or 7818.[ppbv]; Ground Water: 126.0[$\mu g/L$]

Best Estimate Target Concentrations
Soil Gas: 1.401e4[$\mu g/m^3$] or 2067.[ppbv]; Ground Water: 76.69[$\mu g/L$]

[2]More Protective Target Concentrations
Soil Gas: 7306.[$\mu g/m^3$] or 1078.[ppbv]; Ground Water: 68.22[$\mu g/L$]

Based on parameter analysis: Advection is the dominant mechanism across foundation. Diffusion through soil is the

overall rate-limiting process for groundwater to indoor-air pathway.

[1]"Less Protective" concentrations produced with HIGHEST moisture content and DEEPEST depth to contamination.
[2]"More Protective" concentrations produced with LOWEST moisture content and SHALLOWEST depth to contamination.

Building Footpring Area is outside the recommended range for this building type.
Subsurface Foundation Area is outside the recommended range for this building type.

EPA United States Environmental Protection Agency

EPA On-line Tools for Site Assessment Calculation - TCE

Screening Level Implementation of the Johnson and Ettinger Vapor Intrusion Model

Reverse Calculation of Target Media Concentrations

Forward Calculation full uncertainty analysis

Background

Migration of volatile chemicals from the subsurface into overlying buildings is called vapor intrusion (VI). Volatile organic chemicals in contaminated soils or groundwater can emit vapors, which may migrate through subsurface soils and may enter the indoor air of overlying buildings. Building depressurization may cause these vapors to enter the home through cracks in the foundation. Depressurization can be caused by a combination of wind effects and stack effects, which are the result of heating within the building and/or mechanical ventilation. In extreme cases, the vapors may accumulate in dwellings to levels that may pose near-term safety hazards, such as explosion. Typically, however, vapor concentrations are present at low levels, to which long-term exposure may pose increased risk for chronic health effects.

This on-line calculator implements the Johnson and Ettinger (J&E) (Johnson and Ettinger, 1991) simplified model to evaluate the vapor intrusion pathway into buildings. This J&E model replicates the implementation that the US EPA Office of Solid Waste and Emergency Response (OSWER) used in developing its draft vapor intrusion guidance, but includes a number of enhancements that are facilitated by web implementation: temperature dependence of Henry's Law Constants, automatic sensitivity analysis of certain parameters, and others described on the background page.

The results you obtain from this OnSite implementation of the Johnson and Ettinger model may differ from other versions of the Johnson & Ettinger Model. In addition to the OSWER implementation that was used for the draft vapor intrusion guidance, EPA Office of Emergency Response and Remediation (OERR) distributes a set of spreadsheet implementations of the model. The differences among these implementations is described in detail on the results page. Beyond these differences the on-line version includes a simplified uncertainty analysis the other implementations lack.

Click For an Example

Enter Site Name (optional):	Roswell Cleaners		
What type of building are you investigating?	Slab-on-Grade		
What is your contaminant of concern (COC)?	Trichloroethylene		
What type of soil is beneath the building at your site?	Loam		
What is the average soil/ground water temperature?	25	Celsius	
What is the depth to the contamination from the foundation?(L_T)	7	meters	
This value can change by +/-	0.25	meters	

Chemical Properties

CAS Number			79016		
Molecular Weight **(MW)**			131.39	[g/mole]	
Henry's Law Constant at ground water temperature **(H)**			0.4199816	[unitless]	
Free-Air Diffusion Coefficient **(D_a)**			7.900e-2	[cm^2/s]	
Diffusivity in Water **(D_w)**			9.100e-6	[cm^2/s]	
Unit Risk Factor **(URF)**			1.10e-4	[$(\mu g/m^3)^{-1}$]	
Reference Concentration **(RfC)**			4.00e-2	[mg/m^3]	

Soil Properties

Total Porosity **(n)**			0.399	[unitless]	
Unsaturated Zone Moisture Content **(θ_w)**	Low 0.0610	Best Estimate	0.148	High 0.240	[unitless]
Capillary Zone Moisture Content at Air-Entry Pressure **($\theta_{w,cap}$)**			0.332	[unitless]	
Height of Capillary Zone **(CZ_h)**			0.375	[m]	
Soil-gas Flow Rate Into the Building **(Q_{soil})**			5.00	[L/min]	

Building Properties

Air Exchange Rate **(E_B)**	1.00	[hr^{-1}]	
Building Mixing Height **(H_B)**	3.00	[m]	
Building Footprint Area **(F_B)**	440.0	[m^2]	
Subsurface Foundation Area **(A_B)**	440.0	[m^2]	
Building Crack Ratio **(η)**	0.00038	[unitless]	
Building Foundation Slab Thickness **(L_{crack})**	0.300	[m]	

Exposure Parameters

Exposure Duration for Carcinogens **(ED_c)**	30	[years]

Exposure Frequency for Carcinogens (EF_c)	350	[days/year]
Averaging Time for Carcinogens (AT_c)	70	[years]
Exposure Duration for Non-Carcinogens (ED_{nc})	30	[years]
Exposure Frequency for Non-Carcinogens (EF_{nc})	365	[days/year]
Averaging Time for Non-Carcinogens (AT_{nc})	30	[years]
Target Hazard Quotient (THQ)	1	[unitless]

CALCULATE RESULTS

RESULTS

Unsaturated Zone Effective Diffusion Coefficient (D_{eff})	0.004973	[cm^2/s]
Unsaturated + Capillary Zone Effective Diffusion Coefficient (D^T_{eff})	0.0009811	[cm^2/s]

"A" Parameter for Soil Gas	8.525e-5	Based on parameter analysis: Advection is the dominant mechanism across foundation. Diffusion through soil is the overall rate-limiting process for groundwater to indoor-air pathway.
"A" Parameter for Groundwater	1.682e-5	
"B" Parameter	300.7	
"C" Parameter	2.273e-4	

Soil Gas Attenuation Factor (α_{SG})	6.200e-5
Groundwater Attenuation Factor (α_{GW})	1.566e-5

Risk Factor = 1 x 10-6 ▼

Target Concentrations at this Risk Factor are based on CANCER risk

Target Indoor Air Concentration = 0.02212 [$\mu g/m^3$] or 0.004119 [ppbv]

	RANGE OF CONCENTRATIONS BASED ON SENSITIVITY OF SOIL TYPE AND CONTAMINATION DEPTH											
Target Media	Less Protective[1]				Best Estimate				More Protective[2]			
Soil Gas	1325.	[$\mu g/m^3$]	246.8	[ppbv]	356.8	[$\mu g/m^3$]	66.44	[ppbv]	190.2	[$\mu g/m^3$]	35.42	[ppbv]
Groundwater	5.551	[µg/L]			3.363	[µg/L]			2.988	[µg/L]		

[1] "Less Protective" concentrations produced with HIGHEST moisture content and DEEPEST depth to contamination.

[2] "More Protective" concentrations produced with LOWEST moisture content and SHALLOWEST depth to contamination.

CLEAR ALL

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What do these results mean?

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WCMS
Last updated on 2/23/2016

TARGET MEDIA CONCENTRATION RESULTS - TCE

Screening-Level Johnson and Ettinger Model

Site Name: Roswell Cleaners
Report Date: Sun May 29 2016 13:07:02 GMT-0500 (Central Daylight Time)
Report Generated From: https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite.htm
Depth to contamination from bottom of foundation: 7m +/- 0.25m
Average ground water temperature: 25C

CHEMICAL PROPERTIES
Chemical of Concern: Trichloroethylene CAS Number: 79016
Molecular Weight: 131.39[g/mole] Henrys Constant: 0.4199816[unitless]
Diffusivity in Air: 7.900e-2[cm^2/sec] Diffusivity in Water: 9.100e-6[cm^2/sec]
Unit Risk Factor: 0.00011[$(\mu g/m^3)^{-1}$] Reference Concentration: 0.04[mg/m^3]

SOIL PROPERTIES
Soil Type: Loam Total Porosity: 0.399
Unsaturated Zone Moisture Content:
low= 0.061 best estimate= 0.148 high= 0.24
Capillary Zone Moisture Content: 0.332 Height of Capillary Rise: 0.375[m]
Soil-Gas Flow Rate into Building: 5 [L/min]

BUILDING PROPERTIES
Building Type: Slab-on-Grade Air Exchange Rate: 1[hr^{-1}]
Building Mixing Height: 3[m] Building Footprint Area: 440[m^2]
Subsurface Foundation Area: 440[m^2] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.3[m]

EXPOSURE PARAMETERS
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 365 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]
Risk Factor for carcinogens: 1E-6 Target Hazard Quotient for non-carcinogens: 1

JOHNSON & ETTINGER SIMULATION RESULTS
Effective Diffusion Coefficients:
Unsaturated Zone(D_{eff}): 0.004973[cm^2/s]
Unsaturated Zone + Capillary Zone (D^T_{eff}): 0.0009811[cm^2/s]

Soil Gas Attenuation Factor (α_{SG}): 0.000062
Ground Water Attenuation Factor (α_{GW}): 0.00001566
Target Concentrations are based on CANCER risk.
Target Indoor Air Concentration: 0.02212[$\mu g/m^3$] or 0.004119[ppbv]

[1]Less Protective Target Concentrations
Soil Gas: 1325.[$\mu g/m^3$] or 246.8[ppbv]; Ground Water: 5.551[$\mu g/L$]

Best Estimate Target Concentrations
Soil Gas: 356.8[$\mu g/m^3$] or 66.44[ppbv]; Ground Water: 3.363[$\mu g/L$]

[2]More Protective Target Concentrations
Soil Gas: 190.2[$\mu g/m^3$] or 35.42[ppbv]; Ground Water: 2.988[$\mu g/L$]

Based on parameter analysis: Advection is the dominant mechanism across foundation. Diffusion through soil is the

overall rate-limiting process for groundwater to indoor-air pathway.

[1]"Less Protective" concentrations produced with HIGHEST moisture content and DEEPEST depth to contamination.
[2]"More Protective" concentrations produced with LOWEST moisture content and SHALLOWEST depth to contamination.

Building Footpring Area is outside the recommended range for this building type.
Subsurface Foundation Area is outside the recommended range for this building type.

APPENDIX G

RISK REDUCTION STANDARDS CALCULATIONS

APPENDIX G
RISK REDUCTION STANDARDS

Section 391-3-19-.07 of the Rules allows for the determination of Risk Reduction Standards (RRS) that are protective of human health and the environment. The Rules discuss five alternative Types of RRS against which a site can be evaluated. The RRS types are described as:

Type 1 - Standardized exposure assumptions for residential properties;
Type 2 - Site specific exposure determinations for residential properties;
Type 3 - Standardized exposure assumptions for non-residential properties;
Type 4 - Site specific exposure determinations for non-residential properties;
Type 5 - Engineering and institutional controls such as caps, slurry walls, fences, deed restrictions, etc. to minimize risk when it is not appropriate and/or practical to apply Type 1-4 standards.

The site can be delisted from the HSI once Type 1 or 2 RRS are met in both soil and groundwater.

A site in compliance with Type 3 or 4 RRS will be designated as having a known release needing corrective action. Once the activities needed to maintain the RRS are complete, the site can be removed from the HSI.

G.1 SOILS

Soils were sampled and analyzed for VOCs by EPA Method 8260B and PAHs by EPA Method 8270C. Tables 6-1 and 6-2 detail the analytical results for the detected constituents. Initial sampling occurred on March 19, 2007 and August 25-26, 2008, with additional soils samples collected on April 16, 2012; March 14, 2013; and, October 11, 2013 (Tables G-1 and G-2).

A HSRA Release Notification was submitted to the Georgia EPD based on the 2007 analytical results indicating soil (as well as groundwater) exceeding notification concentrations.

Tetrachloroethylene (PCE) was detected in soils at all monitor well and soil boring locations ranging from 0.009 to 193.0 mg/kg, except for the original soil boring, B-3, that was non-detect. Trichloroethylene (TCE) was detected at B-1, B-2, MW-4, MW-6, and all additional borings sampled in 2013. Cis-1,2-dichloroethylene (cis-DCE) was detected at B-1, B-2, B-3, MW-4, B-4B, B-7, and B-8. Trans-1,2-dichloroethylene (Trans-DCE) was detected at MW-4 only (Table G-1). Vinyl chloride was detected at B-1 at 0.016 mg/kg.

Other compounds detected include: Naphthalene at B-2, MW-1 and MW-4 only; Benzene at B-1 and B-9 only; Toluene at B-1, B-2, and MW-4; Ethylbenzene and Xylenes at B-2, MW-4, B-4B, B-7, and B-9; 1,2,4-trimethylbenzene (1,2,4-TMB) at B-2, MW-4, B-4B, and B-7; 1,3,5-trimethylbenzene (1,3,5-TMB) at MW-4 and B-4B; acetone at B-1, B-3, and B-9; and carbon disulfide at B-9 only (Table G-2).

Table G-1
Soil Analytical Results and Appendix I Concentration (mg/kg)
March 19, 2007 (B-1, B-2, and B-3)
August 25-26, 2008 (MW-1, MW-2, MW-3, and MW-4)
April 16, 2012 (MW-5)
March 14, 2013 (B-4B, B-6, B-7, B-8, B-9, B-10)
October 11, 2013 (B-DW/MW-6)

Constituent	App I Conc.	Depth (Feet)	B-1	B-2	B-3	MW-1	MW-2	MW-3	MW-4	B-4B	B-6	B-7	B-8	B-9	B-10	MW-5	B-DW/MW-6
PCE	0.18	1	--	--	--	0.009	0.012	0.013	**1.54**	0.076	0.022	0.163	0.011	--	--	--	--
		2 dup	--	--	--	ND --	0.009 ND	ND --	**0.204**	--	--	--	--	0.005	0.005	--	--
		5	--	--	--	ND	0.028	ND	**6.10**	**6.31** (10')	0.035 (10')	**15.20** (10')	0.018 (10')	0.008 (10')	0.011 (10')	--	0.015
		15 dup	0.005	**8.67** (10')	ND (10')	ND --	0.016 --	ND --	**84.2** **14.9**	0.093 --	ND --	**193.0** --	0.021	0.005 --	0.100 --	--	0.011
		25	--	--	--	--	--	ND	--	--	--	--	--	--	--	ND (20')	0.100 (70')
TCE	0.13	1	--	--	--	ND	ND	ND	0.023	0.018	ND	0.005	ND	--	--	--	--
		2 dup	--	--	--	ND --	ND ND	ND --	0.037 --	--	-- --	--	--	0.052 --	ND	--	0.009
		5	--	--	--	ND	ND	ND	**3.12**	**0.259** (10')	0.011 (10')	0.067 (10')	0.102 (10')	ND (10')	ND (10')	--	ND (10')
		15 dup	0.005	**2.84** (10')	ND (10')	ND --	ND --	ND --	**5.29** **1.35**	0.070	ND --	**5.030** --	ND --	ND --	0.046 --	--	ND
		25	--	--	--	--	--	ND	--	--	--	--	--	--	--	ND (20')	--
Cis-DCE	0.53	1	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
		2 dup	--	--	--	ND --	ND ND	ND --	0.012 --	--	--	--	--	ND	ND	--	ND
		5	--	--	--	ND	ND	ND	0.495	0.006 (10')	ND (10')	0.006 (10')	0.310 (10')	ND (10')	ND (10')	--	ND (10')
		15 dup	0.006	0.029	0.01 4	ND --	ND --	ND --	**2.37** **1.7**	ND --	ND	0.022 --	0.038 --	ND	ND	--	ND
		25	--	--	--	--	--	ND	--	--	--	--	--	--	--	ND (20')	--
Trans-DCE	0.53	1	--	--	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--
		2 dup	--	--	--	ND --	ND ND	ND --	ND --	-- --	ND	ND	ND	ND	ND	--	ND
		5	--	--	--	ND	ND	ND	ND	ND (10')	ND (10')	ND (10')	ND (10')	ND (10')	ND (10')	--	ND (10')
		15 dup	ND	ND (10')	ND (10')	ND --	ND --	ND --	**0.841** 0.282	ND --	--	ND	ND	ND	ND	--	ND
		25	--	--	--	---	--	ND	--	--	--	--	--	--	--	ND (20')	--
VC		15'	0.016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = NOT DETECTED
-- = Sample not collected at this location
Bold numbers indicate sample values greater than the notification concentration limit (Appendix I).

Table G-2
Additional Soil Sample Analytical Results for MW-1, MW-4, and Borings B-4B, B-7, and B-9 (mg/kg)
August 25-26, 2008 and March 14, 2013

Constituent	Appendix I Concentration	Sample Depth (Feet)	B-1	B-2	B-3	MW -1	MW -4	B-4B	B-7	B-9
Naphthalene	100	1	--	0.028 (10')	--	0.016	ND 0.005	ND	ND	ND
Benzene	0.02	2	0.004 (15')	--	--	ND	ND	ND	ND	0.005
Toluene	14.40	1'	--	--	--	ND	0.005	ND	ND	ND
		15' duplicate	0.009 --	0.006 (10')	ND (10')	ND	ND 0.006	ND	ND	ND
Ethylbenzene	20	1	--	--	--	ND	ND	ND	ND	ND
		2	--	--	--	ND	ND	ND	ND	0.006
		5	--	0.061 (10')	ND (10')	ND	ND	0.013 (10')	ND	ND
		15'	ND	--	--	ND	0.010 0.022	ND	0.21	ND
m, p-xylenes	20	2'	--		--	ND	ND	ND	ND	0.023
		10'	--	0.121**	ND	ND	--	0.063	0.056	ND
		15'	ND	--	--	ND	0.041 0.097	ND	0.96	ND
o-xylene	20	2'	--	--	--	ND	ND	ND	ND	0.009
		10'	--	--	ND	ND	ND	0.023	0.017	ND
		15'	ND	--	--	ND	0.015 0.036	ND	0.21	ND
Acetone	2.74	15'	0.205	ND	0.	ND	ND	ND	ND	0.185
Carbon Disulfide	DL	15'	ND	--	--	ND	ND	ND	ND	**0.005**
1,2,4-TMB	*	10'	--	0.031	ND	ND	--	**0.016**	**0.010**	ND
		15'	ND	--	--	ND	ND	ND	ND	ND
1,3,5-TMB	*	10'	--	--	--	ND	--	**0.005**	ND	ND
		15'	ND	0.009 (10')	--	ND	ND	ND	ND	ND

Bold numbers indicate sample values greater than the notification concentration (background/detection limit).
DL = detection limit
* = No Appendix I Concentration (background or DL is the notification concentration)
** = total xylenes

The constituents initially detected at concentrations greater than the notification concentrations in soil samples are PCE, TCE, cis-DCE, and trans-DCE at MW-4. 1,3,5-TMB and 1,2,4-TMB do not have an Appendix I concentration for soils, but were detected at concentrations greater than detection at B-2 and MW-4.

Later sampling detected PCE and TCE at concentration greater than notification concentrations in soil samples at B-4B and B-7; and 1,2,4-TMB and 1,3,5-TMB at B-4B and B-7; and carbon disulfide at B-9.

Carbon disulfide, 1,3,5-TMB and 1,2,4-TMB do not have an Appendix I Concentration for soils.

All other detected constituents (naphthalene, toluene, ethylbenzene, and xylenes) were less than the Appendix I Concentration for soil.

Type 1 RRS for Soils

The Type 1 RRS for soils is determined based on several factors. The first criteria is the concentration given in Table 2 of Appendix III (for metals only), or the least of items 1 through 3, listed below:

(1) The concentration which will not cause contamination of ground water at levels which exceed Type 1 groundwater criteria, determined as the highest of the soil in items (i) through (iii):

(i) Soil concentration in Appendix I,

(ii) Multiplication of the Type 1 groundwater concentration criteria by a factor of 100.

(iii) Demonstration through using of the TCLP, SW-846 Method 1311, that a concentration in soil will not generate leachate concentrations that exceed Type 1 groundwater concentration criteria.

(2) The concentrations which are unlikely to result in any noncancer toxic effects on human health via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 7 for the Risk Assessment Guidance for Superfund (RAGS), Part B, and standard residential exposure factors for the residential use scenario.

(3) The concentrations for which the upper bound on the estimated excess cancer risk is less than 10^{-5} (^{10}-4 for Class C carcinogens) via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 6 from RAGS, Part B, and standard residential exposure factors for the residential use scenario.

None of the organic constituents detected in soils have concentrations given in Table 2 of Appendix III (metals only), thus the Type 1 RRS must be determined using the criteria detailed above.

Chemical constituent values for the detected constituents of concern are provided below. The hierarchy for determining which chemical specific values for any chemical constituent are appropriate for use is:

- IRIS Values
- Provisional Peer-reviewed toxicity values (PPRTV), and
- Other (CAL EPA, ATSDR, HEAST).

Tetrachloroethylene (PCE)

The EPA currently classifies PCE as a human carcinogen. The oral RfD, inhalation RfC, and oral and inhalation slope factors are provided in IRIS and listed in Table G-3.

Trichloroethylene (TCE)

The EPA currently classifies TCE as a human carcinogen. The oral RfD, inhalation RfC, and oral and inhalation slope factors are provided in IRIS and listed in Table G-3.

Cis-1,2-dichloroethylene (cis-DCE)

Cis-DCE is not a human carcinogen. The oral RfD and inhalation RfC, are provided in IRIS and listed in Table G-3.

Trans-1,2-dichloroethylene (trans-DCE)

Trans-DCE is listed in IRIS. The RfD (oral) is 0.02 mg/kg-day. There are no values provided for inhalation and it is not listed as a human carcinogen.

Naphthalene

Napthalene is listed in IRIS. The oral RfD and inhalation RfC, are provided in IRIS and listed in Table G-3. It is listed as a possible human carcinogen (Class C) in IRIS (but no values are provided).

Benzene

The EPA currently classifies Benzene as a human carcinogen. The oral RfD, inhalation RfC, and oral and inhalation slope factors are provided in IRIS and listed in Table G-3.

Toluene

Toluene is listed in IRIS. The oral RfD and inhalation RfC, are provided in IRIS and listed in Table G-3. Neither IRIS or California list toluene as a carcinogen.

Ethylbenzene

Ethylbenzene is listed in IRIS. The oral RfD and inhalation RfC, are provided in IRIS and listed in Table G-3. It is not listed as a non-carcinogen in IRIS.

Xylenes

Xylenes are listed in IRIS. The oral RfD and inhalation RfC, are provided in IRIS and listed in Table G-3. Neither IRIS or California list xylenes as carcinogens.

Acetone

The oral RfD is provided in IRIS and listed in Table G-3. The inhalation RfC, and oral and inhalation slope factors are not available in IRIS.

Carbon Disulfide

The oral RfD and inhalation RfC are provided in IRIS and listed in Table G-3. Carbon disulfide is not listed as a carcinogen in IRIS.

1,3,5-trimethylbenzene (1,3,5-TMB)

1,3,5-TMB is not listed in IRIS or by California EPA on its list of potential cancer causing chemicals. Provisional data is provided in Table G-3.

1,2,4-trimethylbenzene

1,2,4-TMB is not listed in IRIS or by California EPA on its list of potential cancer causing chemicals. Provisional data is provided in Table G-3.

The chemical specific values used and the corresponding references are listed in Table G-3. Note that IRIS provides the $RfD_{inhalation}$ value as mg/m^e. This value is divided by 3.5 (assuming a body weight of 70 kg and an inhalation rate of 20 m^e/day) to convert to the $RfD_{inhalation}$ factor $(mg/kg\text{-}day)^{-1}$ used in the equations. IRIS also provides the $SF_{inhalation}$ value as $(ug/m^3)^{-1}$. This value is multiplied by 3500 (assuming a body weight of 70 kg, an inhalation rate of 20 m^e/day, and 0.001 to convert to ug) to convert to the $SF_{inhalation}$ factor $(mg/kg\text{-}day)^{-1}$ used in the equations.

Table G-3
Chemical Specific Values for
PCE, TCE, Cis-DCE, Trans-DCE, Benzene, Toluene, Ethylbenzene, Xylenes, Naphthalene, Acetone, Carbon Disulfide, 1,2,4-TMB, and 1,3,5-TMB

Parameter	Definition	Value	Reference
PCE			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.006	IRIS
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	0.04	IRIS
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	2.1×10^{-3}	IRIS
SFi	inhalation cancer slope factor $(ug/m^3)^{-1}$	2.6×10^{-7}	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	94.9	RAIS/MCI
D_i	molecular diffusivity (cm^2/s)	0.0505	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	0.0184	RAIS/SSL
TCE			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.0005	IRIS
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	0.002	IRIS
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	4.6×10^{-2}	IRIS
SFi	inhalation cancer slope factor (ug/m^3)	4.1×10^{-6}	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	60.7	RAIS
D_i	molecular diffusivity (cm^2/s)	0.0687	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	0.0103	USEPA. May 1996
Cis-DCE			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.002	IRIS
RfCinhalation	inhalation chronic reference dose (mg/m^3)	NA	IRIS
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	NA	IRIS
SFi	inhalation cancer slope factor $(mg/kg\text{-}day)^{-1}$	NA	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	39.6	RAIS
D_i	molecular diffusivity (cm^2/s)	0.0884	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	0.00408	USEPA. May 1996
Trans-DCE			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.02	IRIS
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	NA	IRIS
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	NA	IRIS
SFi	inhalation cancer slope factor (ug/m^e)	NA	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	39.6	RAIS
D_i	molecular diffusivity (cm^2/s)	0.0876	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	0.00942	RAIS/SSL
Benzene			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.004	IRIS
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	0.03	IRIS
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	0.015 to 0.055	IRIS
SFi	inhalation cancer slope factor (ug/m^e)	2.2E-6 to 7.8E-6	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	146	RAIS/MCI
D_i	molecular diffusivity (cm^2/s)	0.0895	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	0.00558	RAIS/SSL

Toluene			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.08	IRIS
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	5	IRIS
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	NA	IRIS
SFi	inhalation cancer slope factor (ug/m^e)	NA	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	234	RAIS/MCI
D_i	molecular diffusivity (cm^2/s)	0.0778	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	0.00635	RAIS/SSL
Ethylbenzene			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.1	IRIS
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	1	IRIS
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	NA	IRIS
SFi	inhalation cancer slope factor (ug/m^e)	NA	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	39.6	RAIS/SSL
D_i	molecular diffusivity (cm^2/s)	0.0685	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	0.00790	RAIS/SSL
Xylenes			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.2	IRIS
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	0.1	IRIS
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	NA	IRIS
SFi	inhalation cancer slope factor (ug/m^e)	NA	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	602	RAIS
D_i	molecular diffusivity (cm^2/s)	0.0685	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	0.00518	RAIS/EPI
Naphthalene			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.02	IRIS
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	0.003	IRIS
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	NA	IRIS
SFi	inhalation cancer slope factor (ug/m^e)	NA	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	1540	RAIS/MCI
D_i	molecular diffusivity (cm^2/s)	0.0605	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	0.000484	RAIS/SSL
Acetone			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.9	IRIS
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	NA	IRIS
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	NA	IRIS
SFi	inhalation cancer slope factor (ug/m^e)	NA	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	2.36	RAIS
D_i	molecular diffusivity (cm^2/s)	0.106	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	3.50E-5	RAIS, experimental
Carbon Disulfide			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.1	IRIS
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	0.7	IRIS
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	NA	IRIS
SFi	inhalation cancer slope factor (ug/m^e)	NA	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	21.7	RAIS/SSL
D_i	molecular diffusivity (cm^2/s)	0.106	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	0.0303	RAIS/SSL

1,2,4-TMB			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.006	IRIS (provisional, 2012)
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	0.02	IRIS (provisional, 2012)
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	NA	IRIS
SFi	inhalation cancer slope factor (ug/m^e)	NA	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	614	RAIS
D_i	molecular diffusivity (cm^2/s)	0.0607	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	0.0061	RAIS, experimental
1,3,5-TMB			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.006	IRIS (provisional, 2012)
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	0.02	IRIS (provisional, 2012)
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	NA	IRIS
SFi	inhalation cancer slope factor (ug/m^e)	NA	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	602	RAIS/SSL
D_i	molecular diffusivity (cm^2/s)	0.0602	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	0.0088	RAIS/SSL

Note that the RfD values for 1,2,4-TMB and 1,3,5-TMB are provisional from IRIS, with a low to medium confidence level.

Equation 7 from RAGS, Part B is for noncarcinogenic effects of both oral ingestion and inhalation of volatiles and is given as:

$$THI = \frac{C \times 10^{-6}\ kg/mg \times EF \times ED \times IR_{soil}}{RfD_0 \times BW \times AT \times 365\ days/yr} + \frac{C \times EF \times ED \times IR_{air} \times (1/VF + 1/PEF)}{RfD_i \times BW \times AT \times 365\ days/yr}$$

$$C\ (mg/kg;\ Risk\ based) = \frac{THI \times BW \times AT \times 365\ days/yr}{ED \times EF \times [((1/RfD_0) \times 10^{-6}\ kg/mg \times IR_{soil}) + ((1/RfD_i) \times IR \times (1/VF + 1/PEF))]}$$

The parameters and values used in Equation 7 are the standard assumptions for residential sites provided in Appendix III, Table 3 of the regulations, shown below in Table G-4.

Table G-4
Standard Exposure Assumptions for Residential Sites

Parameter	Definition	Standard Exposure Assumptions
C	chemical concentration in soil (mg/kg)	To be calculated
THI	target hazard index (unitless),	1
BW	body weight (kg)	70
AT	averaging time (year)	70
ED	exposure duration (year)	30
EF	exposure frequency (days/year)	350
IR_{soil}	soil ingestion rate (mg/day)	114
IR_{air}	daily inhalation rate (m^3/day)	15
PEF	particulate emission factor (m^3/kg)	4.63×10^9

Equation 7 can be reduced to the following provided the default parameters are applicable:

$$C\ (mg/L) = \frac{170.33}{[1/RfD_0 \times 1.14^{-4}] + [(15/RfD_i) \times (1/VF + 1/PEF)]}$$

Where:

$$VF = \frac{(LS \times V \times DH)}{A} \times \frac{(\pi \times \alpha \times T)^{1/2}}{(2 \times D_{ei} \times E \times K_{as} \times 10^{-3}\ kg/g)}$$

LS = length of side of contaminated area (m), 45
V = wind speed in mixing zone (m/s), 2.25
DH = diffusion height (m), 2
A = area of contamination (cm^2), 2.03×10^7 (=0.5 acre)
π = pi, 3.14
T = exposure interval(s), 7.9×10^8 (=25 years)

$$\alpha\ (cm^2/m) = \frac{(D_{ei} \times E)}{E + (\rho_s)(1\text{-}E)/Kas}$$

ρ_s = density of soil solids (g/cm^3), 2.65
OC = soil organic content fraction (unitless), 0.02
D_{ei} = effective diffusivity (cm^2/s) = $D_i \times E^{0.33}$
E = total soil porosity (unitless), 0.35
Koc = organic carbon partition coefficient (cm^3/g)
Kd = soil-water partition coeffient (cm^3/g) = Koc x OC
Kas = soil/air partition coeffienct (g soil/cm^3 air) = (H/Kd) x 41

Table G-5
Summary Chemical Properties and Calculated Type 1 RRS for Noncarcinogenic Exposure

Constituent	α	VF	C (mg/kg)
PCE	0.0027	904	116
TCE	0.0032	833	5.3
Cis-DCE	0.0026	954	2,988
Trans-DCE	0.0056	625	29,882
Benzene	9.90E-4	1,578	150
Toluene	6.1E-4	2,012	25,647
Ethylbenzene	0.0037	765	2,440
Xylenes	1.7E-4	3,824	1,090
Naphthalene	5.6E-6	21,329	206
Acetone	4.6E-4	2,338	1,344,710
Carbon Disulfide	0.028	192	435
1,2,4-TMB	0.00018	3,789	239
1.3.5-TMB	0.00026	3,126	198

Calculations are detailed in the attached EXCEL file.

The third value needed to be calculated is the carcinogenic using Equation 6, RAGS, Part B.

$$TR = \frac{SFo \times C \times 10^6\ kg/mg \times EF \times ED \times IR_{soil}}{BW \times AT \times 365\ days/yr} + \frac{SFi \times C \times EF \times ED \times IR_{air} \times (1/VF + 1/PEF)}{BW \times AT \times 365\ days/yr}$$

$$C\ (mg/kg;\ Risk\ based) = \frac{TR \times BW \times AT \times 365\ days/yr}{ED \times EF \times [(SFo \times 10^{-6}\ kg/mg \times IR_{soil}) + (SFi \times IR_{air} \times [(1/VF + 1/PEF])]}$$

The residential standard exposure assumptions from Appendix III, Table 3 used in Equation 6 are provided in Table G-4. Table G-6 provides the results for soil concentrations. Calculations are detailed in the attached EXCEL file.

Table G-6
Carcinogenic Exposure Limits for Type I RRS

	C chemical concentration in soil (mg/kg)
PCE	9.7
TCE	2.2
Cis-DCE	NA
Trans-DCE	NA
Naphthalene	NA
Benzene	6.9 and 0.74
Toluene	NA
Ethylbenzene	NA
Xylenes	NA
Acetone	NA
Carbon Disulfide	NA

Cis-DCE, trans-DCE, ethylbenzene, toluene, xylenes, naphthalene, acetone, and carbon disulfide do not have a concentration for carcinogen values.

The Type 1 RRS for this site are given in Table G-7. Table G-8 provides the Type I RRS compared to the soil concentrations detected at the site.

Table G-7
Type 1 Risk Reduction Standards for Detected Constituents (mg/kg)

Detected Constituent	Highest Concentration of the 3 Concentrations Below				Eq. 7	Eq. 6	Final Type 1 RRS
	Soil Conc. in Appendix I	Ground-water conc. * 100	TCLP	Highest			
PCE	0.18	0.5	--	0.50	112	9.7	0.50
TCE	0.13	0.5	--	0.50	5.3	2.2	0.50
Cis-DCE	0.53	7	--	7	2988	--	7
Trans-DCE	0.53	10	--	10	29,882	--	10
Naphthalene	100	2	--	100	206	--	100
Benzene	0.02	0.5	--	0.50	150	0.74	0.5
Toluene	14.4	100	--	100	25,657	--	100
Ethylbenzene	20	70	--	70	2,440	--	70
xylenes	20	1,000* (total)	--	1,000	1.090	--	1,000
Acetone	2.74	400	--	400	1,344, 710	--	400
Carbon Disulfide	DL	400	--	400	435	--	400
1,2,4-TMB	--	--	--	--	239	--	239
1,3,5-TMB	--	--	--	--	198	--	198

DL = Detection Limit

Table G-8
Soil Analytical Results for Soil Sampling Locations with Detected Concentrations Greater Than Type 1 RRS (mg/kg)
August 25-26, 2008 through October 11, 2013

Constituent	Type 1 RRS	Sampling Depth (Feet)	B-2	MW-4	B-4B	B-7
PCE	0.50	1	--	**1.54**	--	--
[redacted]		5	**8.67** (10')	**6.10**	**6.31** (10')	**15.20** (10')
		15 duplicate	--	**84.2** **14.9**	--	**193.0** --
TCE	0.50	5	**2.84** (10')	**3.12**	--	--
[redacted]		15 duplicate	--	**5.29** **1.35**	--	**5.03**
Cis-DCE	7	none	none	none	none	none
Trans-DCE	10	none	none	none	none	none
Naphthalene	100	none	none	none	none	none
Benzene	0.5	none	none	none	none	none
Toluene	100	none	none	none	none	none
Ethylbenzene	70	none	none	none	none	none
Xylenes	1,000	none	none	none	none	none
Acetone	400	none	none	none	none	none
Carbon Disulfide	400	none	none	none	none	none
1,2,4-trimethylbenzene	239	none	none	none	none	none
1,3,5-trimethylbenzene	198	none	none	none	none	none

Bold numbers indicate sample values greater than Type 1 RRS

The site does not meet Type 1 RRS for PCE and TCE at soils collected at MW-4, B-4B, and B-7.

Type 2 RRS

The Type 2 RRS criteria for soil is defined as the least of the following four concentrations:

1) The concentrations which will not cause contamination of ground water at levels which exceed Type 1 or 2 groundwater criteria, whichever is higher, as determined by any laboratory test and/or fate and transport model recognized by USEPA and approved by the Director, at a point of exposure defined as any point at which a drinking water could be installed.
2) The concentrations which are unlikely to result in any noncancer toxic effects on human health via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 7 for the Risk Assessment Guidance for Superfund (RAGS), Part B, and site specific exposure factors for the residential use scenario.
3) The concentrations for which the upper bound on the estimated excess cancer risk is less than 10^{-5} via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 6 from RAGS, Part B, and site specific exposure factors for the residential use scenario.
4) This concentration is specific to lead.

To determine the soil concentrations that will not cause contamination of ground water at levels which exceed Type 1 or 2 groundwater criteria, whichever is higher, was evaluated using the criteria in the EPA Document "Soil Screening Guidance: Technical Background Document", May 1996. The generic Soil Screening Levels (SSL) calculated in the document (Appendix A) to determine the value based on the migration to groundwater pathway are very conservative. The model has 10 simplifying assumptions used to calculate the SSLs, and this site does not meet most of them. The model assumes the source is infinite, contaminants are uniformly distributed in the zone of contamination, there is no chemical or biological degradation in the unsaturated zone, there is no attenuation of contaminants in the aquifer, there is no dilution from recharge downgradient of the site, and the aquifer is homogeneous and isotropic.

Soil saturation concentrations were calculated to verify that the constituent concentrations detected at the site do not exceed the soil saturated limit using the equation:

$$C(sat) = \frac{S\,(K_d p_b + O_w + H'\,O_a)}{p_b}$$

where:

Csat = soil saturation concentration (mg/kg)
S = Solubility in water (mg/L)
p_b = dry soil bulk density (kg/L), 1.5 default
K_d = soil-water partition coefficient (L/kg)
O_w = water filled soil porosity, 0.15 default
H' = Henry's Law constant (H * 41)
H = Henry's Law constant (atm-m^3/mol)
O_a = air filled soil porosity, 0.28 default

Soil saturated concentrations are presented in Table G-9.

Table G-9
Soil Saturated Concentration Levels (mg/kg)

Constituent	S (mg/L)	K_d	H	H'	Csat (mg/kg)	Highest Detected Soil Concentration
PCE	200	2.14	--	0.754	476	193.0
TCE	1,110	1.35	--	0.422	1670	5.29

K_d = Koc * foc (0.001)

None of the detected constituents exceed the soil saturated concentration. Therefore, the site does not appear to have free product.

The following equation is used to determine the soil concentration that is protective of groundwater:

Soil Concentration (mg/kg) = C_w* [K_d + {($\Theta_w + \Theta_a$*H')/p_b}] DAF

Where:
C_w = target soil leachate concentration (mg/L) (MCL, MCLG)
K_d = soil water partition coefficient (L/kg); for organics, $K_d = K_{oc} * f_{oc}$
f_{oc} = fraction organic carbon in soil (g/g); 0.002 (2%)
Θ_w = water-filled soil porosity (L_{water}/L_{soil}); 0.3
Θ_a = air-filled soil porosity (L_{air}/L_{soil}); $n * \Theta_w$; 0.18
H' = dimensionless Henry Law constant
ρ_b = dry soil bulk density (kg/L); 1.5
ρ_s = soil particle density (kg/L); 2.65
n = soil porosity (L_{pore}/L_{soil}) = 1** (ρ_b/ρ_s)
DAF= dilution attenuation factor; range from 1 to 20

This site does not have a drinking water well and none are located within 1.0 miles. The area is served by city/county water. The soil concentration protective of groundwater are provided in Table G-10.

Table G-10
Soil Concentrations Protective of Groundwater

Constituent	Soil Concentration calculated to be protective of Groundwater (mg/kg)	Highest Detected Soil Concentration (mg/kg)
PCE	0.06*	193.0
TCE	0.06*	5.29

*Soil Concentration provide in EPA Soil Screening Level Guidance

The Type 2 RRS for soils are summarized below in Table G-11.

Table G-11
Type 2 RRS

	Groundwater Modeling Conc. (mg/kg)*	Eq. 7 Noncarcinogenic Effects (mg/kg)	Eq. 6 Carcinogenic Effects (mg/kg)	Final Type 2 RRS (mg/kg)
PCE	0.06	116	9.7	0.06
TCE	0.06	5.3	2.2	0.06

*Soil Screening Levels (SSLs) based on EPA conceptual model (generic residential).

The site does not meet Type 2 RRS for soils for three constituents: PCE, TCE, and 1,2,4-trimethylbenzene.

Type 3 RRS

There are two criteria to be met for Type 3 RRS for soils. First, the concentrations at any point above the uppermost groundwater zone in soil that has been affected by a release shall not exceed the **higher** of:

1) Concentration described in Item 1 of Rule 391-3-19.07(6)(c). [Essentially Tpye 1 RRS].
2) Concentrations listed in Table 2 of Appendix III.
3) For lead, 400 mg/kg.

Secondly, concentrations in surface soils (soil within 2 feet of the land surface) shall meet the criteria above and, in addition, shall not exceed the **lower** of the concentrations defined in (1) through (3) below. If none of the calculations implied below can be made, the surface soil criterion shall be equal to the criterion above.

1) Concentrations which are unlikely to result in any noncancer toxic effects on human health due to ingestion of soil and inhalation of particulates and volatiles, determined using Equation 7 of RAGS, Part B, and standard nonresidential exposure assumptions in Table 3 of Appendix III.
2) Concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 10-5 (10-4 for Class C carcinogens) for human ingestion of soil and inhalation of particulates and volatiles, determined using Equation 6, RAGS, Part B, and standard nonresidential exposure assumptions in Table 3 of Appendix III.
3) For lead, 400 mg/kg.

Table G-12
Type 3 RRS Criteria for All Soil

Detected Constituent	Highest Concentration of the 3 Concentrations Below (Same as Ttype 1)				Table 2 Appendix III	Type 3 RRS For all Soil
	Soil Conc. in Appendix I	Ground-water conc. * 100	TCLP	Highest		
PCE	0.18	0.5	--	0.50	NA	0.50
TCE	0.13	0.5	--	0.50	NA	0.50
Cis-DCE	0.53	7	--	7	NA	7
Trans-DCE	0.53	10	--	10	NA	10
Naphthalene	100	2	--	100	NA	100
Benzene	0.02	0.5	--	0.50	NA	0.50
Toluene	14.4	100	--	100	NA	100
Ethylbenzene	20	70	--	70	NA	70
xylenes	20	1,000* (total)	--	1,000	NA	1,000
Acetone	2.74	400	--	400	NA	400
Carbon Disulfide	DL	400	--	400	NA	400
1,2,4-trimethylbenzene	--	--	--	--	NA	DL
1,3,5-trimethylbenzene	--	--	--	--	NA	DL

DL = Detection Limit

The surface soil most also meet the second set of criteria using the RAGS equations for noncancer and carcinogenic effects.

The second concentration to establish Type 3 soil concentrations is using Equation 7 for RAGS, Part B. Equation 7 is given below:

$$THI = \frac{C \times 10^{-6}\ kg/mg \times EF \times ED \times IR_{soil}}{RfD_0 \times BW \times AT \times 365\ days/yr} + \frac{C \times EF \times ED \times IR_{air} \times (1/VF + 1/PEF)}{RfD_i \times BW \times AT \times 365\ days/yr}$$

$$C\ (mg/kg;\ Risk\ based) = \frac{THI \times BW \times AT \times 365\ days/yr}{ED \times EF \times [((1/RfD_0) \times 10^{-6}\ kg/mg \times IR_{soil}) + ((1/RfD_i) \times IRair \times (1/VF + 1/PEF))]}$$

The parameters and values used in Equation 7 are the standard assumptions for nonresidential sites provided in Appendix III, Table 3 of the regulations, shown below in Table G-13. The chemical specific parameters are the same as provided in Table G-3.

Table G-13
Standard Exposure Assumptions for Calculating
Noncarcinogenic Concentrations at Nonresidential Sites

Parameter	Definition	Standard Exposure Assumptions
C	chemical concentration in soil (mg/kg)	To be calculated
THI	target hazard index (unitless),	1
BW	Body weight (kg)	70
AT	averaging time (year)	70
ED	exposure duration (year)	25
EF	exposure frequency (days/year)	250
IR_{soil}	soil ingestion rate (mg/day)	50
IR_{air}	Daily inhalation rate (m^3/day)	20
K	volatilization factor (m^3/kg)	0.5

Equation 7 can be reduced to the following provided the nonresidential default parameters are applicable:

$$C\ (mg/L) = \frac{102}{[1/RfD_0 \times 5x10\text{-}5] + [(1/RfD_i) \times (20/VF + 4.3\ x10\text{-}9)]}$$

Equation 6 can be reduced to the following provided the nonresidential default parameters are applicable:

$$C\ (mg/L) = \frac{2.9E\text{-}3}{[5x10\text{-}5x\ SFo] + [(SFi)x(20/VF + 20/PEF)]}$$

Table G-14 summarizes the results of the calculations.

Table G-14
Type 3 RRS
Non-Residential

	Item I (mg/kg)	Eq. 7 Noncarcinogenic Effects (mg/kg)	Eq. 6 Carcinogenic Effects (mg/kg)	Final Type 3 RRS (mg/kg)
PCE	0.50	52	14.4	0.5
TCE	0.50	2.4	8.4	0.5
Cis-DCE	7	4,080	--	7
Trans-DCE	10	40,800	--	10
Naphthalene	100	93	--	93
Benzene	0.50	62	8.3	0.50
Toluene	100	13,457	--	100
Ethylbenzene	70	1,107	--	70
xylenes	1,000	557	--	557
Acetone	400	20,400	--	400
Carbon Disulfide	400	195	--	195
1,2,4-TMB	DL	190	--	DL
1,3,5-TMB	DL	90	--	DL

DL= Detection Limit

The Type 3 RRS compared to constituent concentrations:

Table G-15
Onsite Soil Analytical Results and Type 3 RRS Concentration (mg/kg)
August 25-26, 2008 to October 11, 2013

Constituent	Type 3 RRS	Depth (Feet)	B-1	B-2	B-3	MW-1	MW-2	MW-3	MW-4	B-4B	B-6	B-7	B-8	B-9	B-10	MW-5	B-DW/ MW-6
PCE	0.05	1	--	--	--	0.009	0.012	0.013	1.54	0.076	0.022	0.163	0.011	--	--	--	--
		2 dup	--	--	--	ND --	0.009 ND	ND --	0.204	--	--	--	--	0.005	0.005	--	--
		5	--	--	--	ND	0.028	ND	6.10	6.31 (10')	0.035 (10')	15.20 (10')	0.018 (10')	0.008 (10')	0.011 (10')	--	0.015
		15 dup	0.005	8.67 (10')	ND (10')	ND --	0.016 --	ND --	84.2 14.9	0.093 --	ND --	193.0 --	0.021	0.005 --	0.100 --	--	0.011
		25	--	--	--	--	--	ND	--	--	--	--	--	--	--	ND (20')	0.100 (70')
TCE	0.50	1	--	--	--	ND	ND	ND	0.025	0.018	ND	0.005	ND	--	--	--	--
		2 dup	--	--	--	ND --	ND ND	ND --	0.037 --	--	-- --	--	--	0.052 --	ND	--	0.009
		5	--	--	--	ND	ND	ND	3.12	0.259 (10')	0.011 (10')	0.067 (10')	0.102 (10')	ND (10')	ND (10')	--	ND (10')
		15 dup	0.005	2.84 (10')	ND (10')	ND --	ND --	ND --	5.29 1.35	0.070	ND --	5.030 --	ND --	ND --	0.046 --	--	ND
		25	--	--	--	--	--	ND	--	--	--	--	--	--	--	ND (20')	--
Cis-DCE	7	1	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
		2 dup	--	--	--	ND --	ND ND	ND --	0.012 --	--	--	--	--	ND	ND	--	ND
		5	--	--	--	ND	ND	ND	0.495	0.006 (10')	ND (10')	0.006 (10')	0.310 (10')	ND (10')	ND (10')	--	ND (10')
		15 dup	0.005	0.029	0.014	ND --	ND --	ND --	2.37 1.7	ND --	ND	0.022 --	0.038 --	ND	ND	--	ND

Table G-15 (Cont.)

Constituent	Type 3 RRS	Depth (Feet)	B-1	B-2	B-3	MW-1	MW-2	MW-3	MW-4	B-4B	B-6	B-7	B-8	B-9	B-10	MW-5	B-DW/MW-6
		25	--	--	--	--	--	ND	--	--	--	--	--	--	--	ND (20')	--
Trans-DCE	10	1	--	--	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--
		2 dup	--	--	--	ND --	ND ND	ND --	ND --	-- --	ND	ND	ND	ND	ND	--	ND
		5	--	--	--	ND	ND	ND	ND	ND (10')	ND (10')	ND (10')	ND (10')	ND (10')	ND (10')	--	ND (10')
		15 dup	ND	ND (10')	ND (10')	ND --	ND --	ND --	0.841 0.282	ND --	--	ND	ND	ND	ND	--	ND
		25	--	--	--	--	--	ND	--	--	--	--	--	--	--	ND (20')	--

Table G-16

Constituent	Type 3 RRS	Sample Depth (Feet)	MW-1	MW-4	B-4B	B-7	B-9
Naphthalene	82	1	0.016	ND 0.005	ND	ND	ND
Benzene	0.05	2	ND	ND	ND	ND	0.005
Toluene	100	1'	ND	0.005	ND	ND	ND
		15' duplicate	ND	ND 0.006	ND	ND	ND
Ethylbenzene	70	1	ND	ND	ND	ND	ND
		2	ND	ND	ND	ND	0.006
		5	ND	ND	0.013 (10')	ND	ND
		15'	ND	0.010 0.022	ND	0.21	ND
m, p-xylenes	808	2'	ND	ND	ND	ND	0.023
		10'	ND	--	0.063	0.056	ND
		15'	ND	0.041 0.097	ND	0.96	ND
o-xylene	808	2'	ND	ND	ND	ND	0.009
		10'	ND	ND	0.023	0.017	ND
		15'	ND	0.015 0.036	ND	0.21	ND
Acetone	51	15'	ND	ND	ND	ND	0.185
Carbon Disulfide	198	15'	ND	ND	ND	ND	0.005
1,2,4-trimethyl-benzene	DL	10'	ND	--	**0.016**	**0.010**	ND
		15'	ND	ND	ND	ND	ND
1,3,5-trimethyl-benzene	DL	10'	ND	--	**0.005**	ND	ND
		15'	ND	ND	ND	ND	ND

ND = NOT DETECTED

-- = Sample not collected at this location

Bold numbers indicate sample values greater than the notification concentration limit (Appendix I).

The surface soil samples for soils less than 2 feet below grade surface (except for PCE at 1 foot at MW-4, B-4B, and B-7) and TCE at B-9 meet the Type 3 RRS.

Two constituents (PCE and TCE,) do not meet the Type 3 RRS at the 5 and 15 depths.

Type 4

The Type 4 RRS criteria for soil is defined as the least of the following four concentrations:

1) The concentrations which will not cause contamination of ground water at levels which exceed Type 3 or 4 groundwater criteria, whichever is higher, as determined by any laboratory test and/or fate and transport model recognized by USEPA and approved by the Director, at a point of exposure defined as any point at which a drinking water could be installed.
2) The concentrations which are unlikely to result in any noncancer toxic effects on human health via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 7 for the Risk Assessment Guidance for Superfund (RAGS), Part B, and site specific exposure factors for the nonresidential use scenario.
3) The concentrations for which the upper bound on the estimated excess cancer risk is less than 10^{-5} via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 6 from RAGS, Part B, and site specific exposure factors for the nonresidential use scenario.
4) This concentration is specific to lead.

The Type 4 RRS will be the concentration as determined by number 1 above, which is the same as the Type 3 RRS.

The site does not meet Type 4 RRS.

G.2 GROUNDWATER

Type 1 RRS for Groundwater

The Type 1 RRS for groundwater is defined as:

1) The concentration given in Table 1 of Appendix III, or if a substance is not listed, then:
2) The background concentration, or
3) The detection limit concentration.

Groundwater samples were analyzed for volatile organic compounds using EPA Method 8260B and polycyclic aromatic hydrocarbons (PAHs) using EPA Method 8270C. The first sampling occurred in 2008 and the last in March 2016. Eight constituents have been detected in the groundwater at this site (perchloroethylene; trichloroethylene; cis-1,2-dichloroethylene; trans-1,2-dichloroethylene; vinyl chloride; naphthalene; chloroform; and bromodichloromethane; Table G-17). Six of these constituents are listed specifically in Table 1 of Appendix III; bromodichloromethane and chloroform are not individually listed in Table 1 of Appendix III, but are listed as trihalomethanes.

Table G-17
Summary of Groundwater Analytical Results
Detected Constituents Only
(all concentrations in mg/L)

Constituent	Type 1 RRS	B-1	B-2	B-3	MW-1		MW-2		MW-3		MW-4		MW-5		MW-6	
		2007	2007	2007	2016	H/ year	2016	H/ year	2016	H/ year	2016	H/ year	2016	H/ year	2016	H/ year
CE	.005	ID	**.26**	ID	D	D	**.026**	**.055** 012	ID	**.150/** 008	**.26**	**.01/** 008	D	ID	ID	ID
CE	.005	ID	**.234**	ID	D	D	ID	.012/20 5	ID	**.152/20** 8	**.15**	**.156/** 008	D	ID	ID	ID
is-DCE	.07	ID	.016	ID	D	D	ID	.055 012	.012	.177/ 008	**.14**	**.315/** 008	D	ID	ID	ID
rans-DCE	.1	ID	ID	ID	D	D	ID	ID	ID	.004/ 008	ID	.036/ 008	D	ID	ID	ID
C	.002	**.003**	ID	ID	D	D	ID	**.02/** 015	ID	ID	ID	ID	D	ID	ID	ID
hloro- rm		D	D	ID	D	D	ID	.004/ 008	ID	ID	ID	ID	D	.0045/ 015	ID	.27/2015
romo- ichloro- ethane		D	D	ID	D	D	ID	ID	ID	ID	ID	ID	D	ID	ID	.0056/ 014
aphtha- ne	.02	D	D	ID	D	D	ID	ID	ID	ID	ID	ID	D	ID	ID	ID

2016 = concentration in March 2016
H/year = highest recorded value/ year recorded
* Total Trihalomethane concentrations must not exceed 0.08 mg/L
Numbers in bold exceed the Type 1 RRS.

Naphthalene was detected in the equipment blank only in 2008 at 0.006 mg/L which is less than the Table 1, Appendix III notification concentration of 0.02 mg/L, and meets the Type 1 RRS.

Bromodichloromethane was detected in MW-6 at 0.0056 mg/L during the last sampling event (August 2015), and total trihalomethanes were less than 0.08 mg/L at that well, meeting the Type 1 RRS.

Naphthalene and bromodichloromethane meet Type 1 RRS in groundwater at this site, and are not addressed further in this section.

PCE in groundwater onsite ranged from not detected (MW-1, MW-5, and MW-6; all years) to 2.010 mg/L (MW-4; 2008). The Type 1 RRS criteria for PCE is 0.005 mg/L. Groundwater samples at only MW-4 exceeded the Type 1 RRS criteria for PCE during the last sampling (March 2016).

TCE in groundwater onsite ranged from not detected (MW-1, MW-5, and MW-6; all years) to 0.153 mg/L at MW-4 in 2008. The Type 1 RRS criteria for TCE is 0.005 mg/L. Groundwater samples at only MW-4 exceeded the Type 1 RRS criteria for TCE during the last sampling (March 2016).

Cis-DCE in groundwater onsite ranged from not detected (MW-1, MW-5, and MW-6; all years) to 0.315 mg/l (MW-4; 2008). The Type 1 RRS criteria for cis-DCE is 0.07 mg/L. Groundwater samples at only MW-4 exceeded the Type 1 RRS criteria for cis-DCE during the last sampling (March 2016).

Trans-DCE in groundwater onsite ranged from not detected (MW-1, MW-2, MW-5, and MW-6; all years) to 0.036 mg/l (MW-4; 2008). The Type 1 RRS criteria for trans-DCE is 0.1 mg/L. All groundwater samples at this site met this criteria during the last sampling event (March 2016), and have not exceeded the criteria.

Vinyl chloride was detected in only one permanent monitor well, MW-2 ranging from non-detect to 0.02 mg/L (2015). The Type 1 RRS criteria for vinyl chloride in 0.002 mg/L. This latest sample (March 2016) meets the Type 1 RRS criteria.

Chloroform in groundwater onsite ranged from not detected (MW-1, MW-2, MW-3, MW-4, and MW-5; all years) to 0.27 mg/l (MW-6; 2015). The Type 1 RRS criteria for chloroform is 0.08 mg/L (total trihalomethanes). Chloroform was not detected during the last sampling event, and meets the Type 1 RRS.

Type 1 RRS for trans-DCE is met at all onsite wells. Trans-DCE will not be discussed further in the groundwater portion of this report.

Type 1 RRS are currently exceeded for PCE, TCE, and cis-DCE at MW-4. Additionally, results from temporary wells, B-1, B-2 and B-3 are not addressed further in the report, as the locations are now covered by permanent wells.

Type 2 RRS for Groundwater

GA EPD regulations cite the *Risk Assessment Guidance for Superfund: Volume 1. Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals)[RAGS, Part B]* for use in determining the Type 2 RRS. The hierarchy for determining which chemical specific values for any chemical constituent are appropriate for use is:

- IRIS Values
- Provisional Peer-reviewed toxicity values (PPRTV), and
- Other (CAL EPA, ATSDR, HEAST).

The Type 2 RRS criteria for groundwater is defined as the least of the following two concentrations:

1) Concentrations which are unlikely to result in any nontoxic cancer effects on human health via ingestion of, or inhalation of volatiles from, groundwater, determined using Equation 2 from RAGS, Part B, and site-specific exposure factors for the residential use scenario.
2) Concentrations for which the upper bound on the estimated excess cancer risk is less than 10^{-5} via ingestion of, and inhalation of volatiles from groundwater, determined using Equation 1 from RAGS, Part B, and site specific exposure factors for the residential use scenario.

Tetrachloroethylene (PCE)

The EPA currently classifies PCE as a human carcinogen. The oral RfD, inhalation RfC, and oral and inhalation slope factors are provided in IRIS and listed in Table G-3.

Trichloroethylene (TCE)

The EPA currently classifies TCE as a human carcinogen. The oral RfD, inhalation RfC, and oral and inhalation slope factors are provided in IRIS and listed in Table H -3.

Cis-1,2-dichloroethylene (cis-DCE)

Cis-DCE is not a human carcinogen. The oral RfD, inhalation RfC, are provided in IRIS and listed in Table H -3.

Vinyl Chloride

Vinyl chloride is listed as a carcinogen in IRIS. All values are provided in Table H -3.

Chloroform

The EPA currently classifies chloroform as a human carcinogen. The oral RfD, inhalation RfC, and oral and inhalation slope factors are provided in IRIS and listed in Table G-18.

The chemical specific values used and the corresponding references are listed in Table G-18. Note that IRIS provides the $RfD_{inhalation}$ value as mg/m^e. This value is divided by 3.5 (assuming a body weight of 70 kg and an inhalation rate of 20 m^e/day) to convert to the $RfD_{inhalation}$ factor (mg/kg-day) used in the equations. IRIS also provides the $SF_{inhalation}$ value as ug/m^3. This value is multiplied by 3500 (assuming a body weight of 70 kg, an inhalation rate of 20 m^e/day, and 0.001 to convert to ug) to convert to the $SF_{inhalation}$ factor (mg/kg-day) used in the equations.

Table G-18
Chemical Specific Values for Vinyl Chloride and Chloroform

Parameter	Definition	Value	Reference
Vinyl Chloride			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.003	IRIS
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	0.1 mg/m^3	IRIS
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	0.72 -adult; 1.4 –lifetime Drinking water: 2.1×10^{-5} ug/L Adult; 4.2×10^{-5} ug/L lifetime	IRIS – adult IRIS – lifetime from birth
SFi	inhalation cancer slope factor (ug/m^e)	4.4×10^{-6} ug/m^e-adult; 8.8×10^{-6} ug/m^3-lifetime	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	23.7	RAIS
D_i	molecular diffusivity (cm^2/s)	0.107	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	0.0270	USEPA. May 1996
Chloroform			
RfD_{oral}	oral chronic reference dose (mg/kg-day)	0.01	IRIS
$RfD_{inhalation}$	inhalation chronic reference dose (mg/m^3)	NA	IRIS
SForal	oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	0.01	IRIS – adult IRIS – lifetime from birth
SFi	inhalation cancer slope factor (ug/m^e)	2.3×10^{-5} ug/m^3	IRIS
Koc	organic carbon partition coefficient (L/kg; cm^3/g)	39.8	RAIS/SSL
D_i	molecular diffusivity (cm^2/s)	0.104	RAIS
H	Henry's Law Constant ($atm\text{-}m^3/mol$)	3.67×10^{-3}	RAIS/SSL

Equation 2 from RAGS, Part B is for noncarcinogenic effects of both oral ingestion and inhalation of volatiles and is given as:

$$THI = \frac{C \times EF \times ED \times IR_{water}}{RfD_o \times BW \times AT \times 365\ days/yr} + \frac{C \times K \times IR_{air} \times EF \times ED}{RfD_i \times BW \times AT \times 365\ days/yr}$$

$$C\ (mg/L; = \frac{THI \times BW \times AT \times 365\ days/yr}{}$$

Risk based)_ $ED \times EF \times [(1/RfD_i \times K \times IR_{air})+(1/RfD_o \times IR_{water})]$

The parameters and values used in Equation 2 are the standard assumptions for residential sites provided in Appendix III, Table 3 of the regulations, and are listed below in Table G-19.

Table G-19
Standard Exposure Assumptions for Residential Sites

Parameter	Definition	Standard Exposure Assumptions
C	chemical concentration in water (mg/L)	To be calculated
THI	target hazard index (unitless)	1
BW	body weight (kg)	70
AT	averaging time (year)	30
ED	exposure duration (year)	30
EF	exposure frequency (days/year)	350
IR_{water}	daily water ingestion rate (L/day)	2
IR_{air}	daily inhalation rate (m^3/day)	15
K	volatilization factor (unitless)	0.5

Equation 2 can be reduced to the following provided the default parameters above are applicable:

$$C\ (mg/L) = \frac{73}{[7.5/RfD_i + 2/RfD_o]}$$

Carcinogenic Risk Reduction Standard

The second equation calculates the carcinogenic risk reduction standard using Equation 1, RAGS, Part B.

$$TR = \frac{SFo \times C \times EF \times ED \times IRwater}{BW \times AT \times 365\ days/yr} + \frac{SFi \times C \times K \times EF \times ED \times IR_{air}}{BW \times AT \times 365\ days/yr}$$

$$C\ (mg/L; \text{ Risk based}) = \frac{TR \times BW \times AT \times 365\ days/yr}{ED \times EF \times [(SFi \times K \times IR_{air})+(SFo \times IR_{water})]}$$

The residential standard exposure assumptions from Appendix III, Table 3 used in Equation 1 are provided in Table G-19.

Equation 1 can be reduced to the following provided the default parameters are applicable:

$$C\ (mg/L) = \frac{1.6 \times 10^{-3}}{2(SF_o) + 7.5(SF_i)}$$

If one of the reference doses is not available, that value is equated to zero.

The Type 2 Risk Reduction Standards for groundwater at this site are summarized in Table G-20 and compared to the detected groundwater concentrations in Tables G-21, G-22, G-23, and G-24.

Table G-20
Type 2 Risk Reduction Standards for PCE, TCE, cis-DCE, Vinyl Chloride, and Chloroform (mg/L)

Method to Determine Type 2 RRS Criteria	Concentration (mg/L)				
	PCE	TCE	Cis-DCE	Vinyl Chloride	Chloroform
Noncarcinogen	0.074	0.0043	0.073	0.079	0.37
Carcinogen –adult	0.15	0.0085	NA	0.0011	0.0027
Carcinogenic – over a lifetime	NA	NA	NA	0.00056	NA
Type 2 RRS (lowest value)	0.074	0.0043	0.073	0.00056	0.0027

Table G-21
Type 2 Risk Reduction Standards versus Groundwater Concentrations (mg/L)

Constituent	Type 2 RRS	MW-1		MW-2		MW-3		MW-4		MW-5		MW-6	
		2016	H/ year	2016	H/ year	2016	H/ year	2016	H/ year	2016	H/ year	2016	H/ year
PCE	0.074	ND	ND	ND	0.055 /2012	ND	**0.150/** 2008	0.43	**2.01/** 2008	ND	ND	ND	ND
TCE	0.0043	ND	ND	ND	**0.012/** 2015	ND	**0.152/** 2008	**0.05**	**0.156/** 2008	ND	ND	ND	ND
Cis-DCE	0.073	ND	ND	0.026	0.055 /2012	0.012	**0.177/** 2008	**0.13**	**0.315/** 2008	ND	ND	ND	ND
Vinyl Chloride	0.00056	ND	ND	ND	**0.02/** 2015	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	0.0027	ND	ND	ND	0.004/ 2008	ND	ND	ND	ND	ND	**0.0045/** 2015	ND	**0.27/** 2015

2015 = concentration in August 2015 (last recorded sample)
H/year = highest recorded value/ year recorded
Numbers in bold exceed the Type II RRS.

Table G-22
MW-2
VOC Concentrations vs Type 2 RRS

	Type 2 RRS	8/27/2008	4/18/2012	4/4/2013	10/19/2013	3/14/2014	8/14/2014	3/6/2015	8/8/2015	3/2016
PCE	0.074	0	0.0055	0	0	0	0	0	0	0.026
TCE	0.0043	0	0.0066	0	0	0	0	**0.012**	0	0
Cis-DCE	0.073	0.014	0.055	0.011	0.0046	0.019	0.025	0.0056	0.031	0
VC	0.00056	**0.003**	**0.0036**	0	0	0	**0.01**	0	**0.02**	0
Chloroform	0.0027	0	0	0	0	0	0	0	0	0

Table G-23
MW-3
VOC Concentrations vs Type 2 RRS

	Type 2 RRS	8/27/2008	4/18/2012	4/4/2013	10/13/2013	3/14/2014	8/14/2014	3/6/2015	8/7/2015	3/2016
PCE	0.074	**0.15**	**0.016**	**0.023**	0	0	0	0	0	0
TCE	0.0043	**0.152**	**0.0084**	**0.02**	0	0	0	0	0	0
Cis-DCE	0.073	**0.177**	0.0077	0.021	0	0	0	0	0.01	0.012
VC	0.00056	**0.0036**	0	0	0	0	0	0	0	0
Chloroform	0.0027	0	0	0	0	0	0	0	0	0

Table G-24
MW-4
VOC Concentrations vs Type 2 RRS

	Type 2 RRS	8/27/2008	4/18/2012	4/4/2013	10/13/2013	3/14/2014	8/14/2014	3/6/2015	8/7/2015	3/2016
PCE	0.074	**2.01**	0.066	0.027	0.04	**0.085**	0.028	0.047	**0.26**	0.043
TCE	0.0043	**0.156**	**0.037**	**0.02**	**0.028**	**0.056**	**0.038**	**0.038**	**0.15**	**0.050**
Cis-DCE	0.073	**0.315**	0.056	0.035	0.053	**0.105**	**0.078**	0.071	**0.14**	**0.13**
VC	0.00056	0	0	0	0	0	0	0	0	0
Chloroform	0.0027	0	0	0	0	0	0	0	0	0

The site does not currently meet Type 2 RRS for groundwater for TCE and cis-DCE at MW-4. However, the cis-DCE concentrations at MW-4 have been less than the Type 2 RRS during the time period from 2013 to March 2015. TCE is the only constituent that has consistently exceeded the Type 2 RRS at MW-4.

Type 3 RRS for Groundwater

The Type 3 groundwater risk RRS is the same as the Type 1 groundwater RRS. This site does not meet the Type 3 RRS for groundwater for TCE, and cis-DCE (March 2016).

Type 4 RRS for Groundwater

This site meets the definition of a nonresidential property. The property has been operating as a commercial facility since the 1960s. This location does qualify for the Type 4 Risk Reduction Standards.

The Type 4 RRS criteria for groundwater is defined as the least of the following two concentrations:

1) Concentrations which are unlikely to result in any nontoxic cancer effects on human health via ingestion of, or inhalation of volatiles from, groundwater, determined using Equation 2 from RAGS, Part B, and site-specific exposure factors for the non-residential use scenario.

2) Concentrations for which the upper bound on the estimated excess cancer risk is less than 10^{-5} via ingestion of, and inhalation of volatiles from groundwater, determined using Equation 1 from RAGS, Part B, and site specific exposure factors for the non-residential use scenario.

The site specific exposure assumptions are the same as Type 3 (Table G-19).

The equations used are the same as Type 2. Equation 2 can be reduced to the following provided the default parameters are applicable:

$$C\ (mg/L) = \frac{286.16}{[10/RfD_i + 1/RfD_o]}$$

Equation 1 can be reduced to the following provided the default parameters are applicable:

$$C\ (mg/L) = \frac{2.86 \times 10^{-3}}{(SF_o) + 10(SF_i)}$$

If one of the reference doses is not available, that value is equated to zero.

The Type 4 Risk Reduction Standards for groundwater at this site are summarized in Table G-25.

Table G-25
Type 4 Risk Reduction Standards for Groundwater (mg/L)

Method to Determine RRS Criteria	PCE	TCE	Cis-DCE	Vinyl Chloride	Chloroform
Noncarcinogen	0.27	0.015	0.57	0.42	2.9
Carcinogen	0.26	0.015	NA	0.0033/0.0017	0.0035
Type 4 RRS (lowest value)	0.26	0.015	0.57	0.0017	0.0035

The Type 4 RRS for PCE, TCE, vinyl chloride, and chloroform in groundwater are based on the carcinogenic calculations. Additionally, the groundwater at the site and at downgradient locations is greater than 15 feet below the surface and is not now used for drinking water or any other purposes. There are no withdrawal wells at the subject property or downgradient properties. The nearest possible discharge location is 1.0 miles from the site. The Type 4 Risk Reduction Standards for groundwater at this site are summarized in Table G-26 and compared to the detected groundwater concentrations in Tables G-27, G-28, G-29, and G-30.

Table G-26
Summary of Groundwater RRS and Detected Concentrations (mg/L)

Constituent	Type 4 RRS	MW-1		MW-2		MW-3		MW-4		MW-5		MW-6	
		2016	H/ year	2016	H/ year	2016	H/ year	2016	H/ year	2016	H/ year	2016	H/ year
PCE	0.26	ND	ND	0.026	0.055 /2012	ND	0.150/ 2008	0.043	**2.01/** 2008	ND	ND	ND	ND
TCE	0.015	ND	ND	ND	0.012/ 2015	ND	**0.152/** 2008	**0.050**	**0.156/** 2008	ND	ND	ND	ND
Cis-DCE	0.57	ND	ND	ND	0.055 /2012	0.012	**0.95**	0.13	0.315/ 2008	ND	ND	ND	ND
Vinyl Chloride	0.0017	ND	ND	ND	**0.02/** 2015	ND	ND	ND	**0.036/** 2008	ND	ND	ND	ND
Chloroform	0.0035	ND	ND	ND	**0.004/** 2008	ND	ND	ND	ND	ND	**0.0045/** 2015	ND	**0.27/** 2015

Bold numbers indicate constituent concentrations that exceed Type 4 RRS.

Table G-27
MW-2
VOC Concentrations vs Type 4 RRS

	Type 4 RRS	8/27/2008	4/18/2012	4/4/2013	10/19/2013	3/14/2014	8/14/2014	3/6/2015	8/8/2015	3/2016
PCE	0.26	0	0.0055	0	0	0	0	0	0	0.026
TCE	0.015	0	0.0066	0	0	0	0	0.012	0	0
Cis-DCE	0.57	0.014	0.055	0.011	0.0046	0.019	0.025	0.0056	0.031	0
VC	0.0017	**0.003**	**0.0036**	0	0	0	**0.01**	0	**0.02**	0
Chloroform	0.0035	0	0	0	0	0	0	0	0	0

Table G-28
MW-3
VOC Concentrations vs Type 4 RRS

	Type 4 RRS	8/27/2008	4/18/2012	4/4/2013	10/13/2013	3/14/2014	8/14/2014	3/6/2015	8/7/2015	3/2016
PCE	0.26	0.15	0.016	0.023	0	0	0	0	0	0
TCE	0.015	**0.152**	0.0084	0.02	0	0	0	0	0	0
Cis-DCE	0.57	0.177	0.0077	0.021	0	0	0	0	0.01	0.012
VC	0.0017	**0.0036**	0	0	0	0	0	0	0	0
Chloroform	0.0035	0	0	0	0	0	0	0	0	0

Table G-29
MW-4
VOC Concentrations vs Type 4 RRS

	Type 4 RRS	8/27/2008	4/18/2012	4/4/2013	10/13/2013	3/14/2014	8/14/2014	3/6/2015	8/7/2015	3/2016
PCE	0.26	**2.01**	0.066	0.027	0.04	0.085	0.028	0.047	0.26	0.043
TCE	0.015	**0.156**	0.037	0.02	0.028	0.056	0.038	0.038	**0.15**	**0.050**
Cis-DCE	0.57	0.315	0.056	0.035	0.053	0.105	0.078	0.071	0.14	0.13
VC	0.0017	0	0	0	0	0	0	0	0	0
Chloroform	0.0035	0	0	0	0	0	0	0	0	0

SUMMARY FOR GROUNDWATER RRS

MW-1 has not detected any constituents and meets Type 1 RRS. MW-3 meets Type 1 RRS. MW-5 has only detected chloroform, and meets Type 2 RRS for chloroform. MW-6 has only detected chloroform, and meets Type 4 RRS for chloroform. Chloroform is not associated with any activities conducted onsite.

MW-2 only exceeds RRS for detected vinyl chloride sporadically. This is the only well where vinyl chloride has been detected. The last sampling event (March 2016) did not detect the presence of vinyl chloride.

MW-4 does not currently meet Type 2 RRS for trichloroethylene. MW-4 has met the Type 2 RRS for all parameters during previous sampling events (2013 to March 2015).

The higher concentrations detected during sampling events in 2015/2016 may be due to the increase in precipitation leading to a higher groundwater table enabling greater groundwater contact with soils at the site. The concentrations are expected to decrease as the groundwater elevation decreases. The overall trend of constituent concentration has been predominantly decreasing. The only wells may have not now or previously met Type 2 RRS for groundwater are MW-2 (vinyl chloride only), MW-4 (trichloroethylene only), and MW-6 (chloroform only).

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OSWER Directive 9285.7-75, June 12, 2003.

USEPA. Office of Emergency and Remedial Response. *Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals).* Publication 9285.7-01B. Washington, D.C. December 1991.

USEPA. Office of Emergency and Remedial Response. *Soil Screening Guidance: Technical Background Document. EPA/540/R-95/128.* Washington, D.C. May 1996.

RAIS - Professional Peer Review Toxicity Values (PPRTV) (**https://hhpprtv.ornl.gov/quickview/pprtv.php**) **https://rais.ornl.gov/tools/profile.php**

SSL Soil Screening Guidance: User's Guide. EPA Document Number: EPA540/R-96/018. July 1996. Attachment C: Chemical Properties for SSL Development.

Soil calculations for non-carcinogens and carcinogens								
Calculating α (cm2/m):		$\alpha\ (cm^2/m) = \frac{(D_{ei} \times E)}{E + (\rho_s)(1-E)/Kas}$						
Value	**pce**	**tce**	**Benzene**	**acetone**	**carbon disulfide**	**Benzene (second value in IRIS)**	**1.2.4-TMB**	**1,3,5-TMB**
di- diffusivity (cm2/s)	0.0505	0.0687	0.0895	0.106	0.106	0.0895	0.0607	0.0602
dei - molecular diffusivity (cm2/s)	0.0357035	0.0485709	0.0632765	0.074942	0.074942	0.0632765	0.0429149	0.0425614
E - soil porosity (0.35-default)	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
p - soil density (g/cm3-2.65-default))	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65
H - Henry's Law constant (atm-m3/mol)	0.0184	0.0103	0.00558	0.000035	0.0303	0.00558	0.0061	0.0088
koc - organic carbon partition coeff. (cm3/g)	94.9	60.7	146	2.36	21.7	146	614	602
OC - organic content of soil (fraction-0.02-	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
kd=koc*oc	1.898	1.214	2.92	0.0472	0.434	2.92	12.28	12.04
kas=(H/kd)*41	0.397471022	0.3478583	0.078349315	0.030402542	2.862442396	0.078349315	0.02036645	0.029966777
dei*E	0.012496225	0.0169998	0.022146775	0.0262297	0.0262297	0.022146775	0.015020215	0.01489649
p*(1-E)	1.7225	1.7225	1.7225	1.7225	1.7225	1.7225	1.7225	1.7225
p*(1-E)/kas	4.333649258	4.9517286	21.9848763	56.65644599	0.601758834	21.9848763	84.57536985	57.48032151
E+above (denominator)	4.683649258	5.3017286	22.3348763	57.00644599	0.951758834	22.3348763	84.92536985	57.83032151
α (cm2/m)	0.002668053	0.0032065	0.000991578	0.000460118	0.027559187	0.000991578	0.000176864	0.00025759

calculate VF		$VF = \frac{(LS \times V \times DH)}{A} \times \frac{(\pi \times \alpha \times T)^{1/2}}{(2 \times D_{ei} \times E \times K_{as} \times 10^{-3}\ kg/g)}$						
Value	**pce**	**tce**	**Benzene**	**acetone**	**carbondisulfide**	**Benzene**	**1.2.4-TMB**	**1,3,5-TMB**
LS - length of side of contaminated area (m-default 45 m)	45	45	45	45	45	45	45	45
V - wind speed in mixing zone (m/s-2.25 default)	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
DH - diffusion height (m-2 -default)	2	2	2	2	2	2	2	2
A - area of contamination (cm2 - 20,250,000 - default)	20300000	20300000	20300000	20300000	20300000	20300000	20300000	20300000
a (calculated above) (cm2/m)	0.002668053	0.0032065	0.000991578	0.000460118	0.027559187	0.000991578	0.000176864	0.00025759
T - exposure interval (s)	790000000	790000000	790000000	790000000	790000000	790000000	790000000	790000000
dei (calculated above)	0.0357035	0.0485709	0.0632765	0.074942	0.074942	0.0632765	0.0429149	0.0425614
E - soil porosity (unitless-default)	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
kas - (calculated above)	0.397471022	0.3478583	0.078349315	0.030402542	2.862442396	0.078349315	0.02036645	0.029966777
(LS*V*DH)/A	9.97537E-06	9.975E-06	9.97537E-06	9.97537E-06	9.97537E-06	9.97537E-06	9.97537E-06	9.97537E-06
(pi*a*T)0.5	2572.619786	2820.2767	1568.345856	1068.348755	8268.211419	1568.345856	662.3655262	799.3602368
2*dei*e*kas*10-3	2.83822E-05	3.379E-05	9.91534E-06	4.55685E-06	0.000429034	9.91534E-06	1.74805E-06	2.55086E-06
second value	90641972.16	83460922	158173670.1	234448722.8	19271678.53	158173670.1	378917179	313369408.8
VF - volatilization factor (m3/kg)	904.1871607	832.55353	1577.840798	2338.712629	192.2421134	1577.840798	3779.838855	3125.97563
PEF - particulate emission factor (m3/kg) default	4630000000	4630000000	4630000000	4630000000	4630000000	4630000000	4630000000	4630000000

Noncarcinogenic effects (Type 1 and Type 2))		c = 170.33						
Residential		$[1/RfD_o \times 1.14^{-4}]+[(15/RfD_i) \times (1/VF+1/PEF)]$						
Value	**pce**	**tce**	**Benzene**	**acetone**	**carbondisulfide**	**Benzene**	**1.2.4-TMB**	**1,3,5-TMB**
(1/vf + 1/pef)	0.001105966	0.0012011	0.000633778	0.000427586	0.005201774	0.000633778	0.000264562	0.0003199
RfDi (mg/m3)	0.04	0.002	0.03	0	0.7	0.03	0.02	0.02
RfDi (mg/kg-day)	0.011428571	0.00057143	0.008571429	0	0.2	0.008571429	0.005714286	0.005714286
15/RfDi	1312.5	26250	1750	0	75	1750	2625	2625
total inh factor	1.451580285	31.52951	1.109111007	0	0.390133056	1.109111007	0.694474618	0.839738399
RfDo	0.006	0.0003	0.004	0.9	0.1	0.004	0.006	0.006
RfDo total factor	0.019	0.38	0.0285	0.000126667	0.00114	0.0285	0.019	0.019
rfdo + rfdi	1.470580285	31.90951	1.137611007	0.000126667	0.391273056	1.137611007	0.713474618	0.858738399
C- chemical conc. in soil (mg/kg)	115.8250262	5.3379072	149.7260478	1344710.526	435.3225901	149.7260478	238.7330899	198.3491132

Carcinogenic effects (Type 1 and Type 2)								
Residential		ED x EF x [(SFo x 10^{-6} kg/mg x IR_{soil})+(SFi x IR_{air} x [(1/VF+1/PEF])]						
(1/vf + 1/pef)	0.001105966	0.0012011	0.000633778	0.000427586	0.005201774	0.000633778	0.000264562	0.0003199
Value	**pce**	**tce**	**Benzene**	**acetone**	**carbondisulfide**	**Benzene (second value in IRIS)**	**1.2.4-TMB**	**1,3,5-TMB**
Sfo - oral cancer slope factor $(mg/kg\text{-}day)^{-1}$	0.0021	0.046	0.015			0.055	na	na
Sfi - inhalation cancer slope factor $(mg/m3)^{-1}$	2.60E-06	4.10E-06	2.20E-06			7.80E-06		
Sfi - inhalation cancer slope factor $(mg/kg\text{-}day)^{-1}$	9.10E-03	1.44E-02	7.70E-03			2.73E-02		
TR - Target excess lifetime cancer risk (10-	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05		
BW- body weight (kg)	70	70	70	70	70	70		
AT - averaging time (yr)	70	70	70	70	70	70		
TR x BW x AT x 365	17.885	17.885	17.885	17.885	17.885	17.885		
sfo * 10-4 * Irsoil	0.00002394	0.0005244	0.000171	0	0	0.000627		
sfi * Irx* (1/VF+1/PEF]	0.000150964	0.0002585	7.32013E-05	0	0	0.000259532		
Second Value								
sfo * 10-4 * Irsoil						0.000627		
sfi * Irx* (1/VF+1/PEF]						2.25E-02		
ed*ef*(sfo+sfi) adult	1.836495671	8.2208908	2.564113928	0	0	2.43E+02		
c adult	9.738656225	2.175555	6.975119087	#DIV/0!	#DIV/0!	0.073579703		

non-carcinogenic		c = 102						
non-residential (Type 3 and 4)	$[5 10E\text{-}5/RfD_o]+[(1/RfD_i) \times (20/VF+4.3E\text{-}9)]$							
Value	**pce**	**tce**	**Benzene**	**acetone**	**carbondisulfide**	**Benzene**	**1.2.4-TMB**	**1,3,5-TMB**
RfDo	0.006	0.0005	0.0003	0.01	0.02	0.0003	0.006	0.006
RfDi (mg/m3)	0.04	0.002	0.03	0	0.7	0.03	0.02	0.02
RfDi (mg/kg-day)	0.011428571	0.00057143	0.008571429	0	0.2	0.008571429	0.005714286	0.005714286
VF - volatilization factor (m3/kg)	904.1871607	832.55353	1577.840798	2338.712629	192.2421134	1577.840798	3779.838855	3125.97563
PEF - particulate emission factor (m3/kg) default	4630000000	4630000000	4630000000	4630000000	4630000000	4630000000	4630000000	4630000000
20/VF +20/PEF	0.022119319	0.0240225	0.01267555	0.008551714	0.104035477	0.01267555	0.005291231	0.006398003
(1/RfDi)*above	1.93544038	42.039339	1.478814197	0	0.520177387	1.478814197	0.925965439	1.119650481
5*10E-5/(RfDo)	0.008333333	0.1	0.166666667	0.005	0.0025	0.166666667	0.008333333	0.008333333
C	52.47524406	2.420541	61.98795879	20400	195.1490586	61.98795879	109.1727861	90.42682944

carcinogenic		C =2.9E-3				
nonresidential (Type 3 and 4)	[(SFo *5E^{-5})+(SFi x [(20/VF)+4.3E-9])					
Value	**pce**	**tce**	**Benzene**	**acetone**	**carbondisulfide**	**Benzene**
Sfo - oral cancer slope factor (mg/kg-day)$^{-1}$	0.0021	0.046	0.015			0.055
Sfi - inhalation cancer slope factor (ug/m3)$^{-1}$	2.60E-06	4.10E-06	2.20E-06			7.80E-06
Sfi - inhalation cancer slope factor (mg/kg-day)$^{-1}$	9.10E-03	1.44E-02	7.70E-03			2.73E-02
VF - volatilization factor (m3/kg)	904.1871607	832.55353	1577.840798	2338.712629	192.2421134	1577.840798
PEF - particulate emission factor (m3/kg) default	4630000000	4630000000	4630000000	4630000000	4630000000	4630000000
20/VF +20/PEF	0.022119319	0.0240225	0.012675554	0.008551718	0.104035481	0.012675554
Sfi*above	0.000201286	0.0003447	9.76018E-05	0	0	0.000346043
Sfo * 0.00005	0.000000105	0.0000023	0.00000075	0	0	0.00000275
sfi+sfo	0.000201391	0.00034702	9.83518E-05	0	0	0.000348793
C	14.39986339	8.3568035	29.48599746	#DIV/0!	#DIV/0!	8.314395762

Constituent	S (mg/L)	K_d
PCE	200	2.14
TCE	1,110	1.35
Cis-DCE	3,500	0.876
Trans-DCE	6,300	0.876
1,2,4	57	0.7176
1,3,5	57	0.703
ethylbenzene	169	4.08

Noncarcinogenic effects (Type 2)	C=	73						
		[(7.5/RfDi) + (2/RfDo)]						
Value	**pce**	**tce**	**cis-DCE**	**Vinyl Chloride**	**chloroform**			
RfDi (mg/m3)	0.04	0.002	0	0.1	0			
RfDi (mg/kg-day)	0.01142857	0.0005714	0	0.0285714	0			
7.5/RfDi	656.25	13125	0	262.5	0			
RfDo	0.006	0.0005	0.002	0.003	0.01			
2/RfDo	333.33333	4000	1000	666.6667	200			
rfdo + rfdi	989.58333	17125	1000	929.1667	200			
C- chemical conc. in soil (mg/kg)	0.0737684	0.0042628	0.073	0.078565	0.365			

Carcinogenic effects (Type2)	C=	1.70E-03							
		2SF0 + 7.5SFi							
Value	**pce**	**tce**	**cis-DCE**	**Vinyl Chloride**	**chloroform**	**Vinyl Chloride (2)**			#REF!
Sfo - oral cancer slope factor $(mg/kg\text{-}day)^{-1}$ - Adult	0.0021	0.046	0	0.72	0.01	1.4			
Sfi - inhalation cancer slope factor $(ug/m3)^{-1}$	2.60E-07	4.10E-06	0	4.40E-06	2.30E-05	8.80E-06			
Sfi - inhalation cancer slope factor $(mg/kg\text{-}day)^{-1}$	9.10E-04	1.44E-02	0.00E+00	1.54E-02	8.05E-02	3.08E-02			
denominator	1.10E-02	2.00E-01	0.00E+00	1.56E+00	6.24E-01	3.03E+00			
C =	1.54E-01	8.52E-03	#DIV/0!	1.09E-03	2.73E-03	5.61E-04			

Noncarcinogenic effects (Type 4)	C=	286.16							
		[(10/RfDi) + (1/RfDo)]							
Value	**pce**	**tce**	**cis-DCE**	**Vinyl Chloride**	**chloroform**				
RfDi (mg/m3)	0.04	0.002	0	0.1	0				
RfDi (mg/kg-day)	0.01142857	0.0005714	0	0.0285714	0				
10/RfDi	875	17500	0	350	0				
RfDo	0.006	0.0005	0.002	0.003	0.01				
1/RfDo	166.66667	2000	500	333.3333	100				
rfdo + rfdi	1041.6667	19500	500	683.3333	100				
C- chemical conc. in soil (mg/kg)	0.2747136	0.0146749	0.57232	0.418771	2.8616				

Carcinogenic effects (Type 4)	C=	2.86E-03							
		SF0 + 10SFi							
Value	**pce**	**tce**	**cis-DCE**	**Vinyl Chloride**	**chloroform**	**Vinyl Chloride (2)**			
Sfo - oral cancer slope factor $(mg/kg\text{-}day)^{-1}$ - Adult	0.0021	0.046	0	0.72	0.01	1.4			
Sfi - inhalation cancer slope factor $(ug/m3)^{-1}$	2.60E-07	4.10E-06	0	4.40E-06	2.30E-05	8.80E-06			
Sfi - inhalation cancer slope factor $(mg/kg\text{-}day)^{-1}$	9.10E-04	1.44E-02	0.00E+00	1.54E-02	8.05E-02	3.08E-02			
denominator	1.12E-02	1.90E-01	0.00E+00	8.74E-01	8.15E-01	1.71E+00			
C =	2.55E-01	1.51E-02	#DIV/0!	3.27E-03	3.51E-03	1.67E-03			