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SITE INVESTIGATION REPORT
ALLIED INDUSTRIAL PARK SITE
(FORMER MACON NAVAL ORDNANCE PLANT)
MACON, GEORGIA

May 1997

Prepared for:
SAVANNAH DISTRICT - U.S. ARMY CORPS OF ENGINEERS

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CERTIFICATION

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(FORMER MACON NAVAL ORDNANCE PLANT)
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PREPARED FOR:
U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT

I certify that I am a qualified groundwater scientist who has received a baccalaureate or post-graduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrogeology and related fields, and demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by myself or by a subordinate working under my direction.

Kenneth P. Bechely, P.G.
Project Director

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LIST OF ACRONYMS

AIP	Allied Industrial Park
AST	Above Ground Storage Tank
ASTM	American Society for Testing and Materials
bls	below land surface
COC	Chain of Custody
CSR	Compliance Status Report
DNR	Department of Natural Resources
DPT	Direct Push Technology
EPA	Environmental Protection Agency
ESE	Environmental Science and Engineering, Inc.
ft/min	feet per minute
HSI	Hazardous Site Inventory
HSRA	Hazardous Site Response Act
MBCIA	Macon-Bibb County Industrial Authority
MCL	Maximum Contaminant Level
mgd	million gallons per day
MNOP	Macon Naval Ordnance Plant
msl	mean sea level
OVM	Organic Vapor Meter
PAH	Polynuclear Aromatic Hydrocarbons
PCBs	Polychlorinated biphenyls
PCE	tetrachloroethene
PETN	Pentaerythritoltetranitrate
PPE	Personal Protective Equipment
ppm	part per million
QA	Quality Assurance
QC	Quality Control
QCSR	Quality Control Summary Report
RRS	risk reduction standards
SOP	Standard Operating Procedures
SVOC	Semi-Volatile Organic Chemicals
TCE	Trichloroethene
USACE	U. S. Army Corps of Engineers
USCS	Unified Soil Classification System
USGS	U. S. Geological Survey
UST	Underground Storage Tank
VOC	volatile organic chemicals
WEGS	Westinghouse Environmental and Geotechnical Services

EXECUTIVE SUMMARY

The Allied Industrial Park (AIP) is located in an industrial setting of south Macon, Bibb County, Georgia. The park is being developed by the Macon-Bibb County Industrial Authority (MBCIA) who also lease buildings as office and warehouse space to various industrial and commercial tenants. Land use in the area is primarily industrial. Most of the buildings and infrastructure were originally part of the Macon Naval Ordinance Plant (MNOP). The MNOP was constructed and operated by Reynolds Corporation prior to World War II. The Navy assumed operations in 1941 and continued operations until 1965 for the production of ordnance. The Georgia Hazardous Site Inventory (HSI) currently lists the AIP site (HSI number 10308) as a Class II site under the Georgia Hazardous Site Response Act (HSRA).

Rust Environment and Infrastructure (Rust) was contracted by the Savannah District of the U.S. Army Corps of Engineers (USACE) to complete parallel site investigations at the AIP and the former MNOP landfill property (south of the AIP). The MNOP landfill study is described under a separate cover. The purpose of the AIP investigation was to collect sufficient information concerning site contamination to prepare a Compliance Status Report (CSR) as required under Section 391-3-19-.06 of the HSRA regulations.

Historical information indicated that potential sources of contamination may include storm water drain outfalls, a former sewage treatment plant, metal plating facilities, electric transformer buildings, areas of explosives handling and storage, and the plant's above ground storage tanks (ASTs) and underground storage tanks (USTs). To evaluate these physical structures and general site conditions, the scope of work included collecting soil and groundwater samples using Direct Push Technology (DPT), and collecting surface water and sediment samples from on-site drainage features.

The analytical results did not reveal any evidence of (1) polychlorinated biphenyl (PCB) contamination from electric transformers, (2) petroleum hydrocarbons related to the ASTs/USTs or oil recovery area, and (3) explosive residues related to the explosives handling areas. The former MNOP sewage treatment plant, the storm drain outfalls, the metal plating facility (Building 5 area) and unknown off-site sources are the primary potential source area(s) of contaminants detected in soil and groundwater.

The results of the groundwater sampling indicate the presence of trichloroethene (TCE) and, to a lesser extent, trace amounts of other chlorinated organic compounds in the shallow water-table aquifer. TCE is a common industrial solvent used in stripping, cleaning, and maintenance operations. TCE is detected at its highest levels near the former MNOP sewage treatment plant near the western property boundary and at lower concentrations throughout the AIP site boundaries. The concentrations at the western boundary indicate a potential for the presence of dense nonaqueous phases liquids (DNAPL). Based upon the collected data several low-level sources may exist within the industrial park area. The source for the high TCE levels along the western site boundary may be related to the former MNOP sewage treatment plant, however, an off-site source (to the west) is also possible. The extent of TCE contamination has not been determined. TCE is expected to be transported at a slower rate than ground-water flow. The ultimate fate of TCE will be either

discharge to wetlands or surface waters of Rocky Creek south of the AIP. Transformation of TCE through slow dechlorination is also possible but may not be a dominant removal process.

The results of soil sampling indicate that TCE and trace amounts of other chlorinated organic compounds are present in the soils of the AIP site. However, soils contamination generally is limited to a few isolated locations and does not appear to be extensive.

Potential receptors include on-site workers, visitors, grounds keepers, and trespassers. Ecological receptors are expected to be minimal as most of the subject surrounding property has been previously developed. The most feasible routes by which exposure to contaminants could occur include ingestion of contaminated soil and inhalation of particulates. For the majority of possible receptors the risk associated with ingestion of site groundwater is minimal because the park receives water from a municipal supply. However, because there are a number of industrial supply wells currently being used both on and at off-site, exposure and ingestion is possible. One on-site supply well is currently used for both industrial and potable supply. State records also indicate one public water system (permanent groundwater) is located within 0.5 miles from the site.

It is concluded that contaminant levels in the shallow groundwater currently exceeds the state of Georgia's risk reduction standards (RRS) as promulgated in the Hazardous Sites Response Act (HSRA). While a large number of constituents were detected in the groundwater samples, only chromium, lead, cis-1,2-dichloroethene and TCE were detected at concentrations greater than the Type 2 (residential) and Type 4 (nonresidential) RRS at multiple points. Soil RRS were exceeded only at one sample location for the presence of TCE and tetrachloroethene. Dimethylphenethylamine and vinyl chloride were detected above Type IV standards one time each.

Based on the results of investigation and current site conditions it is recommended that further definition of the vertical and horizontal extent of soil and groundwater contamination be completed to meet the requirements of a HSRA Compliance Status Report. Further definition of the sources identified in this report will also be necessary.

1.0 INTRODUCTION

This report documents the site investigation conducted by Rust Environment & Infrastructure (Rust) at the Allied Industrial Park (AIP) site. The Georgia Hazardous Site Inventory (HSI) currently lists the AIP site (HSI number 10308) as a Class II site under the Georgia Hazardous Site Response Act (HSRA). Historically, the site was part of the Macon Naval Ordnance Plant (MNOP) which was owned by the United States Navy until 1965.

This report was prepared by Rust for the Savannah District of the U.S. Army Corps of Engineers (USACE). The original intent of the investigation was to collect sufficient information concerning site contamination to prepare a Compliance Status Report (CSR) as required under Section 391-3-19-.06 of the HSRA regulations. Little was known concerning the types, sources, and extent of contamination prior to this site investigation. Due to the lack of knowledge concerning specifics of the site contamination and the wide spread nature of historical site operations, the scope of work was designed to provide a broad investigation of site conditions. While this investigation has provided a good estimate of the general nature and extent of the contamination, not all of the requirements of a CSR were met (specifically the delineation of the horizontal and vertical extent of contamination).

Therefore, this report is structured to provide information applicable to the creation of a CSR following further study, as well as provide recommendations for further actions to be taken. The following sections are presented in this report:

- Section 1.0: Introduction
- Section 2.0: Physical Setting
- Section 3.0: Possible Contaminant Sources
- Section 4.0: Soil Contamination
- Section 5.0: Groundwater Contamination
- Section 6.0: Additional Environmental Sampling Conducted
- Section 7.0: Environmental Receptors
- Section 8.0: Property Ownership
- Section 9.0: Summary of Previous Actions
- Section 10.0: Compliance With Risk Reduction Standards
- Section 11.0: Conclusions and Recommendations

Geologic and hydrogeologic data used to evaluate the status of the site were obtained by Rust during activities conducted in October 1994. Chemical data and additional hydrogeologic data were obtained by Rust as part of this investigation from January through May 1996.

1.1 SITE DESCRIPTION

The AIP site is located in Bibb County on the south side of Macon, Georgia at 600 Guy Paine Road (Figure 1-1). The park is operated by the Macon-Bibb County Industrial Authority (MBCIA). The MBCIA leases buildings as office and warehouse space to various industrial and commercial tenants. The leasees vary widely in their business lines, but most are light industrial, bulk storage, foodstuffs distributors, or small manufacturing facilities.

Some of the industrial park property, primarily the southern half, has been sold for industrial development. At present, there are twelve other property owners within the industrial park, who have purchased tracts from the MBCIA. The ownership of properties at the site is discussed in detail in Section 8.0. The northeast corner of the site has been obtained by the city of Macon for recreational purposes (ballfields and a pool).

Land use in the area around the site is primarily industrial. The site is located north of Rocky Creek and east of U.S. Highway 129 Business. Historically, this property was part of the MNOP and included a landfill once used by both the MNOP and later property owners. The Rocky Creek Waste Water Treatment Plant, operated by the Macon Water Authority, is located along the southeastern border of the AIP property. The western side of the property is bordered by a railroad track which separates the site from the Armstrong Cork Company's (Armstrong World Industries) plant site. The property to the north of the site is primarily developed as commercial and industrial businesses. The Riverwood International industrial plant borders the site to the east. The Armstrong plant site also is a Class II HSRA site (HSI site number 10131), the Riverwood International site is a Class IV HSRA site (HSI site number 10027), and the former landfill property owned by the Macon Water Authority is a Class II HSRA site (HSI site number 10167).

1.2 BACKGROUND

Most of the buildings and infrastructure of the AIP site were originally part of the MNOP. The MNOP was constructed and operated by Reynolds Corporation prior to World War II. The Navy assumed operations in 1941 and continued operations until 1965 for the production of ordnance. Items manufactured included flares, small primers, detonators, and other triggering mechanisms. Construction at the MNOP facility included numerous buildings, several miles of paved roads, fueling facilities, solvent storage buildings, explosives storage magazines, and a sewage treatment plant.

After being declared surplus by the Navy, the property was sold in December 1965 to the Maxson Electronics Company of New York. Maxson continued to produce ordnance under contract with the Navy. Maxson subsequently sold the property to Allied Chemical Corporation in 1973 which manufactured automobile seat belts at the site. Allied made beneficial use of all or nearly all of the

buildings, underground and above ground storage tanks (USTs and ASTs), and utilities. Allied sold the property in 1980 to the Macon-Bibb County Industrial Authority.

Three environmental sampling events and one research study have been conducted at the AIP site prior to the investigation conducted for this report. Beaver Engineering, Environmental Science and Engineering, Inc. (ESE) and Westinghouse Environmental and Geotechnical Services, Inc. (WEGS) completed the sampling events. Sampling in each of these events was limited to relatively small, specific areas of the AIP site. The general locations of each of these sampling events are shown in Figure 1-2. Rust conducted a research study of the MNOP to aid in the planning of the investigation used to develop this report. The Rust study was issued in October of 1994 and was entitled *"Final Project Action Plan, Former Macon Naval Ordnance Plant"*. No analytical chemistry data was collected as part of the 1994 study.

In 1989, an environmental assessment was conducted by Beaver Engineering in the vicinity of the PB&S Chemical facility. The property was divided into four quadrants for sampling purposes. Eight soil samples were collected from each of four quadrants and were combined into one composite sample per quadrant. Various metals were detected in the composite samples, along with methylene chloride, bis-(2-ethylhexyl)-phthalate and chloroform. Analytical results are presented in Table 1-1.

In 1990, ESE advanced two shallow boreholes in a flat drainage area immediately west of Building 117. This area was used as an oil recovery area during MNOP operations. One composite soil sample and a duplicate were made from the soils collected. The soil sample contained detectable concentrations of arsenic, barium, cadmium, chromium, lead, pentaerythritoltetranitrate (PETN), and petroleum hydrocarbons. The ESE report described areas of stained soils and stressed vegetation near the sampling locations, but these areas are no longer apparent in this vicinity of the site. The analytical results from this investigation are presented in Table 1-1.

WEGS performed a preliminary environmental investigation in 1991. During this investigation, four groundwater samples were collected using a HydroPunch™ sampling tool near the storm water drain outfalls located to the southeast of Building 108. WEGS reported that barium, chromium, lead, iron, manganese, aluminum, and trichloroethene (TCE) were detected in the samples. The analytical results from this investigation are presented in Table 1-1.

The 1994 Rust report concluded that the operations, methods, and materials, used by the MNOP could have resulted in several sources of groundwater and soil contamination at the AIP site. These sources include the storm water drain outfalls, the former sewage treatment plant, the metal plating facilities, electric transformer buildings, areas of explosives handling and storage, and the plant's ASTs and USTs. There are also physical indications that environmental contamination may flow onto the AIP site from the drainage ditches at the northeast and northwest corners of the property. These potential sources were investigated as part of the field work done for this report, and are discussed in the following sections.

2.0 PHYSICAL SETTING

2.1 SUBSURFACE GEOLOGY

The geology of the AIP site generally consists of interbedded clayey silts and silty clays, clean sands (sands with less than 5% fines), and a few beds of gravel and gravelly sand. Sediments below the water table are dominated by sands and silty sands. Thin layers of sandy gravel appear in discontinuous lenses throughout much of the site area. The presence of these gravels, along with a repeated sequence of general fining of materials upward, suggests a point-bar, depositional environment laid down through a series of meandering streams. Zones of sandy clays and clay lenses also exist across the site, concentrated mostly above the shallow water-table aquifer. These lenses appear to be discontinuous.

A series of geologic cross-sections were generated using data gathered during this and previous investigations. Figure 2-1 is a cross-section location map while the cross-sections are represented in Figures 2-2 through 2-7. The boring logs and piezometer construction summaries for the historical data used in this report and those generated as part of the current investigation are found in Appendix A. These cross-sections define five distinctive (shallow) lithologic units:

- upper silt and clay
- upper gravel unit
- micaceous sand silt and clay unit
- discontinuous clay
- sands and silty sands

The uppermost unit, which outcrops across the site, is composed of silt and clay, and is described as predominantly red, dark red, and brown. This unit varies from 5 to 15 feet in thickness and is present entirely above the water-table. The uppermost silt and clay unit is underlain by a gravel zone (termed here as the "upper gravel unit") which lithologically consists of sand and gravel (predominantly at the base) and is discontinuous. The "upper gravel" occurs at an elevation of 330 feet to 340 feet mean sea level (msl) and is generally between 5 and 10 feet thick. The "upper gravel" unit occurs above the water-table.

Micaceous sands, silts, and clays are encountered between the "upper gravel unit" and underlying clay and sand units. This unit is distinctive because of the presence and abundance of mica throughout the sedimentary materials. The "micaceous unit" appears to be continuous across the site, is approximately 20 to 25 feet thick and occurs above the water-table. The "micaceous unit" is underlain by silts and clay, which in places has developed localized perched water. However, this unit is too discontinuous for development of significant ponding above this layer, and no piezometers are screened above this unit.

Below an elevation of approximately 310 feet msl, the sedimentary units are predominantly composed of clean sand and silty sand with interbeds of clay 2 to 5 feet thick. This unit forms an aquifer beneath the site, and it's thickness has not been fully penetrated at AIP during this investigation. This unit also has less frequent beds of gravel throughout the section.

Sediments throughout the site vary in color between shades of white, brown, red, and orange. White to tan clayey sands, clayey silts, and clays composed of varying amounts of kaolinite occur throughout the section. The major constituents of the sandy sediments are quartz with lesser amounts of feldspars and muscovite. Where gravel is present, it consists of quartz, quartzite, feldspar, and, in places, chert.

The deeper stratigraphic and lithologic units are known only from the drillers' logs available for many of the deep water-supply wells which surround the site, and from review of available literature. The underlying sands below the site are part of the Cretaceous aged Tuscaloosa formation and consist of light-colored sand, sandy clay, and discontinuous clay (LeGrand, 1962). Sand beds within the Tuscaloosa formation are exceptionally productive and form an ample source of fresh, high quality water used for industrial and potable purposes. The Tuscaloosa is approximately 275 to 280 feet thick beneath the site and directly overlies what is described in drillers' logs as "granite", "marl", or "limestone". In several of the drilled wells, 10 to 20 feet of marl or limestone is described to overlie granite, but is not always present.

In each of the drilled well logs reviewed from Armstrong Cork (seven deep wells located west and south of AIP); Riverwood International Corporation, formerly Kraft Georgia (3 deep wells located east of AIP); and Keebler Company (one deep well to the north of AIP), a consistent stratigraphic sequence can be observed. Below the surficial materials (which are described above and presented in geologic profiles), a white and pink clay unit is encountered between 50 and 70 feet below land surface (bls). This clay, which appears to be discontinuous across the area, is roughly 12 feet thick and where present occurs at an elevation of approximately 248 feet msl. If this clay unit is interpreted to be the base of the shallow water-table aquifer, it would make the shallow aquifer approximately 50 feet thick, given that the water-table is at approximately 300 feet msl at the site.

Between the distinctive clay unit and the first significant water-bearing sand aquifer is a sequence of interbedded sand and clay (predominantly sand with clay and clay interbeds) that measures roughly 60 feet thick. Below the interbedded sands and clay, between approximately 130 and 160 feet bls, is a medium to coarse-grained, water-producing sand. Almost all water-supply wells in the area are screened across this 25-foot thick sand layer. Two or more water-bearing sands or sequences of sands and clays are encountered between 170 feet bls and the base of the Tuscaloosa formation. Distinctive clay units are encountered between about 160 and 180 feet bls (130 to 150 feet msl), and between 200 and 220 feet bls (110 to 90 feet msl).

2.2 HYDROGEOLOGY

Based upon a literature review and an evaluation of geologic logs from both on-site borings and from deep water-supply wells located off-site, the following hydrogeologic units are defined:

- *shallow water-table aquifer*: The shallow aquifer extends from the water-table to approximately 50 to 70 feet bls. The shallow aquifer is comprised primarily of clean sands and silty sands, but contains frequent discontinuous clay intervals and some clayey sand.

- *confining clay and interbedded sand and clay units*: This unit is comprised of a distinctive red-white 12-foot thick clay unit overlying an approximately 60-foot thick sequence of interbedded sand and clay. These strata are encountered between 60 and 140 feet bls (elevations 250 to 180 msl). The clay and interbedded sand and clay units may form a confining unit or semi-confining unit to the deeper water producing aquifer zones.

- *Tuscaloosa sand aquifer(s)*: The Tuscaloosa sand aquifer(s) consist of three or more primary water-bearing sands or sequences of interbedded sand and clay separated by clay. This includes a shallow interval, from approximately 130 to 160 feet bls (elevations of 177 to 152 feet msl), and deeper aquifers between approximately 180 feet bls and the base of the Tuscaloosa at approximately 280 feet bls.

The following discussion on groundwater flow only deals with the *shallow aquifer* under study. Table 2-1 provides a summary of construction details for the piezometers used to evaluate the hydraulic properties of the shallow aquifer.

The groundwater flow direction in the shallow aquifer, within the AIP, is generally in a south-southeast direction based on piezometer water levels taken on April 25, 1996. The potentiometric surface map (Figure 2-8) shows a predominant flow direction to the southeast. Depth to groundwater in the AIP area varied from 5.6 ft. bls at piezometer PZ-1 (northwest part of site) to 47.4 ft. bls piezometer PZ-3. Static water levels, correlated to elevations msl ranged from approximately 317.0 feet msl at piezometer PZ-1 to approximately 289 feet msl at piezometer PZ-6, resulting in a general difference of 28 feet (Table 2-2).

As part of the Project Action Plan study (Rust, 1994), the hydraulic conductivity for the shallow aquifer was estimated by conducting rising head hydraulic slug tests on the piezometers. Hydraulic conductivity is a measure of a fluid's ability to move through a porous media under a unit gradient and is an important variable in evaluating groundwater flow velocities. Data from the study indicate

the average hydraulic conductivity for the six piezometers tested to be 2.1 x 10^{-3} feet per minute (ft/min) (Table 2-3).

The horizontal average linear groundwater flow velocities were calculated using the Darcy equation (Fetter, 1988). The results indicate groundwater flow in the shallow aquifer is approximately 44 feet per year using the average hydraulic conductivity value reported. Groundwater flow was also calculated using the highest hydraulic conductivity value of 6.3 x 10^{-3} ft/min from piezometer PZ-5. In this case, PZ-5 was screened in sand and gravel, which likely attributed to a higher hydraulic conductivity measured at this well. The calculated linear flow velocity for piezometer PZ-5 was 132 feet per year (Rust, 1994).

2.3 WATER USE

All municipalities within the vicinity of the study area use water from wells except for the city of Macon, which treats water from the Ocmulgee River (Rust, 1994). The Macon-Bibb county water system indicates that all water is collected at one intake on the Ocmulgee River near the intersection of interstates I-75 and I-16 (personal communication). Industrial groundwater use is more frequent south of Macon. Local irrigation using well-water is practiced, but the overall use is small (Rust, 1994).

Three water-supply wells currently exist on the AIP property (Figure 2-9). Table 2-4 summarizes the well construction details for wells existing near the AIP site according to U.S. Geological Survey (USGS) Log Library. A 287-foot water well was installed during Department of Defense ownership and provided non-potable water to plating operations in Buildings 5-A and 5-B. According to site personnel, the pumping apparatus is still in place, but is nonfunctional. It is unclear when the well was last used. Another non-potable water-supply well is located on the southern portion of the property, between the southern perimeter road and the Central of Georgia railroad spur. This 243-foot well is owned by Armstrong Cork and is currently active (#16W023). A third water-supply well was drilled on the AIP at the same time as the initial 1994 Rust investigation. The well is owned by Georgia Hydrate Corporation which recently acquired property from the Macon-Bibb County Industrial Authority. The well is located in the southeastern corner of the AIP property, near the railroad spur used during past site operations. The well was drilled to 290 feet by Green's Water Well Company of Gray, Georgia. It is understood from discussions with Georgia Hydrate Corporation personnel that the well is now active and it is used for both process and potable water-supply (Ashley Vickers, personal communication).

Six water-supply wells remain open on the Armstrong Cork Property, located west of the AIP. Also, as described above, one Armstrong Cork Well is located on the AIP property. According to Armstrong Cork personnel, the plant operates four primary wells which are designated as Well Numbers 1, 4, 5, and 6 (Figure 2-9). Well No. 2 has not been used for years but remains open, well

No. 3 has not been used for approximately 3 years, and well No. 7 is used occasionally (Bill Hahan, personal communication). Please note that Figure 2-9 does not show the location of Armstrong's #2 well and three other wells (16W002, 16W013, 16W004) that are indicated by USGS maps have no corresponding information in Table 2-4. Armstrong Cork indicates that average groundwater use is a combined 1.1 million gallons per day (mgd) with a maximum of 1.3 mgd from active water-supply wells. All groundwater supplies are used as make-up water for the manufacturing process. Potable water for the plant is obtained from the Macon-Bibb County water system. According to USGS well records, Armstrong Cork's supply wells are screened across multiple intervals from approximately 100 feet bls to approximately 250 feet bls.

The Keebler Company, located north of the AIP, operates one well. According to site personnel, this well is used for lawn irrigation and process water (Geraldine Jones, personal communication). Keebler did not have access to any records on groundwater withdrawals from the supply well. USGS well records indicate this well is screened across multiple intervals from 150 feet bls to 290 feet bls.

Riverwood International Corporation (formerly Georgia Kraft) operates 2 to 3 wells east of the AIP property. Riverwood personnel indicated that these wells are currently used for process waters and that all potable water is obtained from the Macon-Bibb Water Authority. Riverwood has indicated that approximately the same amount of water is withdrawn from these wells as that during ownership by Georgia Kraft (Marion Bard, personal communication). USGS records show that, during previous ownership by Georgia Kraft, two wells were operated and produced a combined flow of 0.537 mgd during the period of August 1976 and January 1978. The Riverwood International wells are screened similar to other industrial wells in the area.

Public water supply wells are indicated to be within 0.5 to 1.0 miles from the site (HSI, 1995), however, the location of these wells was not specified. The Department of Natural Resources (DNR) Drinking Water Program databases indicate at least one public water system is within 0.5 mile of the site. The presence and geographic location of these public water systems has not yet been field verified, as recommended by DNR when using the Drinking Water Program databases.

2.4 SURFACE WATER

The AIP lies within the drainage basin of the Ocmulgee River. The Ocmulgee is located approximately 2.6 miles east of the site, flowing through eastern Bibb County. The floodplain of the Ocmulgee is generally about 2 miles wide. All streams flowing into the Ocmulgee have a predominantly southeast course. Almost all small tributaries flow southward to join the larger creeks at an acute angle (LeGrand, 1962).

Within the vicinity of the site, the dominant drainage feature is Rocky Creek, which is approximately 800 feet south of the southern boundary of the AIP property. This stream exhibits a well developed

floodplain which boarders the former MNOP property and enters Tobesofkee Creek about 1 mile southeast of the site. Tobesofkee Creek in turn forms a confluence with the Ocmulgee River 5 miles farther to the southeast.

Surface water run-off at the AIP generally follows the land topography which slopes gently southward across the site. A small tributary enters the property at the northeast corner and runs parallel to Mead Road before it exits the site south of Allied Industrial Blvd. A few drainage ways exist in the former bunker area where storm water drain outfalls empty onto the field. A topographic low occurs in the northwest section of the site where surface drainage appears to run off during storm events into a small creek running along the west property boundary. This creek eventually crosses over onto the property south of the former Central of Georgia railroad spur in the southwest portion of the property and empties into meandering streams in a wooded area south of the site.

3.0 DESCRIPTIONS OF POTENTIAL SOURCE AREAS

Several areas were identified as potential sources and/or conduits for contamination and were investigated during the field work conducted for this report. These include the storm water drain outfalls, the abandoned sewage treatment plant, metal plating facility, electrical transformers, the explosives manufacturing area, the oil recovery area, and the above ground and underground storage tanks.

The location, chronology, function and operation of each of these potential sources is discussed in the following sections. The evaluation of potential sources was used in selecting the appropriate analytical parameters to be evaluated as part of this investigation.

3.1 PLANT OPERATIONS AREA

For the purposes of this investigation, the storm water drain outfalls, the abandoned sewage treatment plant, the metal plating facility, the above ground and underground storage tank areas, and the oil recovery area were combined into one area of investigation referred to as the Plant Operations Area. Each of these areas is identified on Figure 3-1 and discussed below.

3.1.1 Storm Water Drain Outfalls

Storm water drain outfalls are located throughout the AIP site; their general locations are shown on Figure 3-1. Although an exact chronology of the installation and use of these drains is not known, it is likely that they have been in use since the early 1940s when the AIP site was originally developed. According to site plan, reviews and interviews conducted by Rust, some of the floor drains and sinks of the industrial buildings on the site discharged to these drains until the early 1970's. As a result, environmental contamination may be the result of discharges of solvents, metals, plating compounds, and waste oils, commonly used in the industrial processes associated with plant operations, to the floor drains and storm water outfalls.

Based on interviews, these drains were routed to the sanitary sewer in the early 1970's.

3.1.2 MNOP Sewage Treatment Plant

The abandoned MNOP sewage treatment plant is located near the west boundary of the AIP site (Figure 3-1). The treatment plant was constructed as part of the MNOP in the early 1940s. It was operated until the early 1970's. The treatment plant was designed to handle only sewage generated by the ordnance plant, however, it is possible that chemicals used in the ordnance plant were disposed of in drains that went to the sewage plant.

For this reason it is possible that environmental degradation associated with this area is due to discharges of solvents, explosives ordnance, plating compounds, and metals.

3.1.3 MNOP Metal Plating Facility

Historical research indicates that Building 5 (Figure 3-1) was the primary metal plating facility throughout the sites' history. No current facilities are known to be involved in metal plating activities at the AIP.

As with other areas of the MNOP, the metal plating facility began operation in the early 1940s. Rust's research indicates that the plating operations in Building 5 probably continued through Maxson's and Allied Chemical's use of the site up until 1980. The metal plating facility used cyanide, solvents, acid baths, caustic baths, and hydraulic oil. In the oil recovery area, metal shavings were centrifuged to remove excess oils. These oils were reportedly allowed to drain to the ground. Records indicate that, during Allied Chemical's use of the facility, the plating operation generated a chrome sludge. During Rust's 1994 facility evaluation, it was not determined how this sludge was managed or disposed.

3.1.4 ASTs, USTs, and Oil Recovery Area

Based on the history of site operations, petroleum hydrocarbon and chlorinated solvent contamination may be associated with underground and above ground storage tanks and at the oil recovery area. Figure 3-1 shows the approximate locations of the underground and above ground tanks and the oil recovery area.

Based upon an understanding of the historical operations at these areas of the industrial park, Rust proposed a subsurface investigation to assess degradation of environmental media at these locations.

3.2 ELECTRIC TRANSFORMERS

Electric transformers, which were located throughout the site, may have been potential sources of PCBs. During MNOP operations, large electrical transformers were reportedly located in Buildings 4 and 104 (Figure 3-2), and later in front of most other main buildings. There are no further details readily available of where transformers may have been located near the other buildings. However, Buildings 4 and 104 were included in the investigation for PCBs based on historical information.

3.3 EXPLOSIVES HANDLING AND STORAGE AREAS

Explosive compounds were either handled or stored at many areas around the industrial park, including numerous small dryer buildings, ordnance magazines, and blending and weighing houses.

Seven buildings and two handling areas have been identified as primary explosives production sites (Figure 3-3). The seven buildings are: 105, 106, 106A, 107, 108, 198, and 109. The two handling areas are the receipt and handling area at the southeast railroad spur, and the area of the four mixing and blending houses (Buildings 38, 38A, 39, and 40) in the southwest area of the ordnance plant. These sites are the most likely sources of any explosives contaminants due to the increased handling required by production operations.

The explosives manufacturing and handling areas are potential sources of explosive residues. For this reason, the environmental samples collected from sample locations associated with these areas of the site were analyzed for explosive residues according to Environmental Protection Agency (EPA) Method 8330.

3.4 OFF-SITE SOURCES

Numerous industrial facilities lie up gradient of the AIP site. These include bulk storage, fuel distribution, and the manufacturing and/or handling of foodstuffs, textiles, rubber products, and chemicals. For this reason, environmental samples were collected along the northern property boundary to determine if off site sources have impacted the site (see Figure 3-4).

4.0 SOIL CONTAMINATION

4.1 INVESTIGATIVE APPROACH

Potential soil contamination at the AIP site was evaluated by collecting one hundred twenty-three (123) soil samples from sixty-three (63) direct push technology (DPT) boring locations at the AIP site. Generally, two soil samples from each boring were selected for chemical analysis. The first sample was collected from 0 to 2 feet bls. The second sample was selected based on the results of a field screening procedure. Quality control (QC) samples, consisting of duplicates and trip blanks, were also collected. The location of each sampling point was surveyed to determine northing, easting coordinates, and elevation in feet above msl. A copy of the soil boring log generated for each of the sixty-three DPT locations is found in Appendix A.

4.2 ANALYTICAL PARAMETERS

Specific analytical parameters were developed for each source area. Analytical parameters for soil samples from the AIP site were selected based on the suspected contaminants and historical activities at specific source areas. Table 4-1 summarizes the soil sampling and analytical requirements for this work. The table includes the analytical methods used, the sample preservation and holding times, and the number of quality control and quality assurance samples collected.

4.3 LOCATION OF SAMPLING POINTS

The source areas identified in Section 3.0 were reduced to four sampling areas investigated as part of this report. The four areas and their associated potential source areas are identified below.

4.3.1 Plant Operations Area

The Plant Operations area includes five potential source areas; the storm water drain outfalls, the sewage treatment plant, the metal plating facility, the USTs and ASTs, and the oil recovery area. Samples were collected from eighteen borings located within the boundaries of the Plant Operations area. These boring locations are shown on Figure 4-1.

4.3.2 Electric Transformers

Three sample locations were identified at Building 4 and two at Building 104, as shown on Figure 4-2. These buildings were known to have contained electric transformers which likely contained PCBs. The boring locations were determined based on site access and building layouts identified during a site inspection.

4.3.3 Explosives Handling and Storage Areas

Seven buildings and two handling areas were identified as primary explosives handling and storage areas. These include Buildings 105, 106, 106A, 107, 108, 109, 198, the mixing/blending houses (Buildings 38, 38A, 39, and 40), and the rail spur receiving area. These buildings are shown in Figure 4-3 along with the thirty-six corresponding DPT sampling locations.

4.3.4 Off-site Sources

Two sample locations were identified to determine if off-site sources may have impacted the study area. The two locations cover areas where surface water drains onto the site. The location of these two sample areas are shown in Figure 4-4.

4.3.5 Background Samples

Background soil samples were collected from an area just north of the AIP site. These two sample locations are believed to be in locations which would be unaffected by any releases caused by activities at the AIP. The background sample locations are shown on Figure 4-5.

4.4 SAMPLING AND ANALYSIS PROCEDURES

4.4.1 Sampling Equipment

Soil samples at the AIP site were collected using direct push technology (DPT). The hydraulic drive-point system is designed to obtain discrete soil samples using a retractable piston combined with a standard 2-inch, barrel sampler with an acetate liner. The piston prevents the sampler from filling as it is advanced to depth. Once the desired depth is reached, the piston is released, and the sampler is driven one foot deeper, allowing the cored material to enter the sample tube as the piston retracts. The barrel sampler is then returned to the surface where the acetate liner containing the soil is recovered.

4.4.2 Collection Techniques

In order to determine soil lithology, samples were collected at five-foot intervals until saturated conditions were encountered. Each sample was collected in accordance with the following procedures:

- The drive rods were advanced to the desired depth. The piston was unlocked by a control rod and the sampler driven one foot deeper to allow the soil sample to enter the sample tube.

- The sampler was removed from the borehole, opened, and the recovered soil sample was described in the test boring log using the Unified Soil Classification System (USCS). The parameters included in the soil descriptions included USCS Classification, USCS symbol, secondary components with estimated percentages, color, plasticity, consistency/density, and relative moisture content.

- A portion of the soil was packed into a clean, glass sample container with a teflon-lined cap and placed on ice for possible chemical analysis for VOC 8260 parameters.

- Upon completion of sample collection, sample bottles were labeled, the sample identification was recorded in the field log book, and a complete Chain of Custody record was maintained.

4.4.3 Field Analytical Techniques

Once the soil sample descriptions were recorded and the VOC sample bottle was filled, the remaining soil from the sampler was containerized in a plastic bag and sealed. After waiting at least 5 minutes, a Thermo Environmental Instruments, Inc. Model 580B Organic Vapor Meter (OVM) was inserted into the bag to measure the headspace reading. At each borehole location, the soil sample with the highest reading was selected for chemical analysis. If no organic vapors were detected, a soil sample from directly above the estimated water table was selected. In addition, a near surface sample collected from 0 to 2 feet bls was submitted for chemical analysis.

4.4.4 Variances in Sample Collection

At multiple locations across the central portion of the site, a dense gravel zone was encountered at an elevation of approximately 320 to 330 feet msl. Due to this zone, sampling procedures had to be altered at nine locations. At seven of the affected locations (ISL-7, ISL-42, ISL- 43, ISL-46, ISL-47, ISL-49, and ISL-50) the DPT equipment was unable to push the soil sampler beyond the gravel zone. Consequently, the second soil sample was collected from just above the equipment refusal depth. No soil samples from below the gravel zone were collected at these locations.

At sample location ISL-4, the DPT equipment was unable to push through the gravel zone. A decision was made to move a new location approximately 100 feet to the east. Therefore, only one soil sample was collected from the surface soils at ISL-4. At the new location, ISL-63, two soil samples were collected.

At sample location ISL-61, only one surface soil sample was collected due to the fact that saturated conditions were encountered at shallow depths.

Problems were also encountered at location ISL-20 near Building 4. A shallow surface soil sample was collected; however, multiple attempts failed to penetrate beyond twenty feet. On the third attempt the DPT tools broke off and could not be retrieved. It was determined that the area contained rubble or other obstacles of unknown origin. Based on limited options for offset locations, no additional attempts were made to obtain a second soil sample from this location.

4.4.5 Sample Handling

Sample bottles were cleaned prior to delivery to the field by the laboratory. Once collected, the samples were placed in a cooler to maintain a temperature of approximately 4°C. Coolers were prepared for shipping when full or at the end of the day. Sample preservations and holding times are presented in Table 4-1.

4.4.6 Decontamination Procedures

DPT equipment decontamination was performed within a decontamination pad, designed to contain the cleaning fluids. The DPT rig was decontaminated upon mobilization to the site and prior to leaving the site. The DPT sample collection equipment and downhole tools were steam cleaned with high pressure steam within the decontamination area. Persistent dirt and other foreign materials were removed with a scrub brush. The sample collection equipment and downhole tools were decontaminated upon mobilization to the site and between each sample location.

Sampling and monitoring equipment, including spoons, bowls, and soil sample barrel were decontaminated according to Section 8.4 of the EPA Standard Operating Procedure (SOP) and Quality Assurance (QA) manual prior to each sampling location.

Sampling personnel avoided contacting decontaminated equipment with the surrounding soils or unprotected hands. Equipment which had contacted any soil, unprotected hands, or anything which might have contaminated the equipment was decontaminated again according to the above procedures.

4.4.7 Chain of Custody Procedures

Information regarding the sample analyses was recorded on the Chain of Custody (COC) form. This information included:

- sample identification
- sampling time and date
- location of sampling point

- sampling personnel
- analytical parameters

The original COC form and the request for analysis form were packed with the samples. Copies of each of these forms are maintained in the project files.

Sample security was documented by placing two signed and dated custody seals across the lid of the cooler after securely taping the cooler. The sample coolers were shipped via overnight express carrier to the laboratory. A copy of the shipping bill has been retained by Rust as part of the sample custody documentation.

4.4.8 Laboratory Analytical Techniques

Collected samples were shipped to HydroLogic Laboratories Inc., in Brighton, Colorado for analyses of organic and inorganic analytes. Specific methods and analytes used for the soil samples collected are listed in Table 4-1. The analytical methods used are described in EPA's *Test Methods for Evaluating Solid Waste* (SW-846), third edition.

Data quality objectives were set for the analytical methods by specifying control limits for QC samples internal to the laboratory. Quality control samples included laboratory control samples, laboratory duplicates, and method blanks. Control limits used to evaluate the QC sample results included percent recovery and percent difference and are functions of the analytical method and sample matrix.

HydroLogic performed regular inspection, maintenance, cleaning, calibration, and servicing of all laboratory equipment according to the manufacturers' recommendations. Calibration and maintenance logs are kept for each piece of laboratory and field instrumentation, detailing any malfunction and the steps taken to correct the problem.

4.5 SOIL SAMPLING DATA SUMMARY

4.5.1 Field Data

Soils were screened in the field with an PID to evaluate the presence of volatile organic compounds. The results of screening, which are presented on the boring logs contained in Appendix A, generally indicated that soils in the AIP did not exhibit organic volatiles exceeding background levels. Soil screening in seven borings exhibited low level organic readings ranging from 1 part per million (PPM) to 30 PPM. ISL-8 exhibited readings of 2 PPM in the 0 to 2-foot and 4 to 6-foot samples and 30 PPM in the 9 to 11-foot sample. ISL-9 exhibited 8 PPM in the 9 to 11-foot sample and 2 PPM in the 14 to 16-foot sample. Soil sample from 14 to 16-feet in ISL-10 exhibited a headspace reading

of 2 PPM. ISL-31 exhibited readings of 2 to 22 PPM in soil samples between ground surface and 43 feet with the highest reading at 22 feet bls. ISL-48 exhibited readings of 1 to 4 PPM in soils collected between 10 feet and 36 feet bls. In addition, borings ISL-34 and ISL-35 exhibited readings of 6 PPM from 14 to 16-feet bls and 4 PPM from 19 to 21-feet bls in these respective borings.

4.5.2 Laboratory Results

One-hundred twenty-three (123) soil samples were collected from 63 DPT sampling locations within the industrial park area. A summary of the results is presented in Table 4-2. This table lists the results for each analyte which were detected above the method detection limit within any of the samples. All analytical data was evaluated with regards to data quality by both the analytical laboratory and Rust. A summary of the data quality review is included as part of the Quality Control Summary Report (QCSR) in Appendix B.

The results of soil analyses indicate that very low concentrations of one or more volatile or semi-volatile organic compounds were detected in 43 of 123 samples (35 different sample locations). Fifty-six detections of organic compounds were reported in these 43 samples, 37 of which were reported as estimated values (J values). At twenty-two sample locations, organics were detected in the shallow soil sample only, while detections occurred in only the deeper soil sample at four locations, and in both the shallow and deep samples at nine locations. Based upon this data, it appears that the only significant "hits" were detections of tetrachloroethene (PCE) and trichloroethlene (TCE) in the shallow soil sample collected from ISL-4 at concentrations of 0.8J mg/Kg and 1.2J mg/Kg for each of these constituents respectively. TCE was also detected in the shallow soil sample (0-2 feet bls) and the deeper soil sample (9-11 feet bls) collected from ISL-8 at concentrations of 0.38J mg/Kg and 0.55J mg/Kg.

Low concentrations of several pesticides were detected in three of nine samples analyzed. Two of the three detections were reported as estimated values. PCB compounds were not identified in any of the samples analyzed.

Most inorganic analytes were reported as below the method detection limits or at concentrations well within the range found in the two background samples collected, ISL-18 and ISL-19. In shallow soil samples from ISL-11, ISL-54, and ISL-55, zinc was detected at concentrations of between 218 mg/Kg and 538 mg/Kg which is significantly higher than zinc concentrations in the background soils (average of 10 mg/Kg). Chromium was detected at an elevated level in the shallow soil sample collected from ISL-44, with a concentration of 181 mg/Kg compared to a background average concentration of 12 mg/Kg. Cadmium was detected at elevated concentrations at ISL-7 and ISL-8 at concentrations of 2.27 mg/Kg and 2.32 mg/Kg, respectively for the shallow soil interval at these boring locations. Average cadmium concentration in background soil is 0.28 mg/Kg. Antimony was also detected at ISL-8 in the deeper sample (9-11 feet bls) at a concentration of 4.2 mg/Kg.

Antimony was not detected in background soil samples. The four sample locations containing the most numerous inorganic detections above background levels (e.g., greater than three analytes) are ISL-8 (0-2 feet bls), ISL-16 (30-31 feet bls), ISL-44 (1-2 feet bls), and ISL-47 (1-2 feet bls).

4.5.3 Extent of Contamination

The results of soil sampling indicates that TCE and trace amounts of other chlorinated organic compounds are present in the soils of the AIP site. These data indicate the highest levels of TCE to be present at locations ISL-4 and ISL-8. Low levels of TCE are also detected in soils throughout the site but these concentrations are well below any regulatory criteria (discussed further in Section 10.0). PCE is also present in the shallow soils at ISL-4. The presence of TCE and PCE together may indicate that locally these contaminants were released in mixed form. TCE and PCE are often combined in a single solvent product.

The TCE detections observed in both shallow and deep soils sampled at ISL-8 could be associated with the former MNOP sewage treatment plant. This sample location is slightly down gradient from the historical outfall for the plant. However, based on the locations' proximity to the property boundary, an off-site source can not be ruled out at this time. In addition, the extent of the localized TCE soil contamination cannot be determined from the data collected.

TCE and PCE observed at ISL-4 may be related to industrial activity at the former metals plating facility (Building 5). No conclusions can be drawn at this time to the exact source or extent of this localized contamination. However, several underground sewer lines transect this area, which could have contributed to the contamination by transporting it from connected operations areas.

No definable extent of inorganics contamination can be determined from the data collected. Considering the wide spread coverage of the sample locations and the limited background soil data collected, elevated levels of inorganics above background appear to be localized and scattered across the property. The most numerous detections of inorganic analytes detected above background occur at sample location ISL-8 and may be associated with the former MNOP sewage treatment plant. The only additional location where TCE and elevated inorganics were detected was the deep soil sample collected at ISL-16. This sample location is near a storm drain outfall in the southeastern portion of the site.

5.0 GROUNDWATER CONTAMINATION

5.1 GENERAL APPROACH

Potential groundwater contamination at the AIP site was evaluated by collecting groundwater samples from sixty (60) of the DPT borings at the AIP site. Sampling of the shallow aquifer was intended with target sample depths determined based on previously generated potentiometric maps. Groundwater samples were collected using a discrete depth sampler. Quality control samples, consisting of replicates and trip blanks were also collected. Sample locations are the same as those indicated on Figures 4-1 through 4-5.

5.2 ANALYTICAL PARAMETERS

Specific analytical parameters were developed for each source area. Based on the suspected contaminants and historical activities at these source areas, the analytical parameters for groundwater samples for the AIP site included:

- volatile organic chemicals (VOC)
- semivolatile organic chemicals (SVOC)
- polynuclear aromatic hydrocarbons (PAH)
- priority pollutant metals
- pesticides
- polychlorinated biphenyls (PCB)
- explosive residues

Table 5-1 summarizes the groundwater sampling and analytical requirements for this work. The table includes the analytical methods used, the sample preservation and holding times, and the number of quality control and quality assurance samples collected.

5.3 SAMPLING AND ANALYSIS PROCEDURES

5.3.1 Water Level Measurements

Water levels in piezometers were measured using an electric water level indicator on April 25, 1996. Groundwater levels and the time of measurement were recorded. Measurements were recorded to the nearest 0.01 foot, using the top of casing as a reference.

5.3.2 Groundwater Sampling Procedures

Well evacuation procedures were not applicable to this investigation at the AIP site since groundwater samples were collected using DPT sampling devices. After the water sampler is hydraulically advanced into the water-bearing zone, the protective sleeve surrounding the sampling device is pulled back to expose a screen. Groundwater from the formation is collected and brought to the surface via a teflon or stainless steel bailer for VOC samples. Sample vials for VOC were filled with groundwater in such a manner as to exclude air bubbles once the cap had been tightened. To obtain sufficient volumes of water for the remaining samples, water was brought to the surface using polyethene tubing and a foot valve. Sample containers for other analysis were filled as outlined in Table 5-1.

Decontamination and Chain of Custody procedures, as well as laboratory analytical techniques for groundwater sampling activities, were as described in Section 4.4 for soil sampling activities. All equipment used to collect groundwater samples was decontaminated in accordance with the procedures referenced in Section 4.4. Polyethene tubing used to collect groundwater samples was not re-used at other sample locations. Sample handling procedures for groundwater were the same as those discussed in Section 4.4 with the addition of sample preservation procedures, as required for aqueous samples. For safety reasons, and to minimize contamination, preservatives were added to the sample bottles prior to delivery to the site. The specific analytical methods and their appropriate sample preservation requirements are found in Table 5-1.

5.3.3 Variances in Sample Collection

As described in Section 4.4.4, DPT sampling was unsuccessful at several locations due to the dense gravel zone or obstacles encountered below ground surface. At two locations, ISL-4 and ISL-50, sampling problems were due to the dense gravel zone encountered. Due to significant coverage of sample points in the vicinity of ISL-50, no additional attempts to collect a water sample were made at this location. At ISL-4, the location was moved approximately 100 feet to the east. Sampling for groundwater at the new location was successful and the location was labeled ISL-63.

Problems encountered at location ISL-20, a PCB Source location near Building 4, were related to rubble or other obstacles encountered at shallow depths. Based on limited options for offset locations, no additional attempts were made to collect a groundwater sample from this location.

5.4 GROUNDWATER SAMPLING DATA SUMMARY

5.4.1 Laboratory Results

A total of 60 groundwater samples were collected from DPT locations across the AIP site. The analytical results are summarized in Table 5-2. The results indicate that various inorganic compounds, volatiles, and semi-volatiles were detected in groundwater. All analytical data were evaluated with regards to data quality by both the analytical laboratory and Rust. A summary of the data quality review is included as part of the QCSR in Appendix B.

The results of analyses for volatile and semi-volatiles indicate that the most widespread organic contaminant in the groundwater at this site is TCE. This compound was detected in 28 samples. The highest concentrations of TCE were 5.1 mg/L at IGW-17, 11 J mg/L at IGW-8 and 62J mg/L at IGW-9. These three locations are situated in the southwest corner of the site and represent the only samples where TCE concentrations exceeded 1.0 mg/L.

Other volatile organic compounds detected in the groundwater samples include cis-1,2-dichloroethene, detected in samples collected from IGW-8, IGW-9, IGW-24, and IGW-28 at concentrations of 0.0054J mg/L, 6.3J mg/L, 0.044 mg/L, and 0.011 mg/L respectively, and methylene chloride which was detected in samples collected from IGW-8, IGW-9, IGW-10, and IGW-63 at concentrations ranging from 0.011J to 0.031J mg/L. In addition, vinyl chloride (0.08J mg/L) 1,1-dichloroethene (0.0078J mg/L) 1,2,4 trimethylbenzene (0.0023 J mg/L) and PCE (0.0044J mg/L) were detected in a groundwater sample collected from IGW-9. Of these compounds, only PCE was detected in any other groundwater samples collected at the site.

Semi-volatile organic compounds detected include bis(2-ethylhexyl)phthalate in samples collected from IGW-21, IGW-26, IGW-30, IGW-60, and IGW-63 at concentrations ranging from 0.032J mg/L to 0.055 mg/L. Phenol was detected in groundwater samples collected at IGW-8, IGW-12, IGW-15, and IGW-30. Single detections of 2,6-dinitrotoluene, and a,a-dimethylphenethylamine were observed in IGW-15.

Numerous detections of the targeted inorganic analytes were identified. The inorganic analytes detected most frequently were cadmium, copper, chromium, lead, nickel, zinc, and beryllium. Chromium, nickel and lead appear to be the analytes which occur at the highest concentrations (relative to their respective detection limit) across the site, with chromium having the most elevated concentrations. Chromium levels were 1 mg/L or greater in 22 groundwater samples at locations in and around the plant operations area and the metals plating facility. The highest reported concentrations of chromium were 3.46 mg/L and 3.22 mg/L in samples collected at IGW-43 and IGW-25, respectively.

It should be noted that groundwater sample collection using DPT equipment does not provide a means of reducing sample turbidity, as can occur in properly sampled groundwater monitoring wells. No field or laboratory filtering was done, therefore, the samples collected using this sampling technique were highly turbid. A review of background samples, collected at locations IGW-18 and IGW-19, also indicated the presence of seven and eight of the metal analytes, respectively. Total chromium was detected at 0.204 mg/L at IGW-18 and at 0.706 mg/L at IGW-19, which is above the standard established in the HSRA regulations. These sample points are located at the northern property boundary, up gradient of the former MNOP plant operations area. In addition, groundwater samples collected from IGW-61 and IGW-62 may also be considered background since these locations are up gradient from any suspected source area at the AIP. IGW-61 and IGW-62 were placed at these locations to evaluate the drainage features entering the site.

5.4.2 Extent of Contamination

The following discussion provides a summary of the extent of groundwater contamination based upon the data collected during this investigation. The primary constituents detected include: TCE, cadmium, chromium, lead, and nickel.

Trichloroethene is the only compound which appears to have had a significant impact to groundwater quality and forms a mappable plume area. Figure 5-1 presents a plume map for TCE detected at the AIP site.

Trichloroethene was detected in 28 of the 60 collected groundwater samples and varies widely in concentration from 0.0018 mg/L to 62 mg/L. The highest concentrations of TCE were detected along the southwest corner of the site near historical building 115 at points IGW-17 (5.1 mg/L), IGW-8 (11J mg/L) and IGW-9 (62 mg/L) located near the historical outfall for the sewage treatment plant. The high concentration TCE plume area appears to extend from IGW-8/IGW9 along the western property boundary. The western and southern extent of the high concentration plume is not defined. The eastern edge of this plume is fairly well defined by points IGW-11 and IGW-25 (non-detects), IGW-27 (0.006 mg/L) and IGW-10, IGW-24, and IGW-38 (0.017 mg/L to 0.340 mg/L). The source area for this plume may be related to activities at the former waste treatment facility, however an off-site source for this compound cannot be ruled out at this time.

The concentrations of TCE in samples collected from locations IGW-8 and IGW-9 indicate a potential for dense, non-aqueous phase liquids (DNAPL). Research indicates that the presence of DNAPL should be considered if the groundwater concentration reaches several percent of solubility (Feenstra, 1992). Generally, the EPA considers DNAPL suspect at one percent of solubility (EPA, 1992), and likely at ten percent of solubility (EPA, 1991). The highest concentrations of TCE detected in groundwater at this site was 62 mg/L at location IGW-9 and 11 mg/L at location IGW-8. Since the solubility of TCE in water is generally taken to be 1100 mg/L (Feenstra, 1992), these

concentrations represent over 5.6 and 1.0 percent of the solubility, respectively. Therefore, DNAPL may be present along the western property boundary.

DNAPL will migrate in a direction independent of the groundwater flow direction because its density will drive it downwards following physical structures more than the groundwater gradient will drive it laterally. Therefore, there is not enough data to suggest a source for these high concentrations.

Smaller, more localized TCE plumes are also observed within the AIP area. These include one near Building 198 and 189 where a localized concentration of 0.550 mg/L was observed in IGW-30. Also an isolated detection of TCE was observed at IGW-63 (0.57 J mg/L) which is located at the southeast corner of Building 5, the former metals plating facility. Historical Navy documents indicate that Buildings 189 and 115 had storage tanks located near them. However, historical records indicate that these tanks were ASTs and contained fuel oils. Therefore, the ASTs are not considered likely sources of the TCE detected in this area.

Trichloroethene was also detected at points IGW-52 and IGW-55 which are located on the western side of Building 108 (former pelleting building) at concentrations of approximately 0.1 mg/L. This plume area may extend from Building 108 to IGW-14 (0.340 mg/L) and is not further defined down gradient from this point. TCE may also form a broad plume area along the eastern border of the AIP extending from the southeast corner of Building 109 (former assembly building and explosive testing) at IGW-38 (0.053 J mg/L) to the southeast corner of the property at points IGW-33 (0.062 mg/L) and IGW-34 (0.015 mg/L). The eastern and southern extent of this TCE plume is not defined by the points sampled during the investigation. Because of the distance between individual sample points, there is some degree of uncertainty in this interpretation of plume extent. This is especially true in the southeast plume area where the distance between points is large.

The presence of metal analytes may be partly due to turbidity in the collected samples and is further discussed below. The results of groundwater analyses show numerous detections of the targeted inorganic analytes. However, of these, only cadmium, chromium, nickel and lead were consistently found to occur at concentrations exceeding federal maximum contaminant levels (MCLs) or HSRA Type I groundwater limits. Figure 5-2 presents the concentrations of these four metals at each of the DPT sample locations. The analytical results indicate that concentrations of cadmium, chromium, nickel and lead are variable across the site and do not show any distinct trends with respect to the identified source areas. Further, because of the presence of each of these constituents in the background sample points (IGW-61, IGW-62, IGW-18, IGW-19) at similar concentrations, the data suggests that all four of these analytes may be present as a result of turbidity rather than as a dissolved species in groundwater. The metals data provides initial screening data for groundwater. However, at this time conclusions cannot be drawn as to the source or extent of metals contamination in groundwater at the AIP, if any.

Additional analytes were detected, but are not considered significant as explained below:

- Vinyl chloride; 1,1-dichloroethene; 1,2,4-trimethylbenzene were only detected at IGW-9. These compounds do not appear to form a contiguous plume, but based on the limited data, may be associated with other plume area(s).

- Antimony, arsenic, beryllium, copper, mercury, thallium, and zinc. These compounds were detected infrequently above regulatory limits or only in single isolated samples and do not form any discernible plume areas. Their presence in the groundwater samples may be due to turbidity in the collected samples.

- a,a-dimethylphenethylamine and 2,6-dinitrotoluene were only detected at IGW-15. These compounds do not form a contiguous plume area.

- bis(2-ethylhexyl)phthalate was detected in groundwater samples collected from points that were geographically in the same area, however, most of the levels measured were flagged by the laboratory as estimated. Because this compound is only estimated, and is a common laboratory artifact, further evaluation of this compound at this time is not considered necessary.

5.4.3 Fate and Transport

This section discusses transport and fate of TCE which is the primary detected contaminant. TCE belongs to a class of compounds referred to as halogenated aliphatic compounds, also referred to as alkyl halides. When released to soils and surface water this class of compounds are primarily lost to volatilization. This is due to the relatively high vapor pressure of these compounds. Once TCE enters subsurface soils or groundwater the principal attenuating mechanisms are sorption, biodegradation and possibly volatilization in the vadose zone.

Halogenated aliphatic compounds are subject to biodegradation under both aerobic and anaerobic conditions (Chapelle, 1993). However, aerobic biodegradation only occurs under special conditions and has generally been found to play a minor role in the degradation process of halogenated aliphatic compounds. Hence, this explains the observed persistence of TCE in most shallow aerobic aquifer systems. Anaerobic degradation of these compounds is more commonly observed and has been documented in the literature. However, anaerobic degradation only occurs under special conditions. Numerous studies have indicated that compounds such as TCE can be progressively dechlorinated under anaerobic conditions. The tendency of reductive dehalogenation is to transform TCE to isomers of dichloroethene (cis- or trans-) and then to vinyl chloride. Research has also shown that complete dehalogenation in the subsurface environment is difficult to achieve (Chapelle, 1993).

Based upon site data it appears that TCE is not being dechlorinated as evidenced by the general absence of isomers of DCE and vinyl chloride. While some transformation may occur, TCE is expected to be relatively persistent in the groundwater system beneath the AIP and should be transported at a slower rate than ground-water flow. Only slight retardation will occur from adsorption to aquifer materials. The ultimate fate of TCE will primarily be discharge to wetlands or discharge to surface waters of Rocky Creek south of the AIP or migration and transport into the deeper aquifers beneath the site.

As was discussed in section 5.4.2, there is a potential for DNAPL to exist below the watertable at this site. If DNAPL is present, it will migrate downwards driven by its density and following structural features, until it either reaches a barrier (such as a clay layer) or becomes trapped in the soil matrix. It will remain in place indefinitely and act as a continuing source of dissolved TCE contamination in groundwater.

6.0 ADDITIONAL ENVIRONMENTAL SAMPLING

In an effort to define possible contamination entering the site from off-site sources, sediment and surface water samples were collected from a flowing stream at the northeast corner of the site and from the drainage swale at the northwest corner of the site which transmits storm water during rainfall events. Three sediment and three surface water samples were to be collected at each location. Due to dry weather conditions no surface water was available from the drainage swale, therefore, only sediment samples were collected at this location. Sample locations are shown in Figure 6-1.

6.1 SAMPLING PROCEDURES

Surface water and sediment sample locations were approached from the stream bank and from the downstream direction to prevent possible disturbance of sediments or contamination of surface water by field personnel during sampling. Where applicable, the surface water samples were collected prior to sediment samples. Sampling points are located approximately 50 feet apart. Field parameters (pH, temperature, and conductivity) of the surface water were determined at each sample location. Samples for VOC analysis were collected at a depth of 0-2 inches from the water surface using a new glass jar. Sample vials were filled with surface water from the glass jar in such a manner as to exclude air bubbles once the cap has been tightened. Sample containers for other analyses were filled in a similar manner. The samples were properly documented, placed on ice in a cooler, and shipped to the analytical laboratory.

Sediment samples were collected to represent stream bed or drainage area sediments. A clean, stainless steel spoon or grain scoop was used to collect the sample. For volatile organic compounds, the sample container was gently tapped as the sample was placed in the container, and the container was completely filled to eliminate any headspace. The sediment was gently mixed, quartered, and placed in the sample containers.

Samples were analyzed according to the methods listed in Table 6-1.

6.2 SURFACE WATER SAMPLING RESULTS

A summary of the analytical results for the surface water samples are found in Table 6-2.

The analyses indicated very low level concentrations of toluene, paracymene, and 4-methylphenol at each of the sampling locations. All detections of toluene and paracymene are reported as estimated values. In addition, an estimated concentration of 0.01J mg/L nitrobenzene was reported in a duplicate sample, ISW-4Q.

Low level concentrations of several inorganic analytes were also reported in the surface water samples. Of these, copper and zinc were the only analytes detected in all samples collected. Estimated concentrations of selenium and mercury were detected in two samples; while lead was reported in the duplicate sample, ISW-4Q.

Based on the results of the limited surface water samples collected, it appears that surface water contained in the drainage feature entering the site in the northeast corner may be contributing contaminants to the AIP site.

6.3 SEDIMENT SAMPLING

A summary of the detected analytes for the six (6) sediment samples collected is found in Table 6-3.

The analytical results of sampling at these areas indicates the presence of several VOCs and semi-volatiles at all of the sampling points, except ISD-2. Samples ISD-4 and ISD-5 indicated the greatest numbers of detections, 16 and 17 compounds, respectively. Reported detectable concentrations of organic compounds ranged from 0.0031J mg/kg toluene at ISD-5 to 20 mg/kg fluoranthene, also at ISD-5.

Concentrations of inorganic analytes were also reported in the sediment samples. Beryllium, cadmium, chromium, copper, lead, nickel, and zinc were reported in all sediment samples collected.

Based on the locations of the sediment samples collected at the site, it appears that sediments at the site may have been impacted by contaminants migrating from off-site source areas north of the site.

7.0 ENVIRONMENTAL RECEPTORS

The Allied Industrial Park is presently in operation and is under no institutional controls to limit access. The park is accessible by vehicle via Guy Paine Road and Mead Road. There are no impediments to pedestrian traffic or postings limiting access to any parts of the AIP except as may be erected by individual property owners within the industrial park. The park consists of approximately 25 buildings. Some of these buildings are abandoned, some are used as warehouses, and some have been converted to office space. Much of the ground within the park has been paved, and the remainder consists of mowed grass, and some overgrown grassed and wooded areas. A portion of the AIP due east of Building 198 is said to be used by the public for recreational model plane flying.

Potential receptors may come into contact with contaminated media associated with the former Macon Naval Ordnance Plant. Ecological receptors are expected to be minimal as most of the subject surrounding property has been previously developed. Potential human receptors include on-site workers, visitors, grounds keepers, and trespassers. The most feasible routes by which exposure to contaminants could occur include ingestion of contaminated soil and inhalation of particulates (dust).

For the majority of possible receptors the risk associated with ingestion of site groundwater is minimal because the park receives water from a municipal supply. However, three water-supply wells currently exist on the Allied Industrial Park property. A 287-foot water well was installed during Department of Defense ownership and provided non-potable water to plating operations in Buildings 5-A and 5-B. According to site personnel the pumping apparatus is still in place, but is nonfunctional. It is unclear when the well was last used. Another non-potable water-supply well is located on the southern portion of the property, between the southern perimeter road and the Central of Georgia railroad spur. This 243-foot well is owned by Armstrong Cork and is currently active. A third water-supply well was drilled on the AIP at the same time as the initial 1994 Rust investigation. The well is owned by Georgia Hydrate Corporation which recently acquired property from the Macon-Bibb County Industrial Authority. The well is located in the southeastern corner of the AIP property, near the railroad spur used during past site operations. The well was drilled to 290 feet by Green's Water Well Company of Gray, Georgia. It is understood from discussions with Georgia Hydrate Corp. personnel that the well is now active and it is used for both process and potable water-supply (Ashely Vickers, personal communication). The use of this water in a production environment may present some incidental and/or secondary contact for human receptors with the groundwater. These wells are significantly deeper than the identified depths of contamination in groundwater at this point in the investigation.

For the contaminants released, the most often cited routes of entry are ingestion, inhalation, and skin (dermal) and eye contact. Therefore, the exposure pathways of concern would be those which provide direct contact with the soil or groundwater.

No sensitive environmental areas or endangered species have been identified at the AIP site as evidenced by an ecological reconnaissance of the former MNOP landfill in early spring of 1996. The AIP site was then noted to be a completely developed site, and the potential for any sensitive environmental areas or endangered species to be limited.

8.0 PROPERTY OWNERSHIP

8.1 SITE PROPERTY DISPOSITION

The Macon Bibb County Industrial Authority owns a significant portion of the former MNOP property. In the time since they acquired the property, they have leased sections to various business interests in development of what is now known as the Allied Industrial Park. The Allied Industrial Park property comprises that portion of the former MNOP that is located north of the former Georgia Southern Railroad line, but the developed portion of the AIP is limited to that area encompassed by the concrete perimeter road. The *Project Action Plan Former Macon Naval Ordnance Plant* submitted by Rust in January 1995 provided a listing of property usage, which included the properties within the Allied Industrial Park, which MBCIA had sold as of December 1994. A more recent delineation of the Allied Industrial Park property owners is provided on Figure 8-1. This figure presents the property owners as of June 1996.

8.2 SITE PROPERTY OWNERSHIP HISTORY

The public records reviewed by Rust during research for the Project Action Plan indicated that the MNOP property was acquired by the Navy in three basic tracts from 1941 through 1960. It was then sold to Maxson Electronics Corporation in 1965, who in turn sold the facility to Allied Chemical Corporation in 1973. Both of these companies have been cited in interviews of knowledgeable parties as having made productive use of the industrial park site and structures. The Macon Bibb County Industrial Authority purchased the property from Allied in 1980 and began development of the facility into an industrial park. The only indication of ownership prior to the City of Macon, which sold the first tract of the subject property to the Navy in 1941, exists in the environmental assessment report by Beaver Engineering for PB&S Chemical Corporation. This report indicates the portion of the site researched in their assessment was part of a family farm prior to the city's acquisition.

8.3 OFF-SITE PROPERTY OWNERSHIP

The AIP is bordered to the west and east by large industrial facilities, to the north by light industrial facilities, to the south by the former MNOP Landfill, and the Rocky Creek Waste Water Treatment Plant owned by the Macon Water Authority.

The nature of the surrounding property usage has not changed dramatically, but surrounding owners and owners' names have changed. A Department of the Navy site plan dated August 1965 depicts the offsite property owners to be as follows:

- Armstrong Cork Company - All property along the western property boundary and a 100-foot drainage easement beginning at the extreme southwestern property corner and proceeding generally southeasterly across the former MNOP landfill property to Rocky Creek.

- City of Macon Water Board - The property adjacent to the eastern half of the southern boundary of AIP. This property is indicated to have formerly belonged to the Cherokee Brick Company.

- Mead Corporation - Generally the property adjacent to the southern half of the eastern property line of AIP.

- General Chemical Company - Generally the property adjacent to the northern half of the eastern property line of AIP.

- Macon Area Development Company - Generally the property adjacent to the northeast corner of the AIP property.

- Adjacent property owners along the northern AIP property boundary proceeding from west to east - Carolina Freight Carrier Corporation, Hutson Oil Company, Lordcastle Shirt Company, General Tire & Rubber Company, Binney-Smith Company, Empire Land Company(Central of Georgia), and United Biscuit Company of America.

- Central of Georgia Railroad - Right-of-way, 150 feet wide running along the western property boundary between Armstrong Cork and the MNOP property, south to the southwest corner of the MNOP. It then turns east across the northern half of the property containing the MNOP Landfill and proceeds through the Macon Water Authority property to a spur in the southeast corner of the MNOP.

Another Department of the Navy site plan (not dated, but most likely prior to August 1965) indicates many of the same property owners with these exceptions: C-D Corporation is shown as the owner of the Macon Water Authority property; Macon Prestressed Concrete Company is shown as the owner of the Macon Area Development Company property; Over-Night Transportation Company owns a portion of the Empire Land Company property fronting San Carlos Drive; and Macon Hosiery Mills is shown as the owner of the Lordcastle Shirt Company property. On both site plans, the barracks area across Guy Paine Road to the north is still shown as part of the MNOP site.

The resulting property owners after a twenty four year period are shown in a site plan of the Allied Industrial Park by Tribble & Richardson. This plan is dated as last revised November 2, 1989. The surrounding property owners appear much as they are currently, but names of some of the companies

have changed since 1965. The United Biscuit Company of America is shown as Keebler Company, and Mead is Georgia Kraft. Shoney's, Inc. is shown as owner of the Binney-Smith Company property, and Inland Container is shown as owner of the property southeast of the MNOP site. The only other owner name given for the properties to the north of the MNOP is Guy Paine Road Properties, which encompasses the former MNOP barracks area. A small triangular parcel on the east side of the MNOP between Georgia Kraft and the MNOP is shown as belonging to the Newman-Pemberton Corporation. Inland Container Corporation is shown as located south of Georgia Kraft. Research of other public records shows Georgia Kraft to now be Riverwood International, and Armstrong Cork Company to be Armstrong World Industries.

On September 13, 1994 Rust conducted a "windshield" survey of the many off-site properties to the north of Allied Industrial Park. The company names were collected from observation of exterior business signs visible from the road. Again, many of the businesses appear to be similar businesses, but have different names than in the 1965 site plan. The businesses observed were as noted below:

- Shoney's - Same location as 1989 site plan
- Allegheny Rubber, Inc. - At the General Tire & Rubber location
- Frederickson Express - To the west of Allegheny Rubber, Inc.
- Macon Apparel Corporation - At the Lordcastle Shirt Co./ Macon Hosiery Mills location
- Carolina Freight - Same location as the 1965 site plan
- Stevens Oil Company - At the Hutson Oil Location

8.4 POTENTIALLY RESPONSIBLE PARTIES

The information on off-site property owners was derived in association with site inspections and research of the Allied Industrial Park and former MNOP. It was not derived from an exhaustive review of historic tax and land title records, which would be the necessary initial step to attempt to determine the particulars of the historic chains of ownership and use of the surrounding properties. Indications of off-site impact are discussed in earlier sections of this report under analytical results, but additional investigation would be required to establish the direct source of the detections at upgradient sampling locations. No identification of Potentially Responsible Parties can be achieved without further research of off-site property ownership, usage, and media quality. It would appear from site observations and a review of topographic conditions, that surface flows and anticipated

groundwater flow onto the MNOP would most likely occur from those properties north and west of the MNOP, and without further study, any upgradient properties could have potentially contributed to the environmental impacts detected in the limited upgradient sampling areas.

9.0 SUMMARY OF PREVIOUS ACTIONS

Limited environmental investigations have been conducted at the AIP site prior to this investigation. These studies are described in Section 1.2.

Two corrective actions have already been implemented at the site - the closing of the on-site wastewater treatment plant and the routing of plant drains away from the storm water sewers to the sanitary sewer system. While these actions reduced the possibility of future contamination, they did not address any contamination that may have already occurred at the site.

10.0 COMPLIANCE WITH RISK REDUCTION STANDARDS

The Georgia Hazardous Sites Response Act (HSRA) regulations specify that a site listed on the HSI must meet one of five risk reduction standards (RRS). The requirements of the RRS, identified as Type 1 through Type 5, are described in Rule 391-3-19-.07 of Georgia Department of Natural Resources Environmental Protection Division Hazardous Site Response (HSRA). Type 1 and 2 RRS criteria apply to residential properties and provide for either a standardized approach to exposure assumptions and defined risk levels (Type 1) or a site-specific risk assessment (Type 2). The Type 3 and 4 RRS apply to non-residential properties following the same standardized verses site-specific approach to risk evaluation. The Type 5 RRS applies to sites where the application of Type 1 through 4 is not appropriate and allows for the use of measures to control the regulated substances or the property where the regulated substances are located.

A detailed description of the evaluation procedure applied to the analytical data collected is found in Appendix C. Tables showing all samples exceeding the HSRA criteria are presented in Appendix C. The appendix presents the evaluation grouped by the RRS risk evaluation approach. Therefore, Type 1 and 3 RRS are discussed first as they require a standardized approach to exposure assumptions and defined risk levels. A discussion of Type 2 and 4 RRS follows in which a site-specific approach to risk evaluation is applied.

The results of groundwater evaluations indicate that while multiple analytes (17) were found to exceed the Type 1 and Type 3 RRS at some point in the groundwaters of the AIP, only chromium, lead, cis-1,2-DCE and TCE are present at concentrations greater than the calculated Type 2 and 4 standards at multiple sampling points. Also, dimethylphenethylamine, and vinyl chloride were detected above Type 4 standards one time each.

The soils evaluation indicates that although several sampling points at the AIP exhibited concentrations exceeding the Type 1 and 3 RRS, comparison of this data to site specific derived Type 2 and Type 4 RRS indicate that these criteria are exceeded only for TCE and PCE at a single sampling point (ISL-4).

Based upon the evaluations, it is concluded that all four of the RRS evaluated are exceeded at some point in the groundwater and soil. It is also concluded that while The Type 2 (residential) or Type 4 (non-residential), standards would apply to any off-site properties affected the Type 4 (non-residential) standards would likely apply to the non-residential use of the AIP properties at this time. The Type 2 and Type 4 standards (see Table C4-4 and C5-1 in Appendix C) are considered "safe concentrations" by the State of Georgia, based upon the two scenarios presented in Appendix C, and may be considered preliminary remedial goals.

11.0 CONCLUSIONS AND RECOMMENDATIONS

11.1 CONCLUSIONS

11.1.1 Extent of Contamination

Based on available data collected during the current and past AIP investigations it is concluded that a release of HSRA regulated substances has occurred to soil and groundwater at the site.

The results of soil sampling indicate that TCE and trace amounts of other chlorinated organic compounds are present in the soils of the AIP site. The highest levels of TCE are found at sample locations near the former MNOP sewage treatment plant and the metals plating facility. Samples collected in the vicinity of the former MNOP sewage treatment plant, a storm drain outfall in the southeastern portion of the site, and at isolated points within the former plant manufacturing and explosives handling areas contained numerous inorganic analytes at concentrations above background levels. It should be noted that the background data used to compare analytical results was limited (four samples at two locations) when compared with the number and distribution of soil samples collected at the site.

The analyte which appears to have had the most significant impact to groundwater quality at the AIP site is TCE. A map of TCE data across the site reveals several possible large areas of TCE contamination across the southern half of the site. However, the highest concentrations appear along the southwest corner of the site. This area of the site includes the former MNOP sewage treatment plant, Building 198 (existing), and Buildings 115 and 189 (removed). Buildings 115 and 189 were identified as incinerators on drawings prepared by the Navy. Although two ASTs are known to have existed at Buildings 115 and 189, historical documentation states that the tanks held fuel oils. Building 198 was identified as being used for storage. Due to the high TCE concentrations near the western property line, and considering that groundwater flow is to the southeast, the possibility of an off-site source for the high TCE in the southwest corner of the site can not be ruled out. An isolated detections of TCE was identified at the southeast corner of Building 5, the former metals plating facility.

11.1.2 Evaluation of Potential Source Areas

Based on the analytical results of this study, several potential source areas identified in Section 2.0 do not appear to have contributed contaminates to the AIP site. These include the electric transformers, the USTs and ASTs, the former oil recovery area, and the explosives handling areas. The analytical results do not indicate any evidence of PCB contamination from electric transformers, no evidence of petroleum hydrocarbons related to the ASTs/USTs or oil recovery area, and no explosives residue related to the explosives handling areas.

Based on the contaminates identified, and the location of their occurrence at the AIP site, the following areas identified in Section 2.0 are considered potential source areas: (1) the former MNOP sewage treatment plant, (2) the storm drain outfalls, (3) the metal plating facility (Building 5 area), and (4) off-site sources. Additional potential sources include off-site sources west of the site, the storm drains and sewer lines crossing the site and various manufacturing and materials handling areas within the plant boundaries. Many of the manufacturing and materials handling areas of concern were identified as potential sources of explosive residues; such as Building 108 and 109. However, it appears that secondary chemicals associated with the manufacturing and materials handling process may have contributed to the contamination identified at the site.

11.1.3 Compliance with HSRA Risk Reduction Standards

11.1.3.1 Soils Contamination

Based on an analysis of the analytical data collected, soils at the site do not meet the Type 1 or Type 3 Risk Reduction Standards (RRS) which use a standardized approach to exposure assumptions for residential (Type 1) and non-residential (Type 3) property classifications. The criteria for both RRSs were exceeded for two VOCs and four inorganic compounds.

The Type 2 and Type 4 RRSs apply site-specific risk data to the evaluation of residential (Type 2) and non-residential (Type 4) property classifications. An analysis of the soil data collected revealed that only two VOCs (TCE and PCE) exceed the Type 2 and Type 4 RRS at only two sampling locations.

11.1.3.2 Groundwater Contamination

An analysis of the groundwater analytical data indicates that shallow groundwater beneath the site does not meet the Type 1 or Type 3 RRSs, which use a standardized approach to exposure assumptions for residential (Type 1) and non-residential (Type 3) property classifications. The site failed to meet the criteria for seventeen analytes consisting of VOCs and inorganic compounds.

The results of screening groundwater data against Type 2 (residential) and Type 4 (non-residential) standards indicates that the levels of TCE, metals, and several less frequently detected organic compounds were exceeded in the shallow groundwater at one or more sampling points.

Based on the non-residential use of the property at this time, it is assumed that the calculated Type 4 RRS for soil and groundwater (Table C5-1 of Appendix C) may apply as remedial goals for the AIP site. Since the Type 4 standards have been exceeded at several areas of the site, we conclude that, under present conditions, the use of remedial measures to control the regulated substances may be required.

11.2 RECOMMENDATIONS

Based upon the results of the site investigation we recommend the following:

1. Collect water quality samples from Armstrong's #3A, #4A, #7 and #6, and the GA. Hydrate well. The first three wells are believed to lie adjacent to or within the high TCE groundwater plume located along the west side of the AIP and are of greatest concern. The Armstrong #6 and the GA. Hydrate well are located hydraulically downgradient from the lower concentration TCE plume(s) discovered within the AIP. It is also recommended that if there are any "capped" wells or wells where the turbine pumps have been removed for cleaning then an attempt should be made to collect groundwater samples from the upper screen interval (120 ft. zone) using reverse packer test methods. The old U.S. Navy well should also be sampled if still open.

2. Develop and sample monitor wells PZ-1 through PZ-6. Care should be taken to micro-purge the monitor wells so that representative groundwater samples from the shallow unconfined aquifer can be obtained.

3. Install additional on-site groundwater monitoring wells in several areas. Based upon information currently available, consideration should be given to installing well nests located (1) just south of IGW-8, (2) in the southwest corner of the AIP property (200 ft west of IGW-17), (3) in the southeast corner of the AIP (east of IGW-33/IGW-34), and (4) in an upgradient location to serve as background (near IGW-19/IGW-19).

   The placement of these wells may be dependent on the results of the first two recommendations. The nested wells should be screened into the shallow water table and the first water producing sand of the Tuscaloosa aquifer. The deeper wells should be constructed to case off the upper contaminated zone.

4. Locate and characterize the source of the high concentration TCE plume along the western boundary. Concentrations in the area of IGW-8 and IGW-9 suggest a possible DNAPL source.. Drilling/testing activities should try to minimize the potential downward migration of contaminants and avoid excessive probing. Wells in this area should be double cased to seal off the upper contaminated zone and the investigation should focus on characterizing detailed stratigraphy (soil profiles) and groundwater flow pathways.

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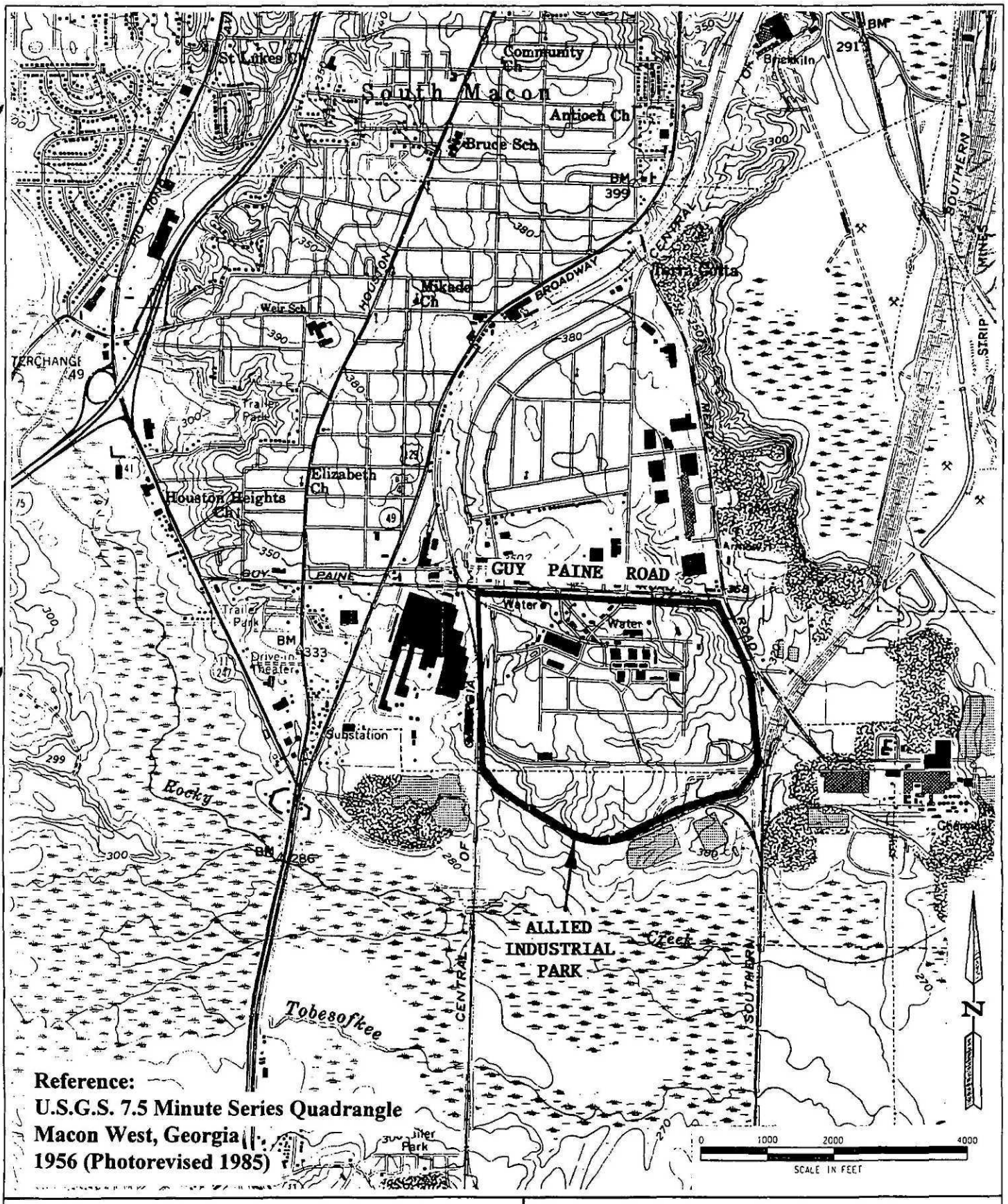
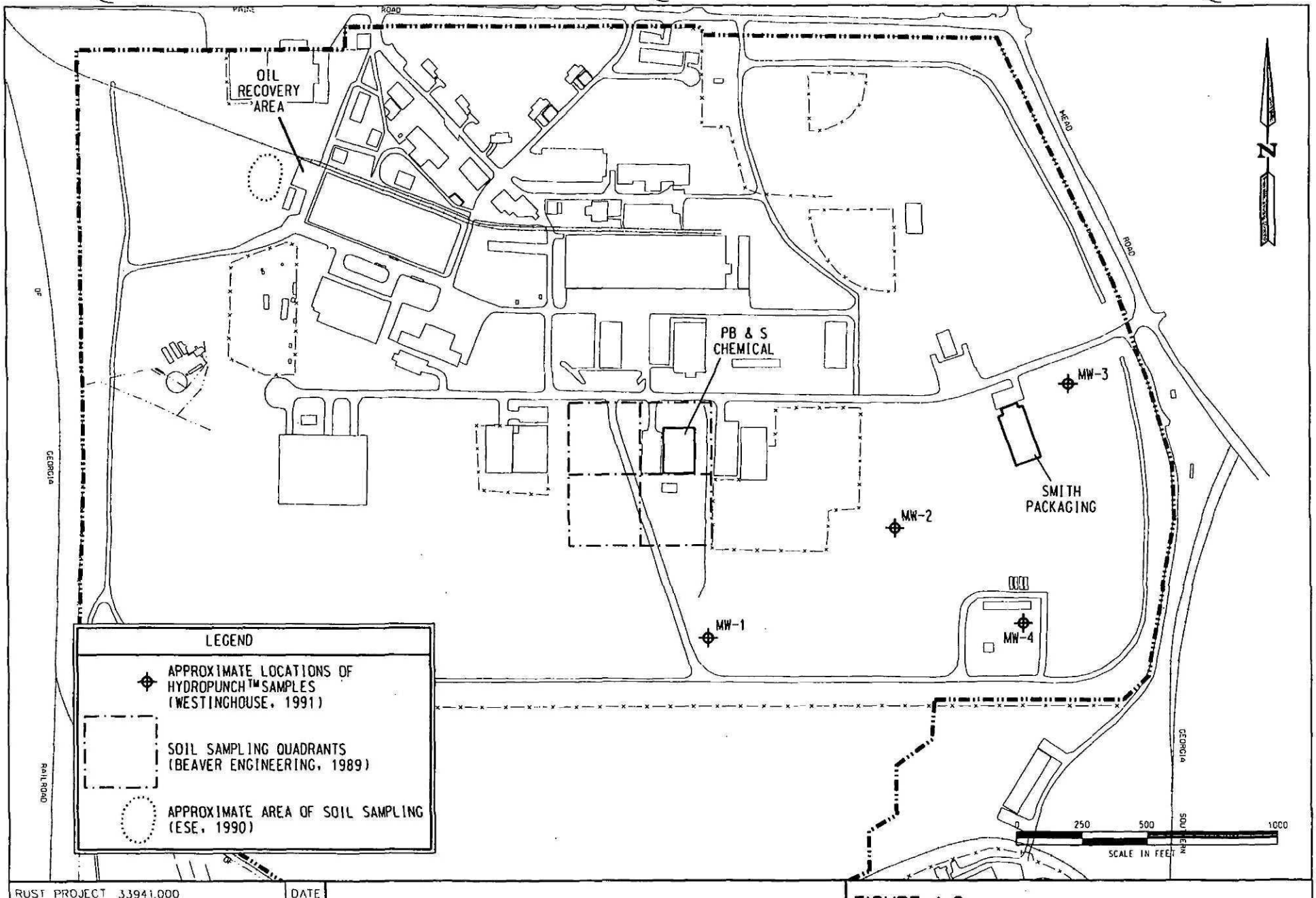


RUST ENVIRONMENT & INFRASTRUCTURE

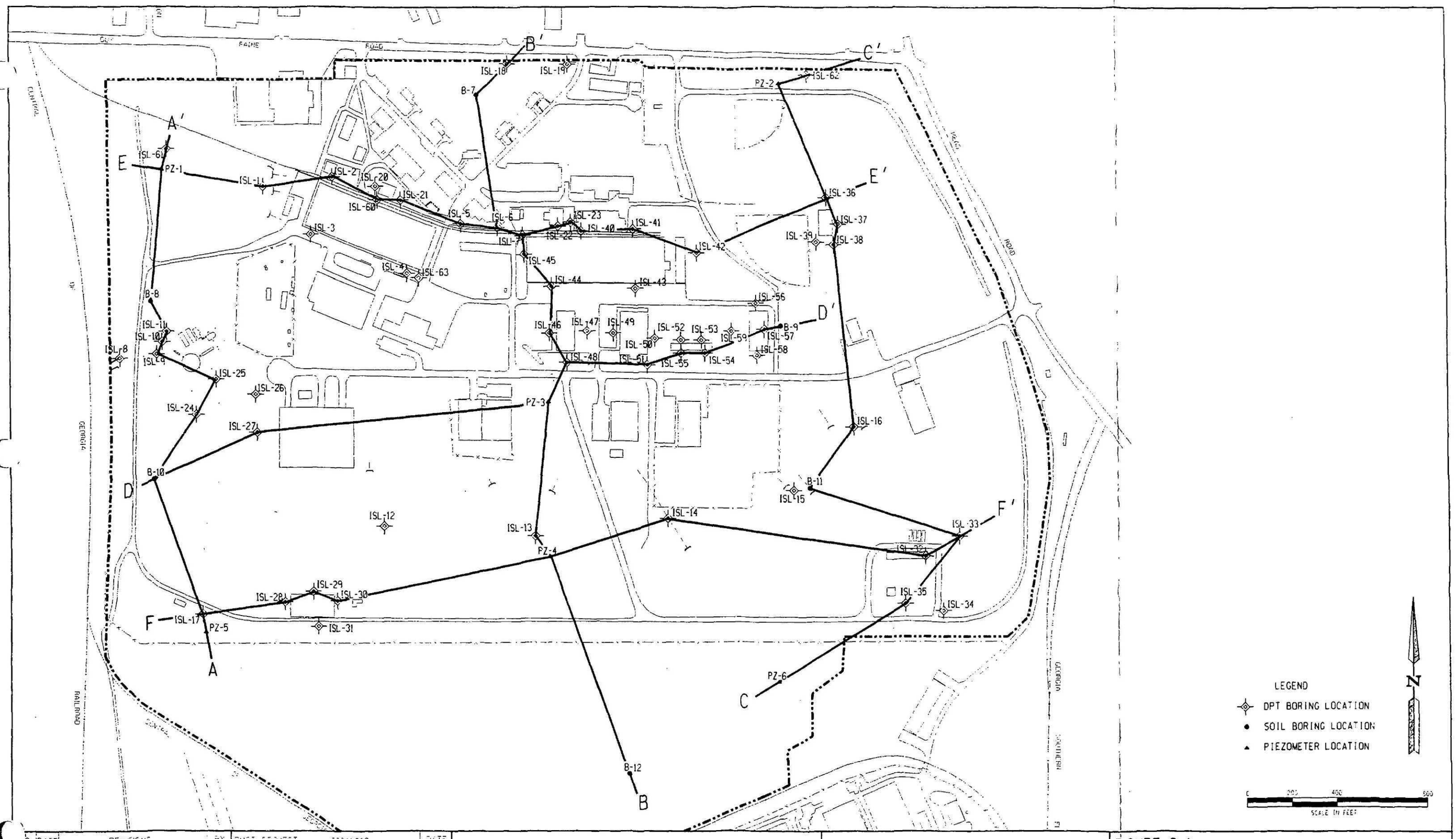
FIGURE 1-1
SITE LOCATION MAP
ALLIED INDUSTRIAL PARK
MACON, GEORGIA
RUST PROJECT 33941.000
33941070 6/96



RUST PROJECT	33941.000	DATE
DESIGNED BY	B.HADDEN	7/96
DRAWN BY	M.PEARCE	7/96
CHECKED BY		
FILE NAME	33941071	

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 1-2
PREVIOUS ENVIRONMENTAL STUDIES
FORMER MACON NAVAL ORDNANCE PLANT
MACON, GEORGIA



NO	DATE	REVISIONS	BY

RUST PROJECT	33941.060	DATE
DESIGNED BY	L WILLIAMS	6/96
DRAWN BY	M PEARCE	6/96
CHECKED BY		
FILE NO	33941067	

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 2-1
CROSS SECTION LOCATION MAP
ALLIED INDUSTRIAL PARK
MACON, GEORGIA

SOUTH
A

NORTH
A'

ELEVATION - FEET

330
320
310
300
290
280
270

B-10
ISL-24
ISL-25
ISL-17
ISL-9
ISL-10
ISL-11
B-8
ISL-61
PZ-1
PZ-5

GROUND SURFACE
CLAY & SILT
SILTY SAND & SAND
GRAVEL ZONE
SILTY SAND
SAND
CLAYEY SAND
SILTY SAND, SILT
GRAVEL

ML
CH
SM
SP
SC
SP-SC
SP-SM
CL
SW
OL
GM
GM-CL

0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400
VIEW BASELINE - FEET

LEGEND

ISL-9 — DPT BORING SHOWING GROUNDWATER SAMPLE LOCATION

APPROXIMATE POTENTIOMETRIC SURFACE BASED UPON INTERPOLATION FROM 4/25/96 POTENTIOMETRIC MAP

SP - USCS SOIL CLASS CODE

0 100 200 400
HORIZONTAL SCALE IN FEET

0 5 10 20
VERTICAL SCALE IN FEET

NO.	DATE	REVISIONS	BY

RUST PROJECT	33941.000	DATE
DESIGNED BY	L.WILLIAMS	6/96
DRAWN BY	M.PEARCE	6/96
CHECKED BY		
FILE NO.	33941085	

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 2-2
CROSS SECTION A-A'
ALLIED INDUSTRIAL PARK
MACON, GEORGIA

SOUTH
B

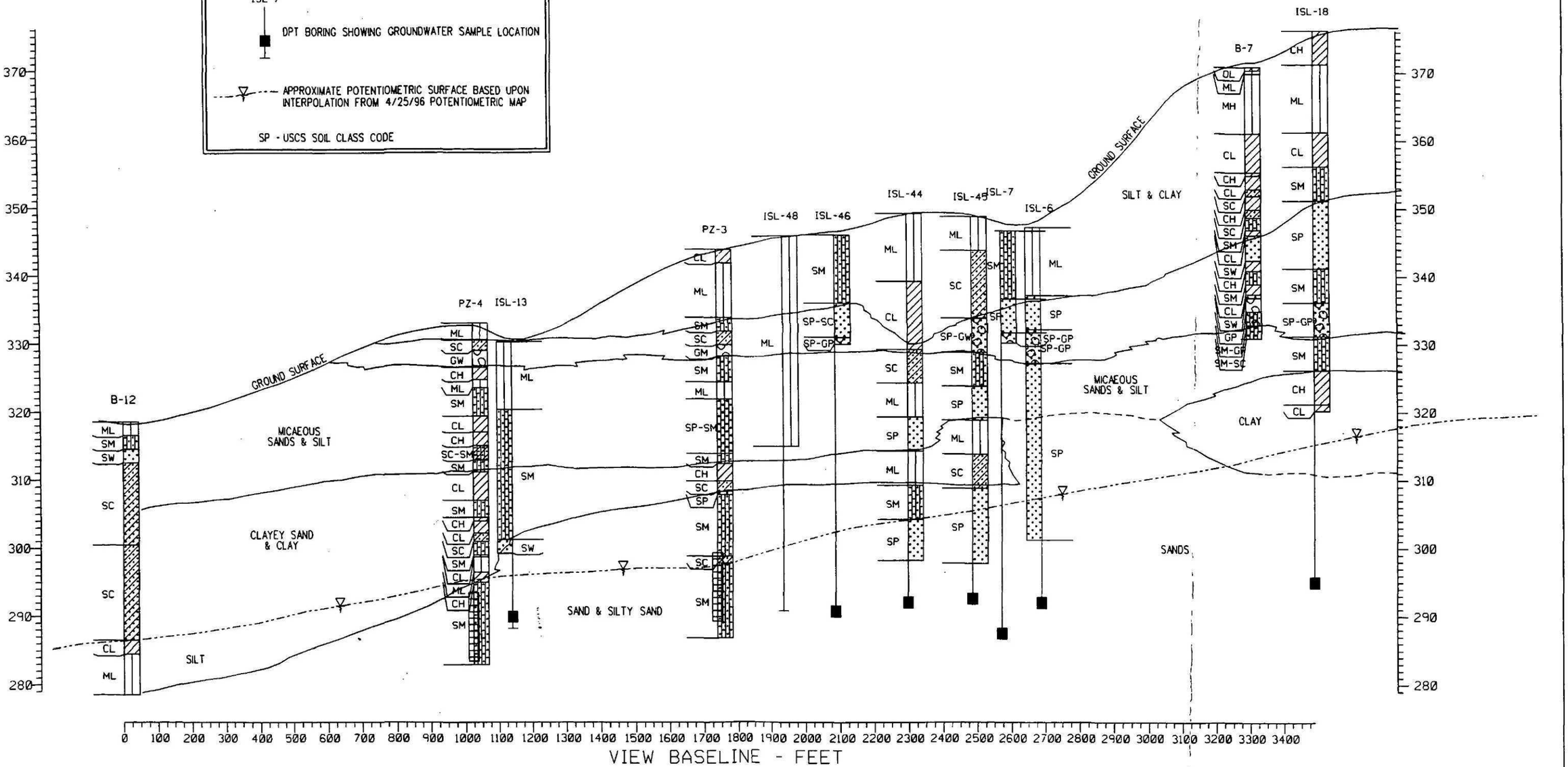
NORTH
B'

LEGEND

ISL-7 — DPT BORING SHOWING GROUNDWATER SAMPLE LOCATION

APPROXIMATE POTENTIOMETRIC SURFACE BASED UPON INTERPOLATION FROM 4/25/96 POTENTIOMETRIC MAP

SP - USCS SOIL CLASS CODE



NO.	DATE	REVISIONS	BY

		DATE
RUST PROJECT	33941.000	
DESIGNED BY	L.WILLIAMS	6/96
DRAWN BY	M.PEARCE	6/96
CHECKED BY		
FILE NO.	33941086	

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 2-3
CROSS SECTION B-B'
ALLIED INDUSTRIAL PARK
MACON, GEORGIA

SOUTH
C

NORTH
C'

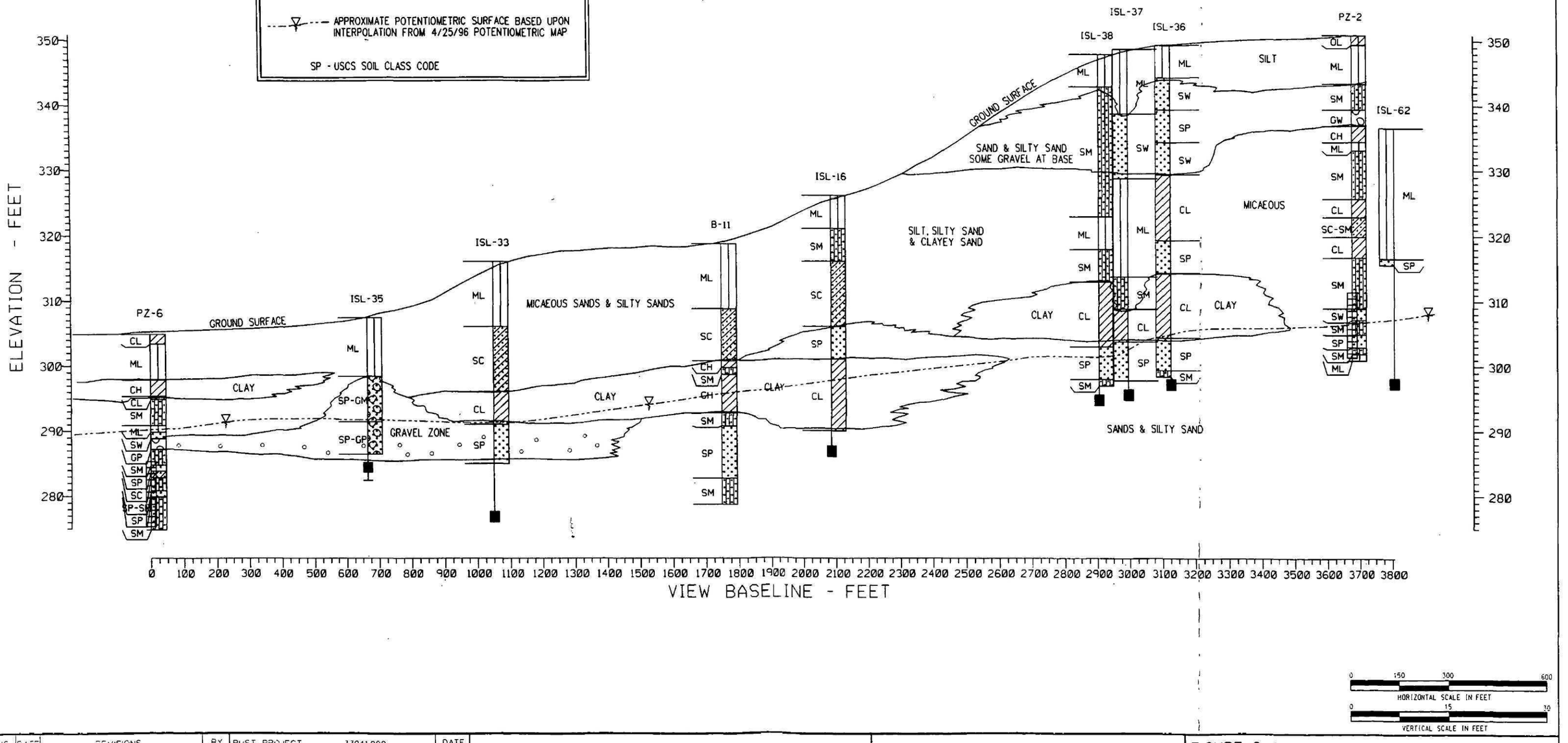
LEGEND

ISL-7

DPT BORING SHOWING GROUNDWATER SAMPLE LOCATION

APPROXIMATE POTENTIOMETRIC SURFACE BASED UPON INTERPOLATION FROM 4/25/96 POTENTIOMETRIC MAP

SP - USCS SOIL CLASS CODE



0 150 300 600
HORIZONTAL SCALE IN FEET

0 15 30
VERTICAL SCALE IN FEET

NO	DATE	REVISIONS	BY

RUST PROJECT	33941.000		DATE
DESIGNED BY	L.WILLIAMS		6/96
DRAWN BY	M.PEARCE		6/96
CHECKED BY			
FILE NO.	33941087		

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 2-4
CROSS SECTION C-C'
ALLIED INDUSTRIAL PARK
MACON, GEORGIA

LEGEND

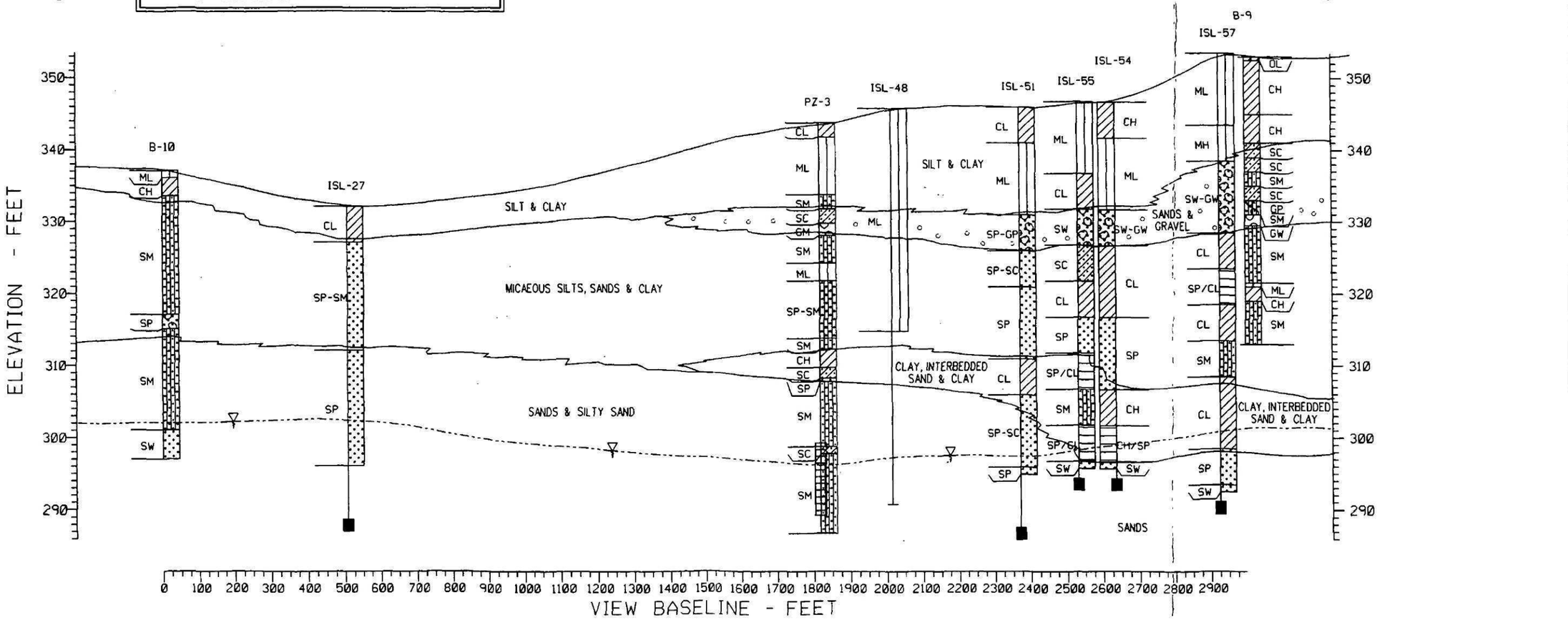
ISL-7 — DPT BORING SHOWING GROUNDWATER SAMPLE LOCATION

APPROXIMATE POTENTIOMETRIC SURFACE BASED UPON INTERPOLATION FROM 4/25/96 POTENTIOMETRIC MAP

SP - USCS SOIL CLASS CODE

WEST D

EAST D'



0 150 300 600
HORIZONTAL SCALE IN FEET

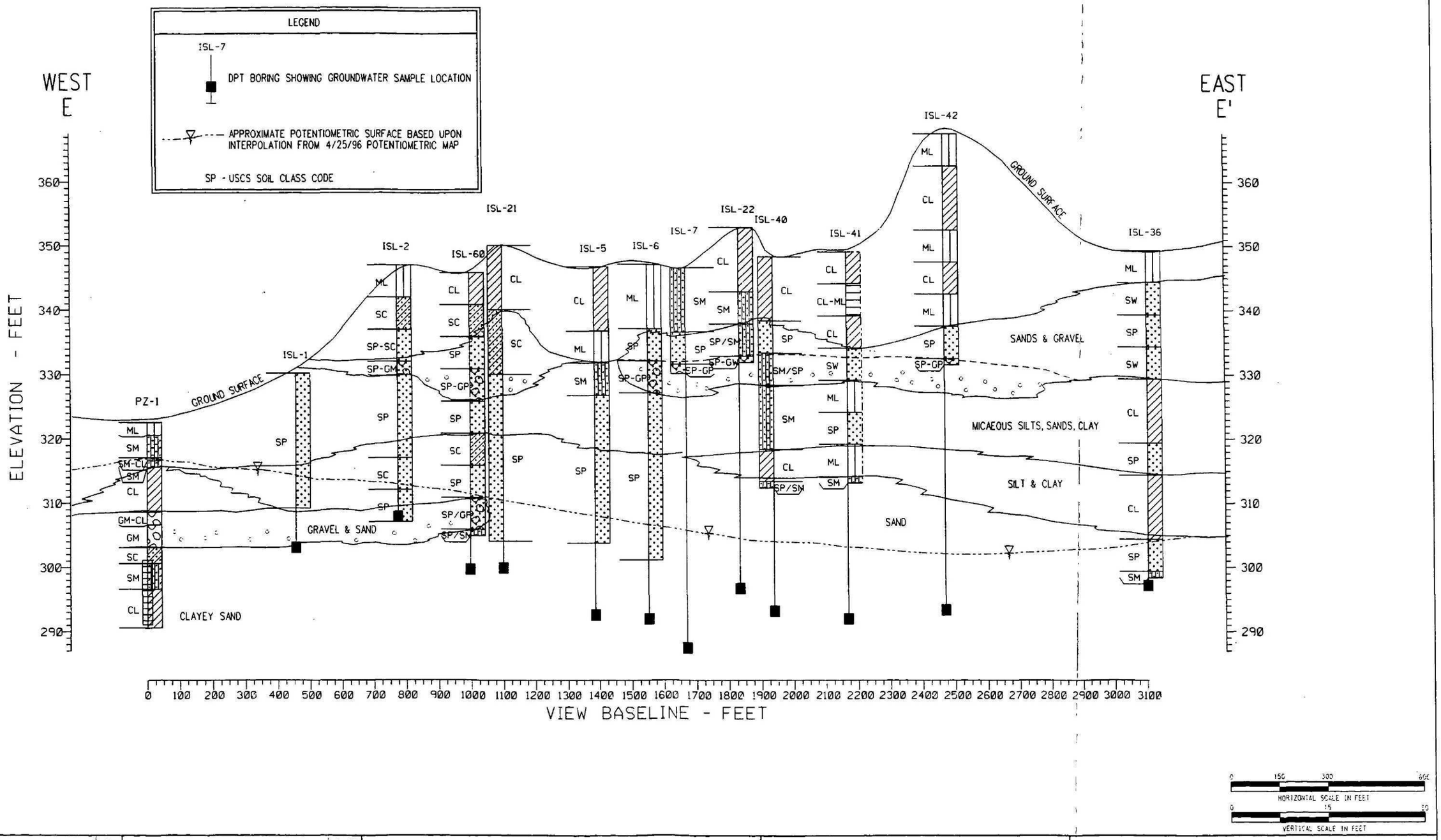
0 15 30
VERTICAL SCALE IN FEET

NO.	DATE	REVISIONS	BY

RUST PROJECT	33941000	DATE
DESIGNED BY	L.WILLIAMS	7/96
DRAWN BY	M.PEARCE	7/96
CHECKED BY		
FILE NO.	33941058	

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 2-5
CROSS SECTION D-D'
ALLIED INDUSTRIAL PARK
MACON, GEORGIA



NO.	DATE	REVISIONS	BY

RUST PROJECT	33941000		DATE
DESIGNED BY	L.WILLIAMS		7/96
DRAWN BY	M.PEARCE		7/96
CHECKED BY			
FILE NO.	33941069		

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 2-6
CROSS SECTION E-E'
ALLIED INDUSTRIAL PARK
MACON, GEORGIA

WEST
F

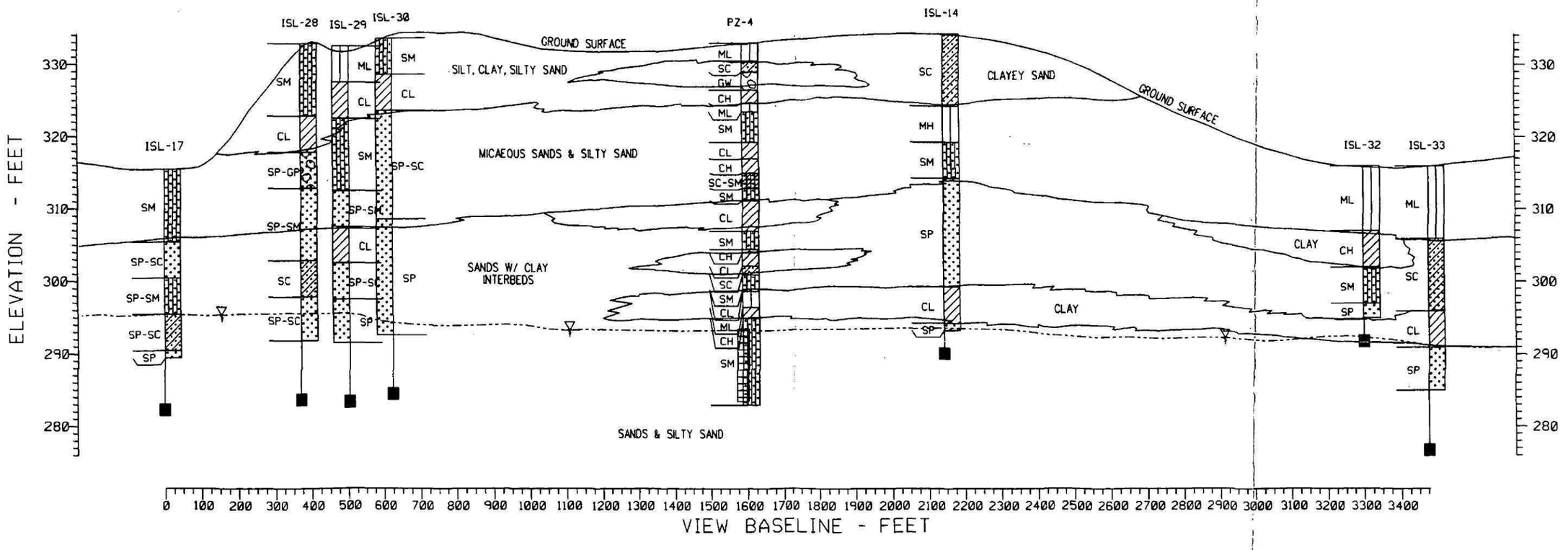
EAST
F'

LEGEND

ISL-7 — DPT BORING SHOWING GROUNDWATER SAMPLE LOCATION

APPROXIMATE POTENTIOMETRIC SURFACE BASED UPON INTERPOLATION FROM 4/25/96 POTENTIOMETRIC MAP

SP - USCS SOIL CLASS CODE



0 150 300 600
HORIZONTAL SCALE IN FEET

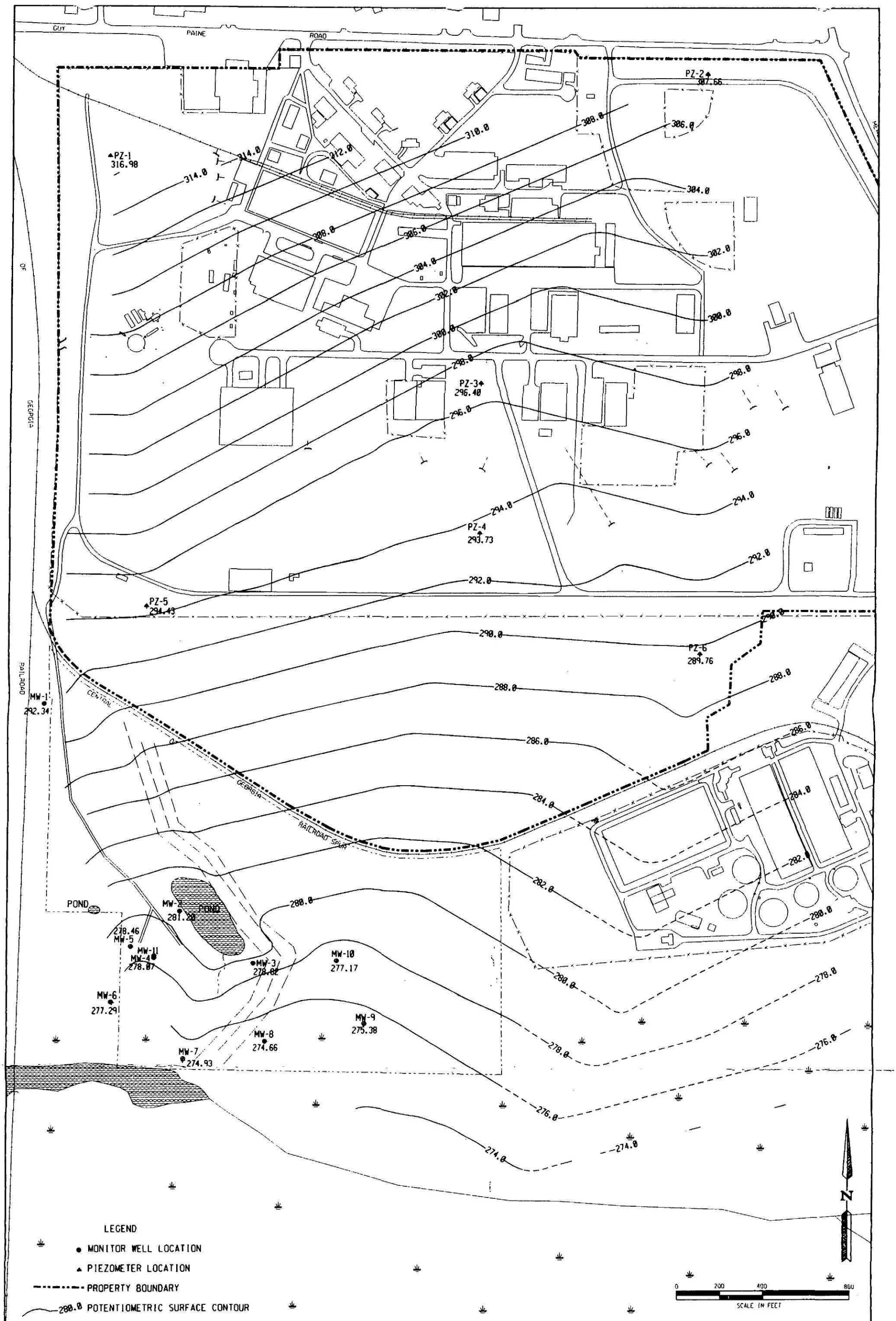
0 15 30
VERTICAL SCALE IN FEET

NO.	DATE	REVISIONS	BY

RUST PROJECT	33941.000	DATE
DESIGNED BY	L.WILLIAMS	7/96
DRAWN BY	M.PEARCE	7/96
CHECKED BY		
FILE NO.	33941090	

RUST ENVIRONMENT & INFRASTRUCTURE

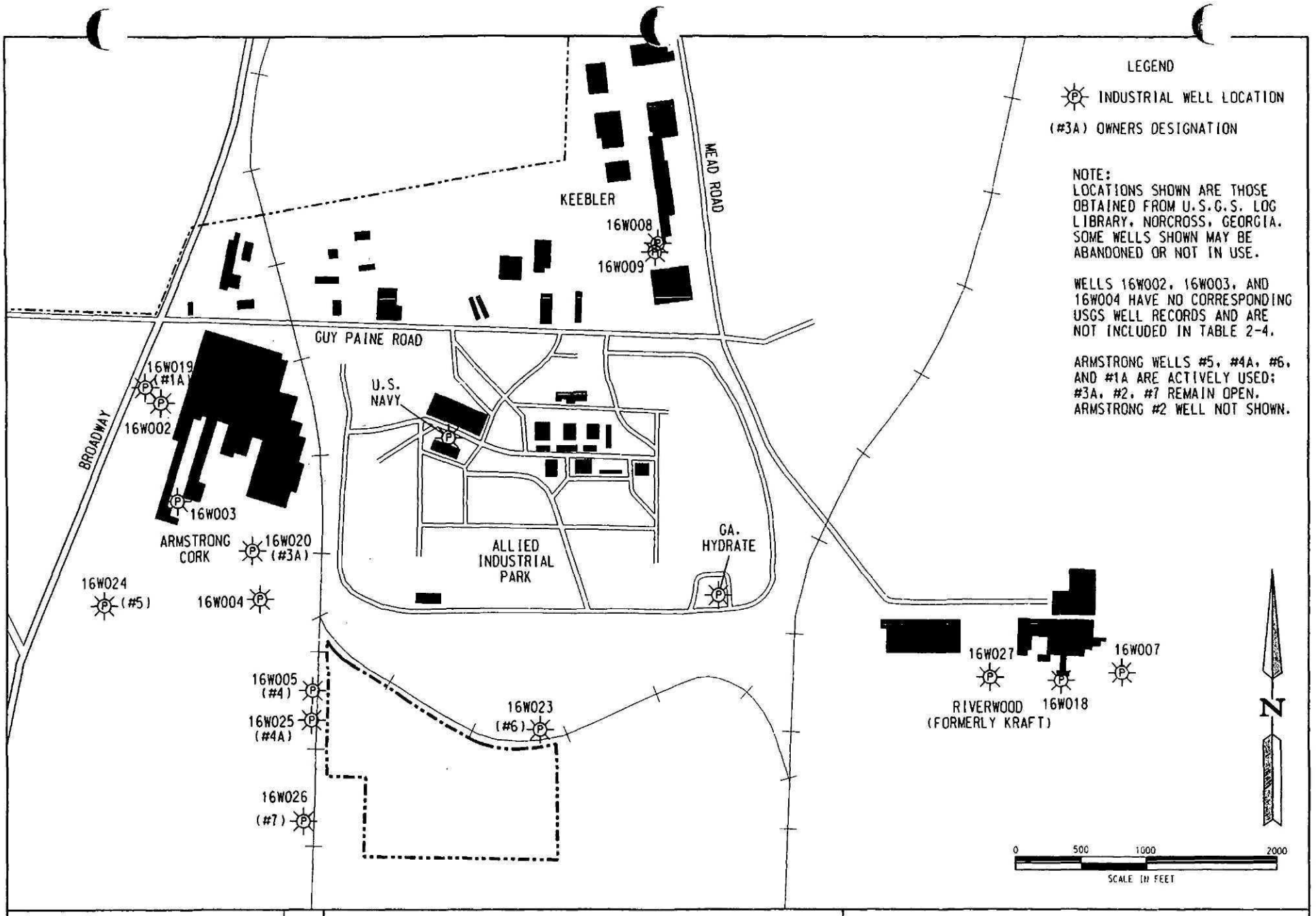
FIGURE 2-7
CROSS SECTION F-F'
ALLIED INDUSTRIAL PARK
MACON, GEORGIA



RUST PROJECT	33941000	DATE
DESIGNED BY	L.WILLIAMS	6/96
DRAWN BY	M PEARCE	6/96
CHECKED BY		
FILE NAME	33941065	

RUST ENVIRONMENT & INFRASTRUCTURE
ATLANTA, GEORGIA

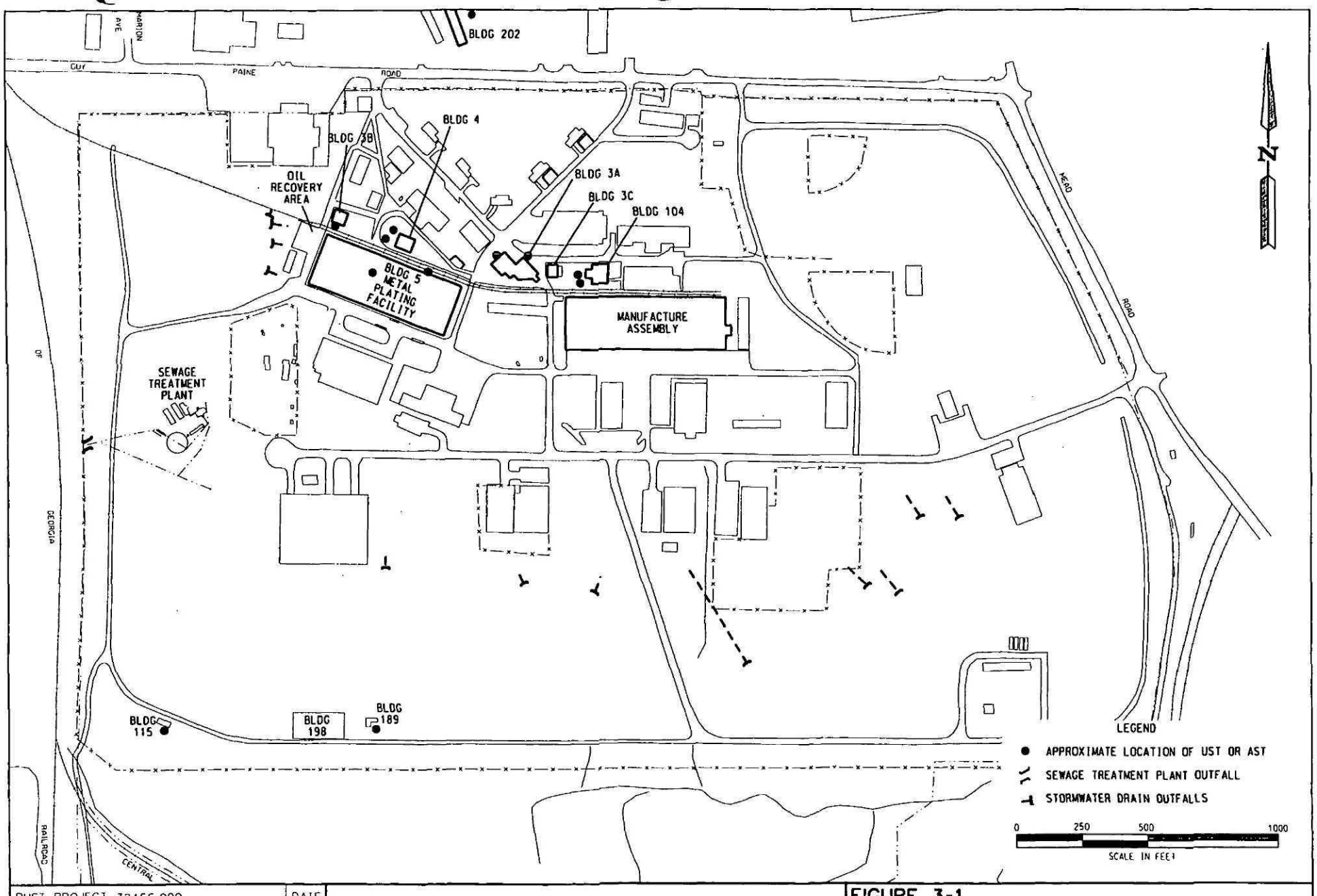
FIGURE 2-8
POTENTIOMETRIC SURFACE MAP
ALLIED INDUSTRIAL PARK & FORMER MNOP LANDFILL
MACON, GEORGIA



RUST PROJECT	33941.000	DATE	
DESIGNED BY	C. ADAMS	7/96	
DRAWN BY	M.PEARCE	7/96	
CHECKED BY			
FILE NAME	33941100		

RUST ENVIRONMENT & INFRASTRUCTURE

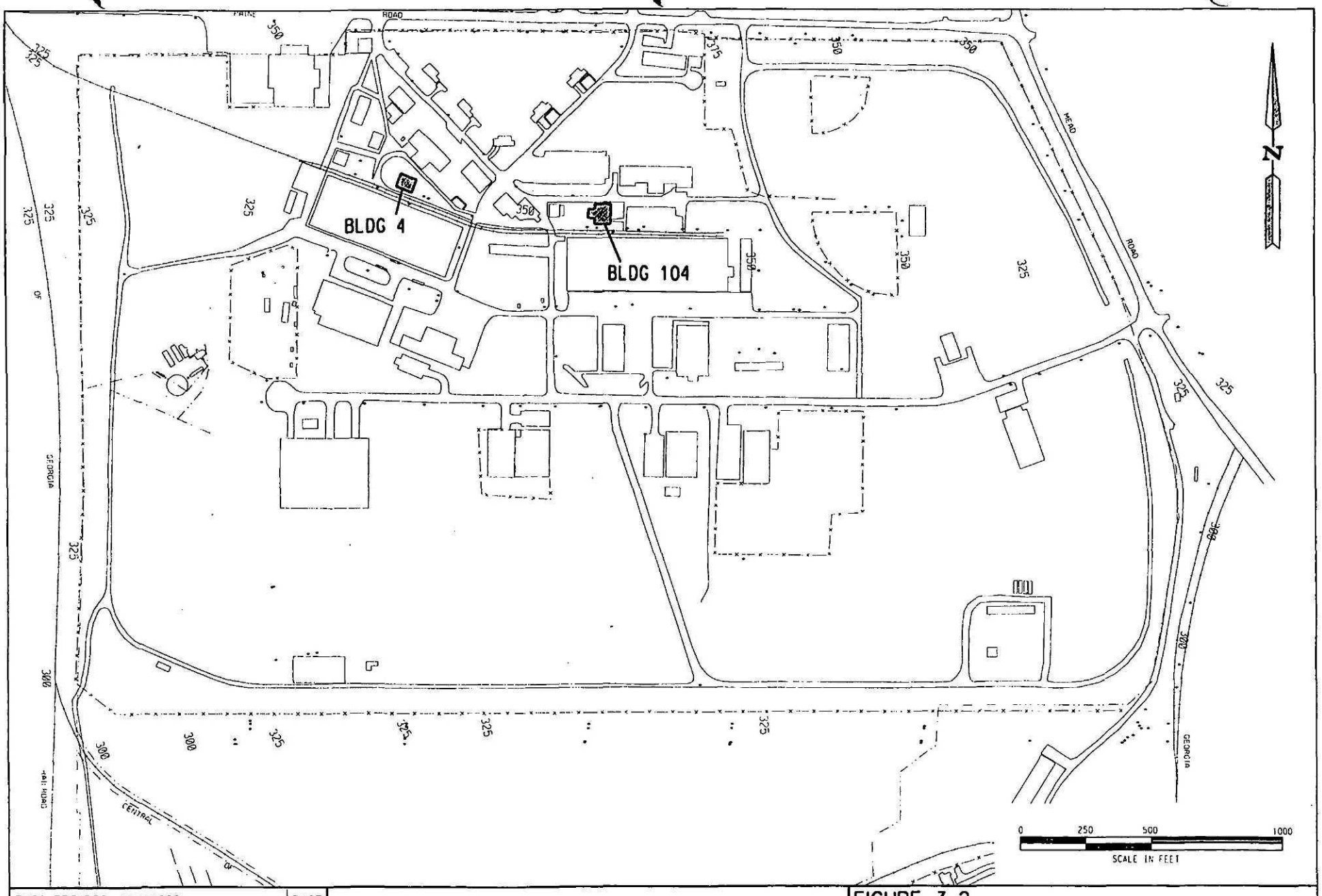
FIGURE 2-9
INDUSTRIAL WELL LOCATION MAP
ALLIED INDUSTRIAL PARK
MACON, GEORGIA



RUST PROJECT	32455.000	DATE
DESIGNED BY	B.HADDEN	7/96
DRAWN BY	M.PEARCE	7/96
CHECKED BY		
FILE NAME	33941099	

RUST ENVIRONMENT & INFRASTRUCTURE

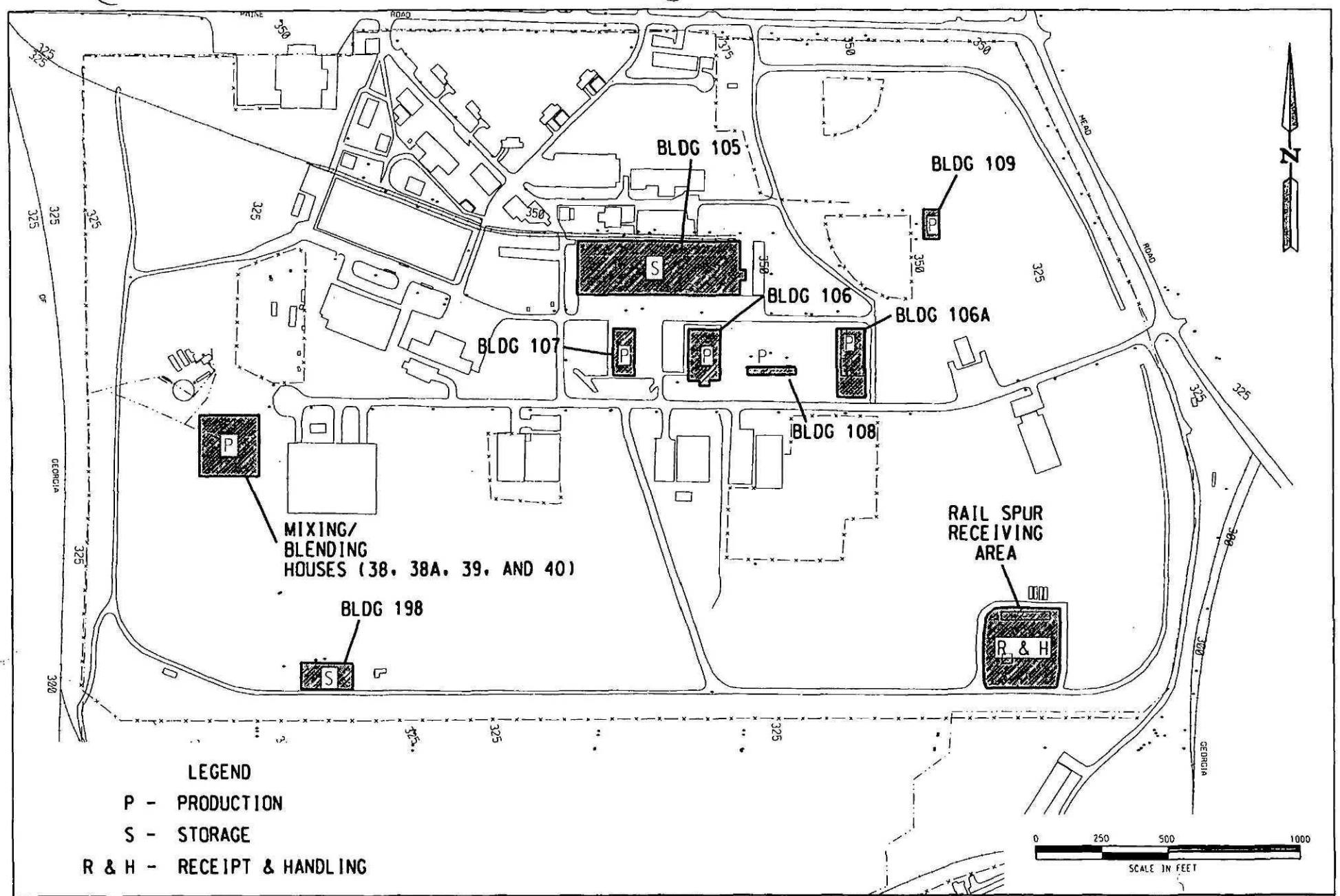
FIGURE 3-1
POTENTIAL SOURCE AREAS
PLANT OPERATIONS AREA .
FORMER MACON NAVAL ORDNANCE PLANT
MACON, GEORGIA



RUST PROJECT	33941.000	DATE
DESIGNED BY	B.HADDEN	7/96
DRAWN BY	V.PEARCE	7/96
CHECKED BY		
FILE NAME	33941095	

RUST ENVIRONMENT & INFRASTRUCTURE

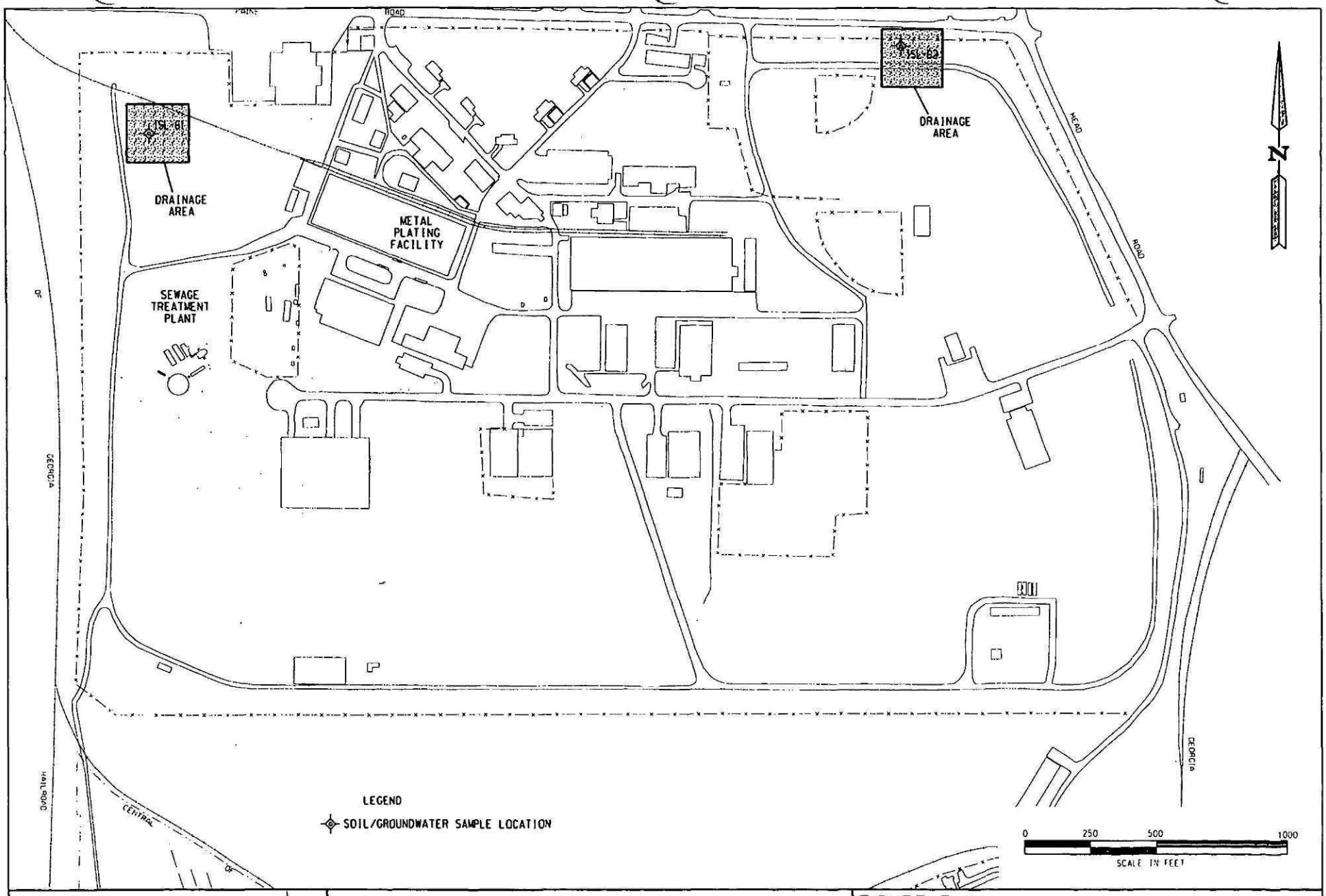
FIGURE 3-2
POTENTIAL SOURCE AREAS
ELECTRIC TRANSFORMER LOCATIONS
FORMER MACON NAVAL ORDNANCE PLANT
MACON, GEORGIA



RUST PROJECT	33941.000	DATE
DESIGNED BY	B.HADDEN	7/96
DRAWN BY	M.PEARCE	7/96
CHECKED BY		
FILE NAME	33941094	

RUST ENVIRONMENT & INFRASTRUCTURE

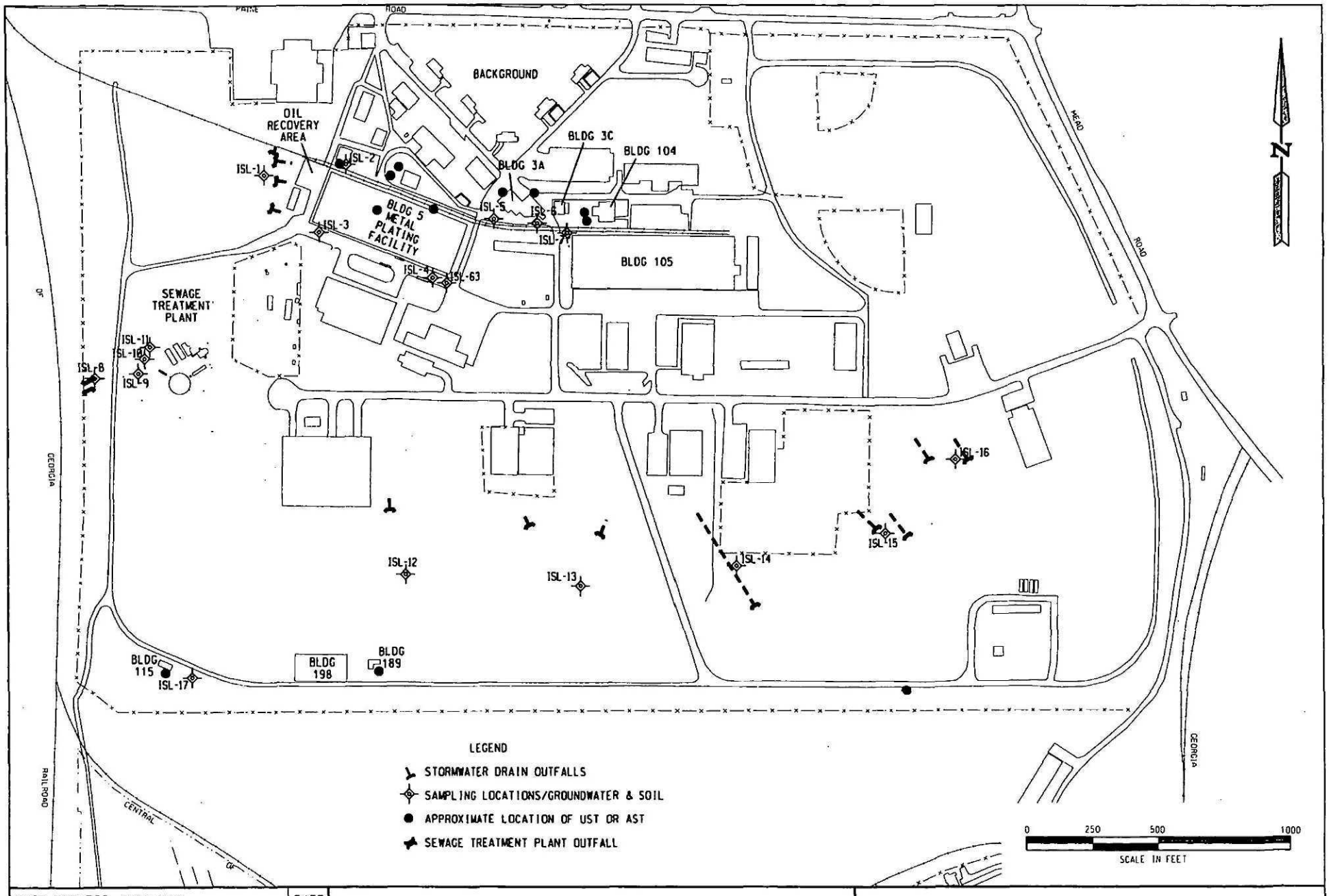
FIGURE 3-3
POTENTIAL SOURCE AREAS
EXPLOSIVES HANDLING & STORAGE AREAS
FORMER MACON NAVAL ORDNANCE PLANT
MACON, GEORGIA



RUST PROJECT 33941.000	DATE
DESIGNED BY D.WANDLING	7/96
DRAWN BY M.PEARCE	7/96
CHECKED BY	
FILE NAME 33941098	

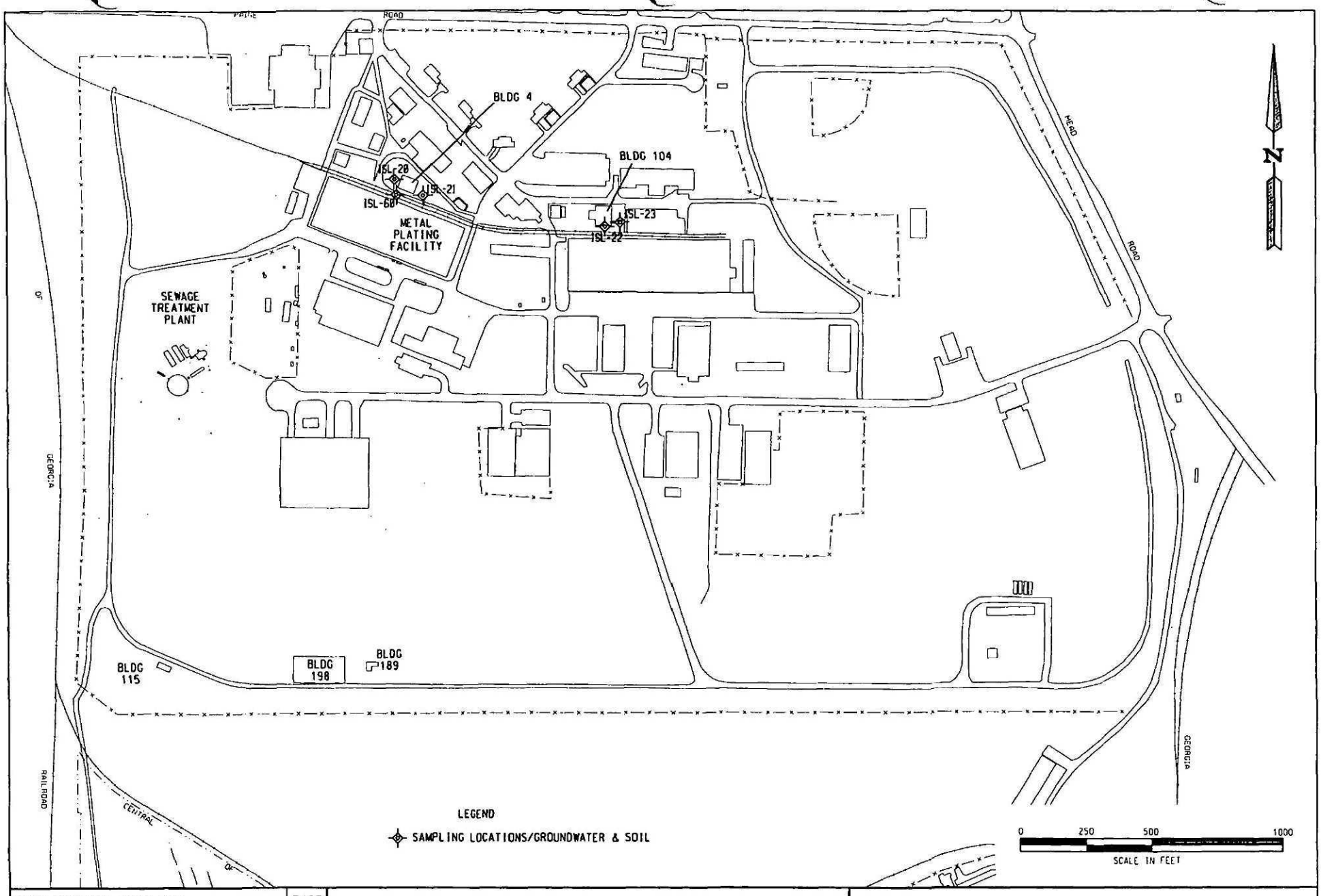
RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 3-4
POTENTIAL SOURCE AREAS
OFF-SITE SOURCE SAMPLING
ALLIED INDUSTRIAL PARK
MACON, GEORGIA



RUST PROJECT 33941.000	DATE	RUST ENVIRONMENT & INFRASTRUCTURE
DESIGNED BY D.WANDLING	6/96	
DRAWN BY M.PEARCE	6/96	
CHECKED BY		
FILE NAME 33941072		

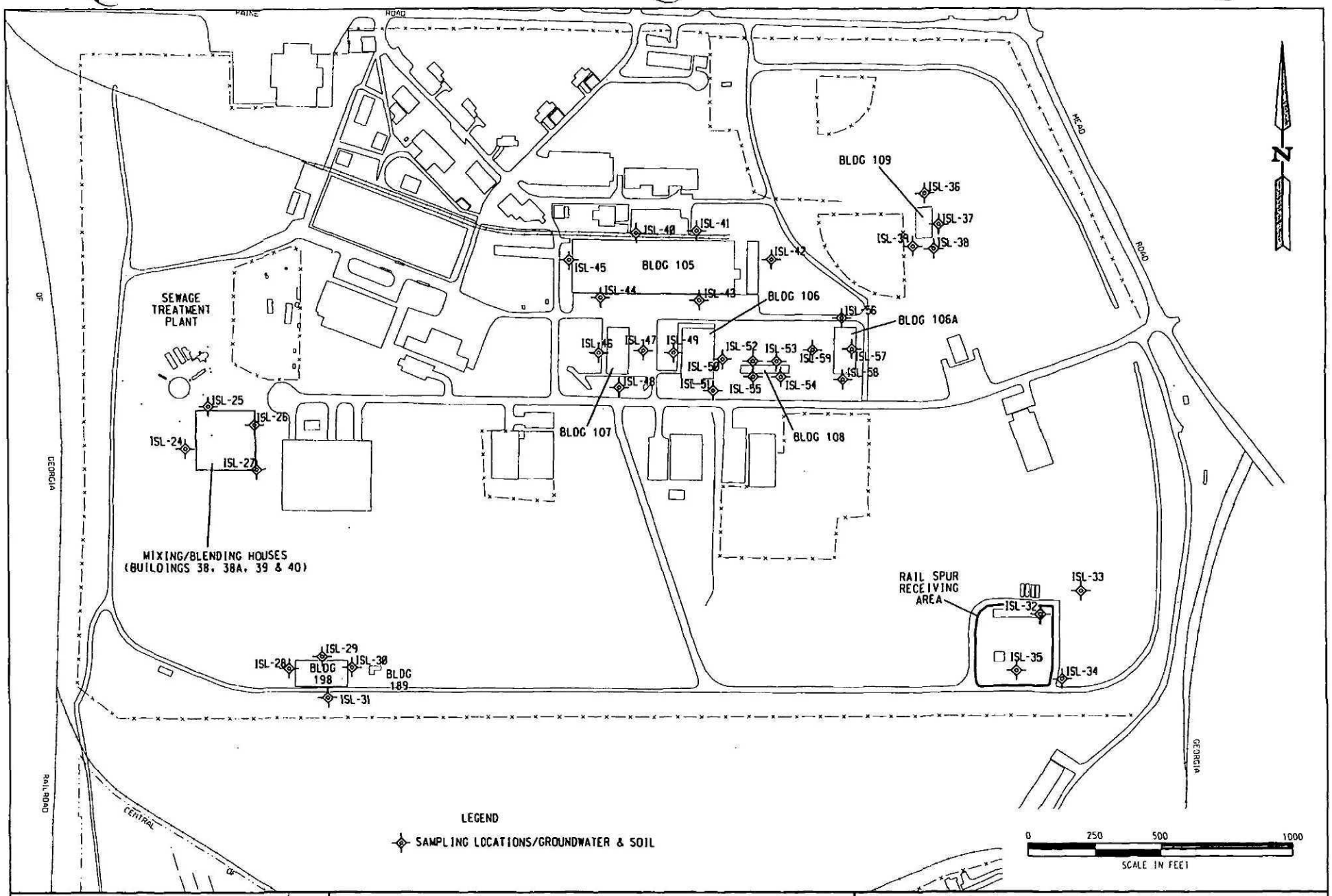
FIGURE 4-1
PLANT OPERATIONS SAMPLING LOCATIONS
ALLIED INDUSTRIAL PARK
MACON, GEORGIA



RUST PROJECT 33941.000	DATE
DESIGNED BY D.WANDLING	6/96
DRAWN BY M.PEARCE	6/96
CHECKED BY	
FILE NAME 33941073	

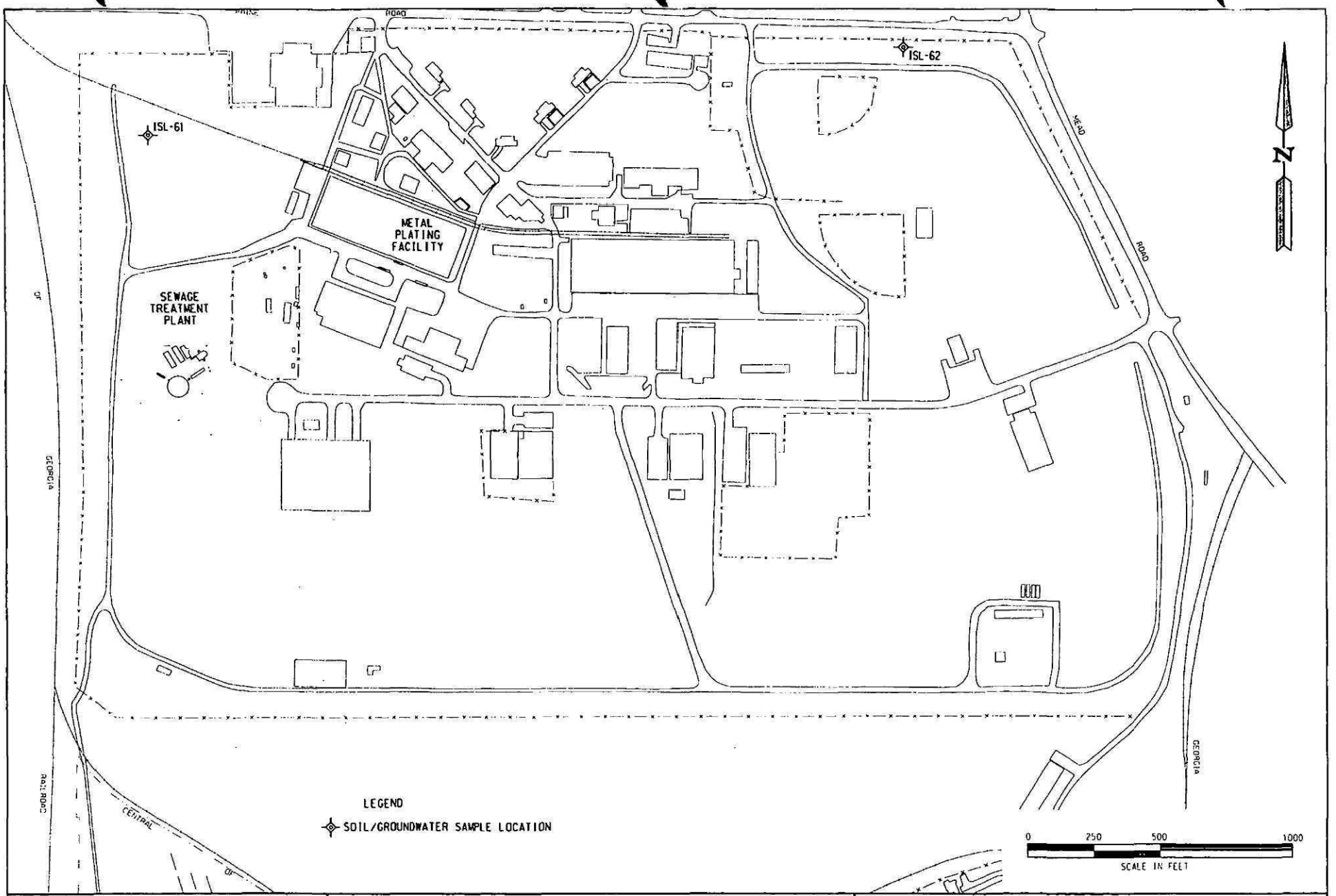
RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 4-2
PCB SAMPLING LOCATIONS
ALLIED INDUSTRIAL PARK
MACON, GEORGIA



RUST PROJECT 33941.000	DATE	RUST ENVIRONMENT & INFRASTRUCTURE
DESIGNED BY D.WANDLING	6/96	
DRAWN BY M.PEARCE	6/96	
CHECKED BY		
FILE NAME 33941074		

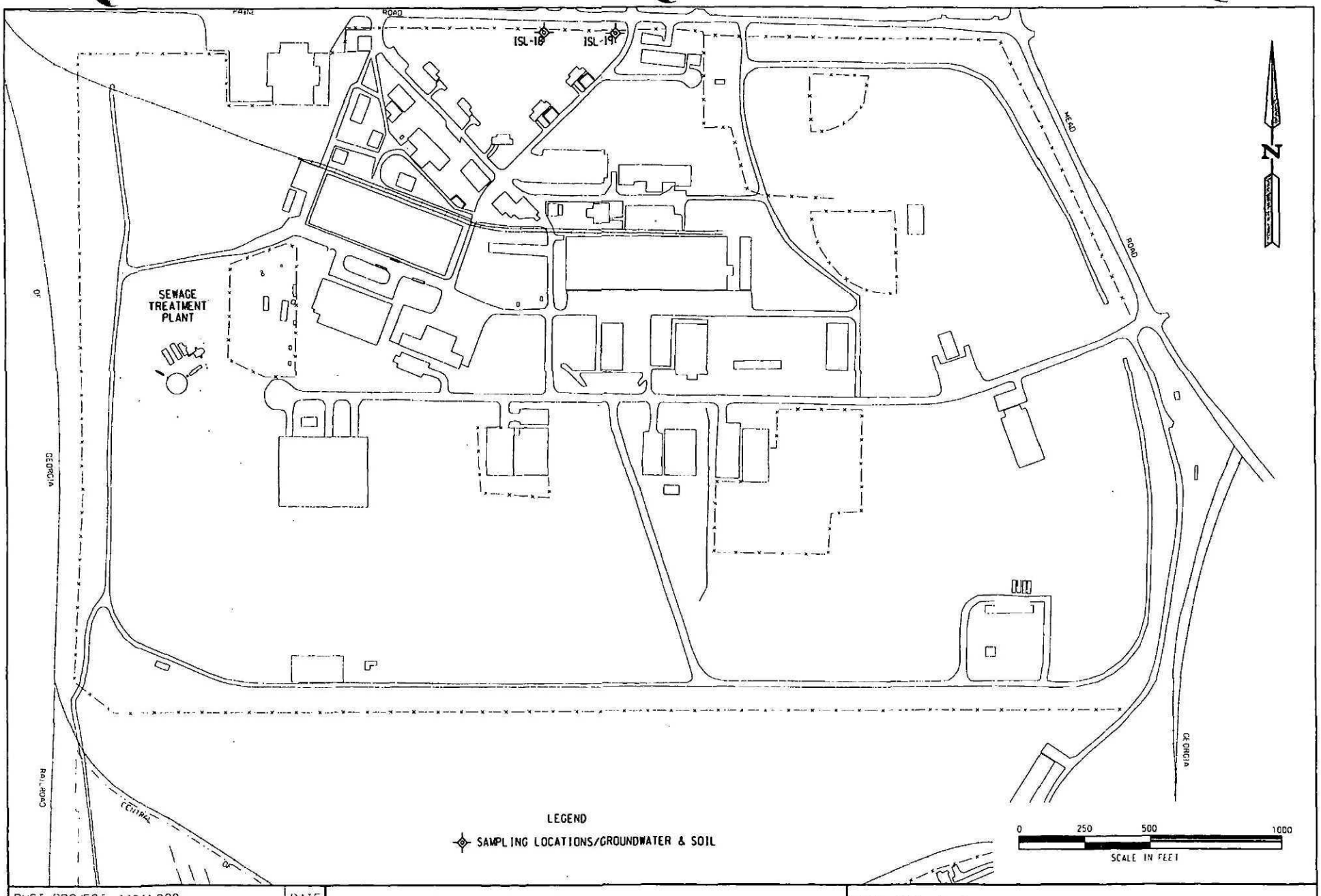
FIGURE 4-3
GROUNDWATER/SOIL SAMPLING LOCATIONS
EXPLOSIVES HANDLING/STORAGE AREA
ALLIED INDUSTRIAL PARK
MACON, GEORGIA



RUST PROJECT	33941.000	DATE
DESIGNED BY	D.WANDLING	6/96
DRAWN BY	M.PEARCE	6/96
CHECKED BY		
FILE NAME	33941075	

RUST ENVIRONMENT & INFRASTRUCTURE

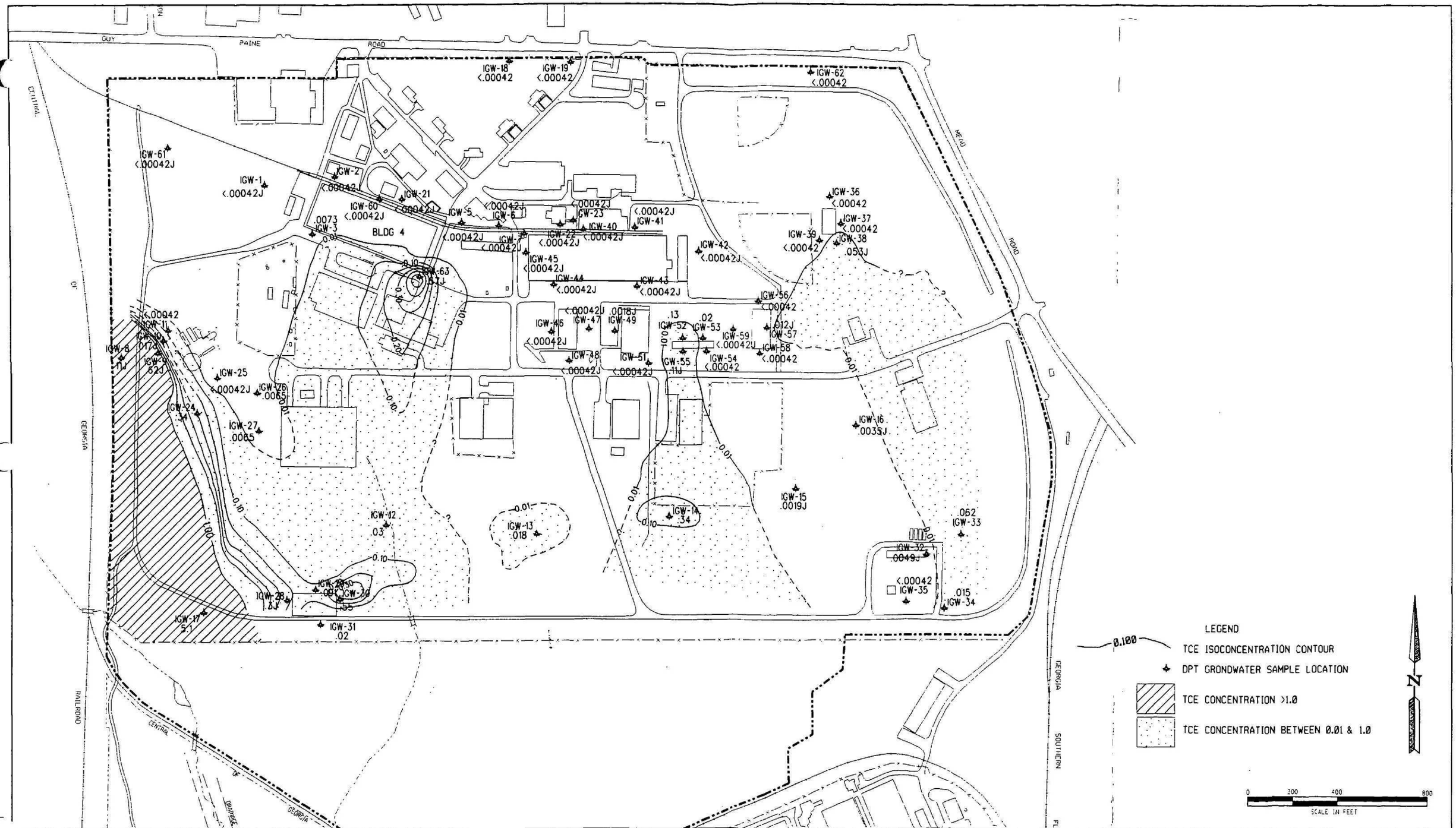
FIGURE 4-4
OFF-SITE SOURCE SAMPLING
ALLIED INDUSTRIAL PARK
MACON, GEORGIA



RUST PROJECT	33941.000	DATE
DESIGNED BY	D.WANDLING	7/96
DRAWN BY	M.PEARCE	7/96
CHECKED BY		
FILE NAME	33941097	

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 4-5
BACKGROUND SAMPLE LOCATIONS
ALLIED INDUSTRIAL PARK
MACON, GEORGIA



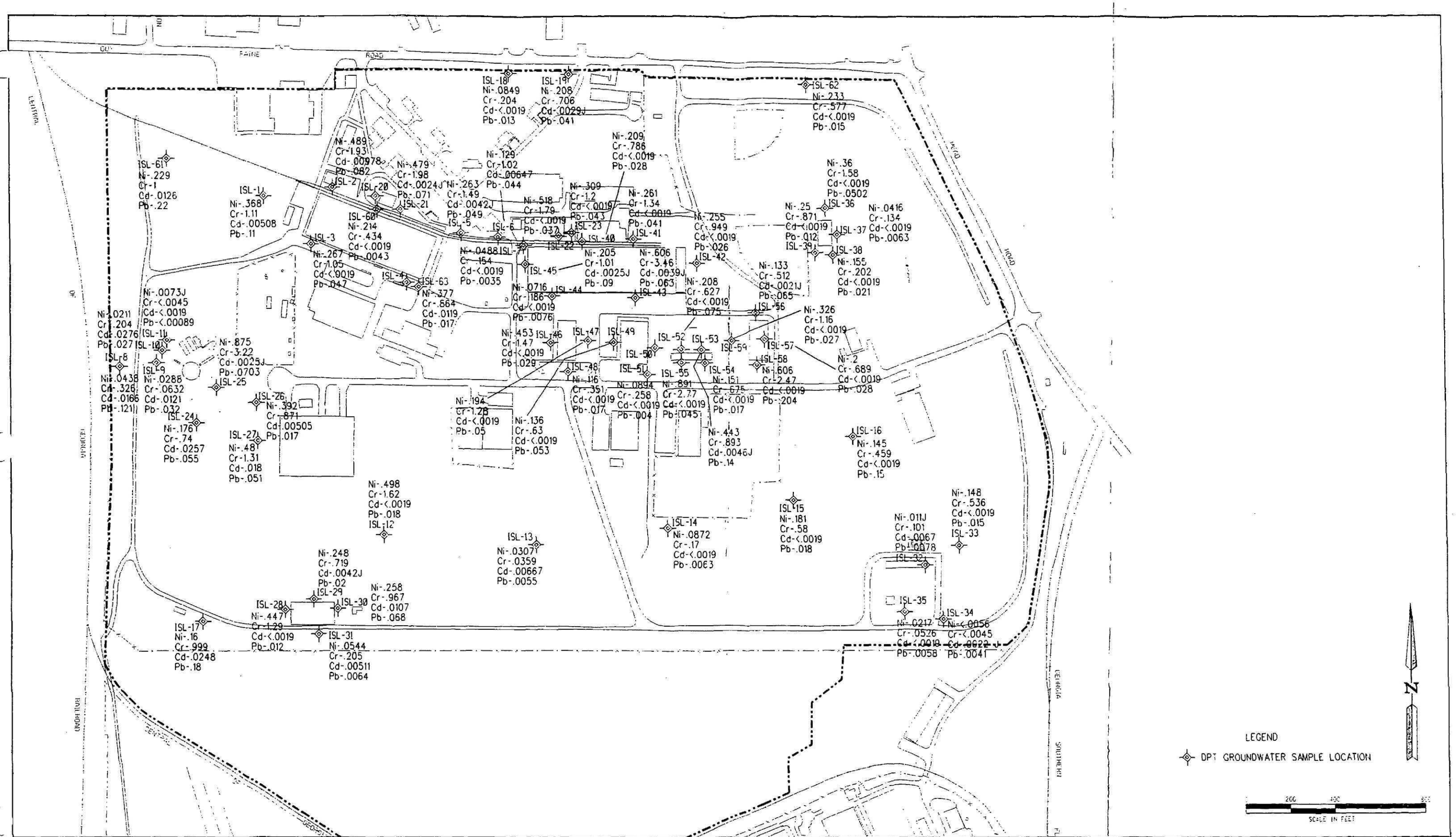
NO.	DATE	REVISIONS	BY

RUST PROJECT	33941.000	DATE
DESIGNED BY	L WILLIAMS	6/96
DRAWN BY	M.PEARCE	6/96
CHECKED BY		
FILE NO.	33941078	

RUST ENVIRONMENT & INFRASTRUCTURE

NOTES:
1 - ALL VALUES IN mg/L
2 - J - ESTIMATED VALUE

FIGURE 5-1
ANALYTICAL RESULTS FOR TCE IN GROUNDWATER
ALLIED INDUSTRIAL PARK
MACON, GEORGIA



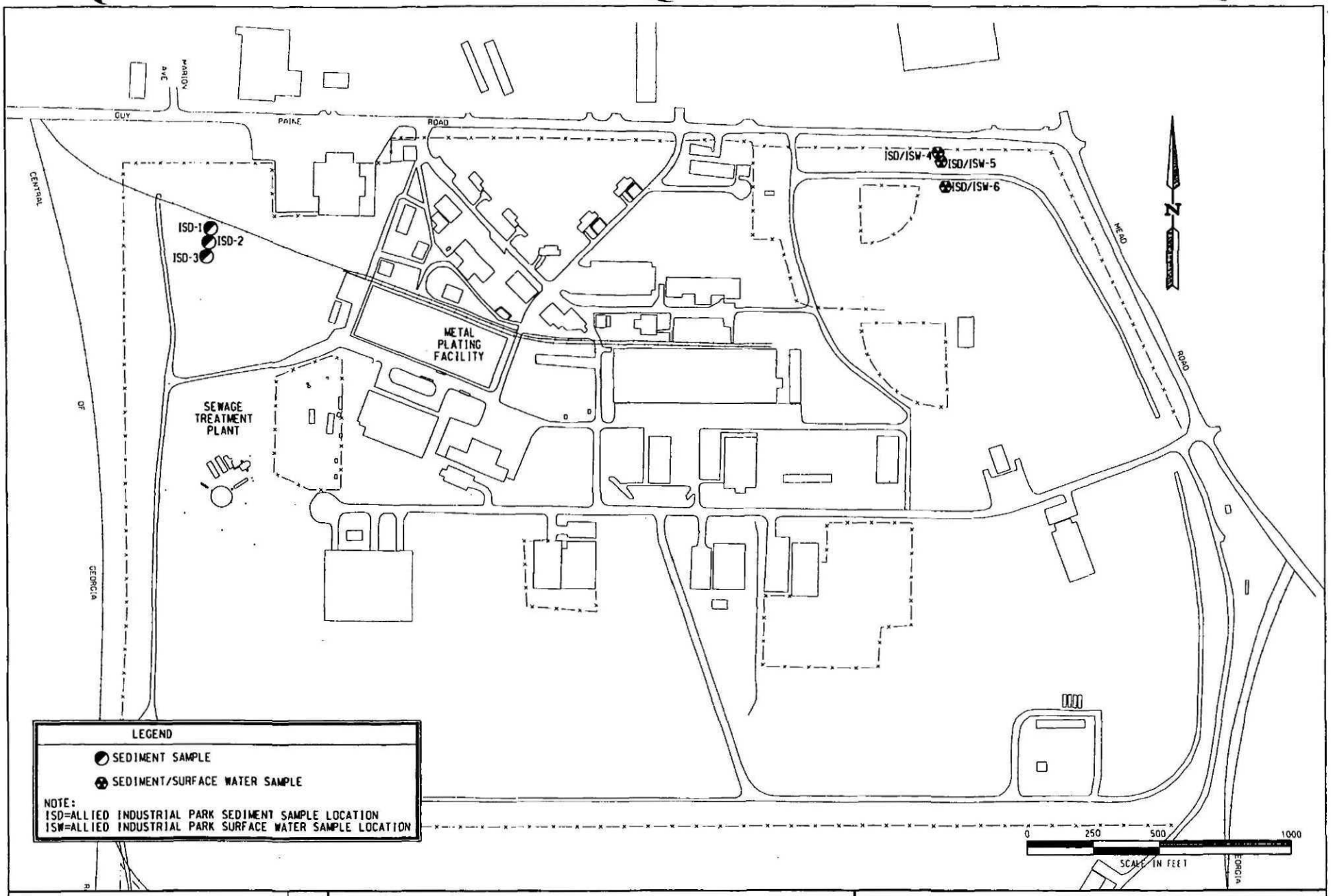
NO.	DATE	REVISIONS	BY

PLST PROJECT	33941.000	DATE
DESIGNED BY	L.WILLIAMS	6/96
DRAWN BY	M.PEARCE	6/96
CHECKED BY		
FILE NO.	33941078	

RUST ENVIRONMENT & INFRASTRUCTURE

NOTES:
1 - ALL VALUES IN mg/L
2 - J - ESTIMATED VALUE

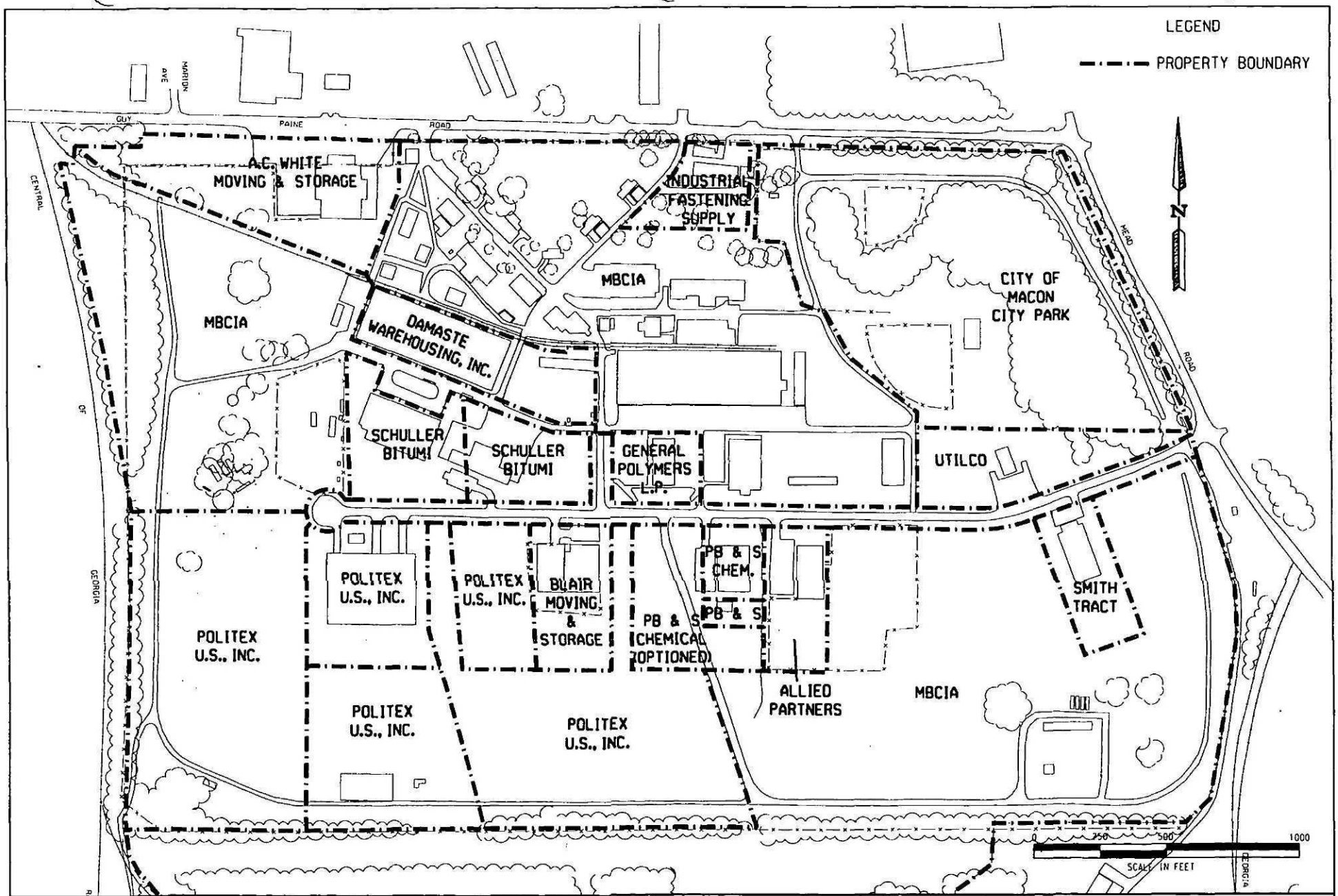
FIGURE 5-2
ANALYTICAL RESULTS FOR METALS IN GROUNDWATER
ALLIED INDUSTRIAL PARK
MACON, GEORGIA



RUST PROJECT	33941.000	DATE
DESIGNED BY	D.WANDLING	5/96
DRAWN BY	M.PEARCE	5/96
CHECKED BY		
FILE NAME	33941061	

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 6-1
SURFACE WATER & SEDIMENT SAMPLE LOCATIONS
ALLIED INDUSTRIAL PARK
MACON, GEORGIA



RUST PROJECT	33941.000	DATE
DESIGNED BY	B.HADDEN	5/96
DRAWN BY	M.PEARCE	5/96
CHECKED BY		
FILE NAME	33941055	

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 8-1
ALLIED INDUSTRIAL PARK
SITE PROPERTY DISPOSITION
FORMER MACON NAVAL ORDNANCE PLANT
MACON, GEORGIA

Table 1-1
Summary of Previous Analytical Data - Allied Industrial Park
Hazardous Site Response Act Investigation
Former Macon Naval Ordnance Plant
Macon, Georgia
Rust Project No. 33941.000

Parameter	Location									
	Beaver Engineering (soil)				ESE, Inc. (soil)		WEGS (groundwater)			
	NW Quad (mg/kg)	NE Quad (mg/kg)	SW Quad (mg/kg)	SE Quad (mg/kg)	SD-2 (mg/kg)	SD-2 Dup (mg/kg)	MW-1 (ppm)	MW-2 (ppm)	MW-3 (ppm)	MW-4 (ppm)
INORGANICS										
Aluminum	NA	NA	NA	NA	BDL	BDL	179	65.1	737	62.5
Arsenic	10.7	8.89	6.93	6.85	1.87	1.84	BDL	BDL	BDL	BDL
Barium	17.2	16.5	32.7	18.6	30.4	27	0.65	0.18	1.46	0.24
Cadmium	NA	NA	NA	NA	0.657	0.766	BDL	BDL	BDL	BDL
Chromium	13.6	14.4	9.61	13.7	12.9	13.6	7.18	0.6	0.85	0.09
Iron	NA	NA	NA	NA	BDL	BDL	106	56.7	104	47.2
Lead	9.1	9.33	12.8	9.53	22.6	26.9	0.31	BDL	0.82	BDL
Manganese	NA	NA	NA	NA	BDL	BDL	1.31	0.38	3.34	0.55
Mercury	0.09	0.08	0.2	0.07	BDL	BDL	BDL	BDL	BDL	BDL
Selenium	0.63	0.47	0.44	0.41	BDL	BDL	BDL	BDL	BDL	BDL
Silver	BDL	0.4	0.53	BDL	BDL	BDL	BDL	BDL	BDL	BDL
ORGANICS										
bis(2-Ethylhexyl)phthalate	0.6	BDL	<0.5	1.8	BDL	BDL	BDL	BDL	NA	NA
Chloroform	BDL	0.035	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Methylene Chloride	0.2	0.1	BDL	1.17	BDL	BDL	BDL	BDL	BDL	BDL
Pentaerythritoltetranitrate	NA	NA	NA	NA	4.92	6.1	NA	NA	NA	NA
Total Petroleum Hydrocarbons	NA	NA	NA	NA	12.6	12.2	NA	NA	NA	NA
Trichloroethene	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.022	BDL	0.062

NA = Not Analyzed
BDL = Below Detection Limits

Table 2-1
Well Construction Summary
Macon Naval Ordnance Plant
Macon, Georgia
Rust Project No. 33941.000

Well No.	Northing Coordinate	Easting Coordinate	Ground Elev. ft-msl	Top of Casing Elevation ft-msl	Top Screen ft-bls	Bottom Screen ft-bls	Bottom Well ft-bls	Top Seal ft-bls	Bottom Seal ft-bls	Well Material	Date Installed
MW-1	1008453.52	658704.01	306.4	308.87	24.2	34.2	34.2	17.5	21.0	2"-PVC	9/12/89
MW-2	1007495.06	659335.07	283.9	286.06	12.1	22.1	22.1	2.0	4.0	2"-PVC	9/13/89
MW-3	1007249.66	659675.89	280.8	283.04	13.4	23.4	23.4	8.1	10.8	2"-PVC	9/14/89
MW-4	1007276.37	659217.75	278.9	281.12	5.4	15.4	15.4	1.4	3.7	2"-PVC	9/14/89
MW-5	1007329.30	659110.10	278.5	280.69	6.0	16.0	16.0	2.2	4.4	2"-PVC	9/15/89
MW-6	1007074.45	659019.61	276.8	279.3	4.8	14.8	15.3	0.5	1.5	2"-PVC	1/29/96
MW-7	1006814.08	659355.04	276.9	278.2	3.8	8.8	9.1	0.0	3.8	2"-PVC	2/6/96
MW-8	1006893.75	659730.93	275.4	277.87	2.0	7.0	7.3	0.0	2.0	2"-PVC	2/8/96
MW-9	1006972.18	660189.45	275.7	278.20	2.7	7.7	8.0	0.0	2.7	2"-PVC	2/7/96
MW-10	1007259.72	660061.84	277.4	279.92	3.0	8.0	8.3	0.0	3.0	2"-PVC	2/6/96
MW-11	1007284.82	659218.67	279.0	281.52	40.0	50.0	50.5	28.6	32.6	2"-PVC	1/26/96
PZ-1	1010971.39	658986.27	322.6	325.17	21.0	31.0	31.5	11.0	17.0	2"-PVC	10/11/94
PZ-2	1011352.85	661746.59	351.0	350.70	39.5	49.5	50.0	31.0	37.0	2"-PVC	10/6/94
PZ-3	1009930.01	660709.40	343.8	346.12	44.5	54.5	55.0	36.0	42.0	2"-PVC	10/13/94
PZ-4	1009238.56	660710.80	333.0	335.11	39.5	49.5	50.0	32.0	37.0	2"-PVC	10/5/94
PZ-5	1008907.39	659173.21	308.2	310.48	14.5	24.5	25.0	5.5	10.5	2"-PVC	10/6/94
PZ-6	1008681.53	661729.58	304.9	307.21	19.5	29.5	30.0	10.7	16.0	2"-PVC	10/7/94

ft-msl = feet mean sea level
ft-bls = feet below land surface

Table 2-2
Groundwater Elevation Summary
Macon Naval Ordnance Plant
Macon, Georgia
Rust Project No. 33941.000

Well No.	Northing Coordinate	Easting Coordinate	Ground Surface Elevation ft. msl	Top of Casing Elevation ft. msl	Depth to Water ft. TOC	Water Elevation ft. msl
MW-1	1008453.52	658704.01	306.4	308.87	16.53	292.34
MW-2	1007495.06	659335.07	283.9	286.06	4.86	281.20
MW-3	1007249.66	659675.89	280.8	283.04	4.22	278.82
MW-4	1007276.37	659217.75	278.9	281.12	3.05	278.07
MW-5	1007329.30	659110.10	278.5	280.69	2.23	278.46
MW-6	1007074.45	659019.61	276.8	279.3	1.96	277.29
MW-7	1006814.08	659355.04	276.9	278.2	3.25	274.93
MW-8	1006893.75	659730.93	275.4	277.90	3.24	274.66
MW-9	1006972.18	660189.45	275.7	278.20	2.82	275.38
MW-10	1007259.72	660061.84	277.4	279.90	2.73	277.17
MW-11	1007284.82	659218.67	279.0	281.50	7.15	274.35
PZ-1	1010971.39	658986.27	322.6	325.17	8.19	316.98
PZ-2	1011352.85	661746.59	351.0	350.70	43.04	307.66
PZ-3	1009930.01	660709.40	343.8	346.12	49.72	296.40
PZ-4	1009238.56	660710.80	333.0	335.11	41.38	293.73
PZ-5	1008907.39	659173.21	308.2	310.48	16.05	294.43
PZ-6	1008681.53	661729.58	304.9	307.21	17.45	289.76

ft. msl = feet mean sea level
ft. bls = feet below land surface
ft. TOC = feet below top of casing
Note: all measurements taken 4/25/96
MW-1 through MW-11 at former MNOP Landfill
PZ-1 through PZ-6 at AIP

Table 2-3
Hydraulic Conductivity Summary
Former Macon Naval Ordnance Plant
Rust Project 33941.000

Well No.	Type Test	Hydraulic Conductivity		
		(cm/sec)	(ft/min)	(ft/day)
PZ-1	Rising Head	5.6E-04	1.1E-03	1.59
PZ-2	Rising Head	2.4E-04	4.7E-04	0.67
PZ-3	Rising Head	9.0E-04	1.8E-03	2.54
PZ-4	Rising Head	1.3E-03	2.6E-03	3.77
PZ-5	Rising Head	3.2E-03	6.3E-03	9.03
PZ-6	Rising Head	2.4E-04	4.7E-04	0.68

Reference: Final Project Action Plan, Former Macon Naval Ordnance Plant, Rust, 1994

Table 2-4
Summary of Well Constuction Details Obtained From USGS Records
Wells Located Near MNOP and AIP Sites
Rust Project No. 33941.000

USGS ID	Well ID	Company	Date Comp.	GS Elev.[1]	Total Depth	Screen 1	Screen 2	Screen 3	Screen 4	Screen 5	Yield	Spec Capacity	Use	Status
16W024	Armstrong #5	Armstrong Cork	11/23/64	320	243	100 to 105	133 to 153	168 to 173	228 to 243	N/A	465	4.1	Industrial Supply	Active
16W025	Armstrong #4A	Armstrong Cork	11/24/69	290	240	120 to 155	225 to 240	N/A	N/A	N/A	524	7.2	Industrial Supply	Active
16W026	Armstrong #7	Armstrong Cork	3/18/68	270	210	80 to 120	128 to 133	195 to 210	N/A	N/A	305	6.3	Industrial Supply	Active
16W020	Armstrong #3A	Armstrong Cork	5/20/64	320	256	128 to 148	155 to 160	186 to 191	230 to 235	251 to 256	360	2.8	Industrial Supply	Active
16W023	Armstrong #6	Armstrong Cork	10/5/66	303	260	140 to 160	240 to 260	N/A	N/A	N/A	510	7.1	Industrial Supply	Active
16W019	Armstrong #1A	Armstrong Cork	4/15/64	340	238	120 to 145	223 to 238	N/A	N/A	N/A	448	4.9	Industrial Supply	Active
16W005	Armstrong #4	Armstrong Cork	1/19/60	290	285	130 to 140	165 to 180	235 to 245	260 to 265	N/A	632	N/G	Industrial Supply	Abandoned
16W009	16W009	Keebler	10/9/89	N/G	300	150 to 165	175 to 195	250 to 265	280 to 290	N/A	270	11.25	Industrial Supply	Active
16W008	Keebler #1	Keebler	9/1/53	370	N/G	N/G	N/G	N/G	N/G	N/G	N/G	N/G	Industrial Supply	Abandoned (?)
16W018	Kraft #1	Riverwood	3/27/46	310	244	60 to 70	160 to 170	212 to 217	N/A	N/A	411	8.93	Industrial Supply	Active
16W007	Kraft #2	Riverwood	9/30/68	354	183	100 to 120	135 to 160	178 to 183	N/A	N/A	285	8.63	Industrial Supply	Active
16W027	Kraft #3	Riverwood	9/10/79	315	290	150 to 190	200 to 210	270 to 280	N/A	N/A	250	2.84	Industrial Supply	Active

1: Groundsurface elevations are approximate
N/G: Not Given
N/A: Not Applicable
All screen depths given below landsurface.
Specific Capacity in gallons per minute per foot drawdown
Yield in gallons per minute

Table 4-1
Soil Sampling and Analytical Requirements
Allied Industrial Park
Macon, Georgia
Rust Project No. 33941.000

Matrix	Field Samples	QC Samples	QA Samples	Total Samples	Analysis	Protocol	Analytical Procedures	Holding Time	Preservation Requirements	Sample (1) Containers
Soil from Plant Operations & Explosive Compounds Sites	107	9	9	125	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C	1-125 mL glass septa vial
	107	9	9	125	SVOC/PAH	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	1-4 oz glass
	107	9	9	125	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days, 28 days for mercury	Ice to 4 degrees C	1-4 oz glass
	107	9	9	125	Explosive Residues	SW-846	EPA 8330	14/40 days	Ice to 4 degrees C	1-4 oz glass
Soil from PCB Sites	9	2	2	13	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C	1-125 mL glass septa vial
	9	2	2	13	SVOC/PAH	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	1-4 oz glass
	9	2	2	13	Pesticides/ PCBs	SW-846	EPA 8080	14/40 days	Ice to 4 degrees C	1-4 oz glass
	9	2	2	13	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days, 28 days for mercury	Ice to 4 degrees C	1-4 oz glass
Soil Offsite Source from DPT near Drainage Ditches	3	0	0	3	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C	1-125 mL glass septa vial
	3	0	0	3	SVOC/PAH	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	1-4 oz glass
	3	0	0	3	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days, 28 days for mercury	Ice to 4 degrees C	1-4 oz glass
Soil Background	4	0	0		VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C	1-125 mL glass septa vial
	4	0	0		SVOC/PAH	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	1-4 oz glass
	4	0	0		Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days, 28 days for mercury	Ice to 4 degrees C	1-4 oz glass
	4	0	0		Explosive Residue	SW-846	EPA 8330	14/40 days	Ice to 4 degrees C	1-4 oz glass

(1) Per EM-200-1-3, Table I-1, 31 March 95 except soil sample container requirements which have been reduced per USACE approval.

Table 4-2
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-1 (1'-2')	ISL-1 (15'-16')	ISL-2 (1'-2')	ISL-2 (35'-36')	ISL-2-A (1'-2') DUP	ISL-3 (1'-2')
Inorganics							
antimony	mg/kg	< 2.4	< 2.5	< 2.5	< 2.4	< 2.5	3.9 J
beryllium	mg/kg	.05 J	.025 J	.27 J	< .017	.18 J	.11
cadmium	mg/kg	.23 J	< .2	.4 J	.22 J	.587	.42
chromium	mg/kg	7.26	3.86	14	1.66	18.5	18.3
copper	mg/kg	1.95	1.2	4.97	1.21	11.5	4.81
lead	mg/kg	2.34	1.03	11.5	1.19	13.7	8.28
mercury	mg/kg	< .027	< .028	.068 J	< .027	.12	.034 J
nickel	mg/kg	.77 J	.25 J	4.26	.34 J	4.74	3.61
selenium	mg/kg	.26 J	< .081	< .083	< .08	< .083	< .082
silver	mg/kg	< .21	< .21	< .22	< .21	< .22	< .22
thallium	mg/kg	< .084	< .087	< .36 J	< .085	< .37 J	< .3 J
zinc	mg/kg	< 3.27	< 2 J	11.9	< 1.5 J	21.7	10.8
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .0019 J	< .0019	< .002	< .0019 J	< .002 J	< .002 J
ethylbenzene	mg/kg	< .0008 J	< .00083	< .00084	< .00081 J	< .00085 J	< .00084 J
hexachlorobutadiene	mg/kg	< .0012 J	< .0012	< .0013	< .0012 J	< .0013 J	< .0012 J
m+p-xylene	mg/kg	< .0025 J	< .0026	< .0026	< .0025 J	< .0026 J	< .0026 J
naphthalene	mg/kg	< .0011 J	< .0012	< .0012	< .0011 J	< .0012 J	< .0012 J
o-xylene	mg/kg	< .0015 J	< .0016	< .0016	< .0015 J	< .0016 J	< .0016 J
tetrachloroethene	mg/kg	< .00052 J	< .00054	< .00055	< .00053 J	< .00055 J	< .00055 J
toluene	mg/kg	< .0009 J	< .00094	< .00095	< .00091 J	< .00095 J	< .00095 J
trans-1,2-dichloroethene	mg/kg	< .00058 J	< .0006	< .00061	< .00059 J	< .00062 J	< .00061 J
trichloroethene	mg/kg	< .00045 J	< .00047	.0051 J	< .00045 J	< .00047 J	.004 J
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .087	< .091	< .092	< .089	< .093	< .092
bis(2-ethylhexyl)phthalate	mg/kg	< .93	< .96	< .98	< .94	< .98	< .97
di-n-butyl phthalate	mg/kg	.34 J	< .17	< .17	< .16	.77	< .17
fluoranthene	mg/kg	< .16	< .17	< .17	< .16	< .17	< .17
phenanthrene	mg/kg	< .097	< .1	< .1	< .098	< .1	< .1
pyrene	mg/kg	< .14	< .14	< .15	< .14	< .15	< .15
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	< .024	< .024	< .024
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	< .057	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-3 (30'-31')	ISL-4 (1'-3')	ISL-4-A (1'-3') DUP	ISL-5 (1'-2')	ISL-5 (40'-41')	ISL-6 (1'-2')
Inorganics							
antimony	mg/kg	< 2.4	< 2.5	3.6 J	< 2.6	< 2.3	< 2.5
beryllium	mg/kg	< .017	.28 J	.24 J	.11 J	< .017	.097 J
cadmium	mg/kg	< .2	.48 J	.46 J	.903	< .19	.837
chromium	mg/kg	1.34	16.9	20.3	25.4	1.61	20.6
copper	mg/kg	< .8	5.58	5.86	7.78	< .77	5.78
lead	mg/kg	.445	7.3	7.61	6.92	.637	4.56
mercury	mg/kg	< .027	.09 J	.068 J	< .033	< .027	< .031
nickel	mg/kg	< .061	4.1	4.07	6.84	.44 J	1.6 J
selenium	mg/kg	< .08	.53 J	.38 J	.36 J	< .077	.679
silver	mg/kg	< .21	< .22	< .22	< .22	< .2	< .22
thallium	mg/kg	< .086	< .31 J	< .31 J	< .091	< .083	< .088
zinc	mg/kg	< 1 J	11.1	10	8.47	1.1 J	5.69
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .0019 J	< .002 J	< .002 J	< .002	< .0018	< .002
ethylbenzene	mg/kg	< .00081 J	< .00084 J	< .00085 J	< .00087	< .00078 J	< .00083 J
hexachlorobutadiene	mg/kg	< .0012 J	< .0012 J	< .0013 J	< .0013	< .0012	< .0012
m+p-xylene	mg/kg	< .0025 J	< .0026 J	< .0026 J	< .0027	< .0024 J	< .0026 J
naphthalene	mg/kg	< .0011 J	< .0012 J	< .0012 J	< .0012	< .0011	< .0012
o-xylene	mg/kg	< .0015 J	< .0016 J	< .0016 J	< .0016	< .0015	< .0016
tetrachloroethene	mg/kg	< .00053 J	.8 J	.2 J	< .00057	< .00051	< .00055
toluene	mg/kg	< .00092 J	< .00095 J	< .00096 J	< .00097	< .00088	< .00094
trans-1,2-dichloroethene	mg/kg	< .00059 J	< .00061 J	< .00062 J	< .00063	< .00057	< .00061
trichloroethene	mg/kg	< .00046 J	1.2 J	.37 J	< .00048	< .00044	< .00047
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .089	< .092	< .093	< .095	< .086	< .091
bis(2-ethylhexyl)phthalate	mg/kg	< .94	< .98	< .99	< 1	< .91	< .97
di-n-butyl phthalate	mg/kg	< .16	.78	< .17	< .17	< .16	< .17
fluoranthene	mg/kg	< .16	< .17	< .17	< .17	< .16	< .17
phenanthrene	mg/kg	< .099	< .1	< .1	< .1	< .095	< .1
pyrene	mg/kg	< .14	< .15	< .15	< .15	< .14	< .14
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	< .024	< .024	< .024
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	< .057	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-6 (45'-46')	ISL-7 (0'-2')	ISL-7 (1'-2')	ISL-8 (0'-2')	ISL-8 (9'-11')	ISL-9 (0'-2')
Inorganics							
antimony	mg/kg	< 2.4	R	< 2.6	R	4.2 J	R
beryllium	mg/kg	.018 J	.2 J	.044 J	.556	.33 J	.12 J
cadmium	mg/kg	< .19	2.27	.56 J	2.32	< .22	.41 J
chromium	mg/kg	4.1	36	37.8	22.6	25	4.61
copper	mg/kg	6.64	6.66	4.62	13.2	10.3	2.01
lead	mg/kg	.735	6.94 J	6.49	28.5 J	8.95 J	4.17 J
mercury	mg/kg	< .027	R	.035 J	R	R	R
nickel	mg/kg	.23 J	4.24	< 1.4 J	7.75	5.93	1.6 J
selenium	mg/kg	.651	1.41	.731	.642	.54 J	.41 J
silver	mg/kg	< .2	< .23	< .23	< .24	< .23	< .21
thallium	mg/kg	< .083	< .093	< .093	.46 J	< .094	< .084
zinc	mg/kg	1.6 J	11.2	3.75	44.5	15.7	7.19
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .0018	< .0021	< .0021 J	.054 J	< .0021 J	< .0019 J
ethylbenzene	mg/kg	< .00079	< .00088	< .00088 J	< .00093 J	< .00089 J	< .0008 J
hexachlorobutadiene	mg/kg	< .0012	< .0013	< .0013 J	< .0014 J	< .0013 J	< .0012 J
m+p-xylene	mg/kg	< .0024	NA	< .0027 J	NA	NA	NA
naphthalene	mg/kg	< .0011	< .0012	< .0012 J	< .0013 J	< .0012 J	< .0011 J
o-xylene	mg/kg	< .0015	< .0017	< .0017 J	< .0018 J	< .0017 J	< .0015 J
tetrachloroethene	mg/kg	< .00051	< .00058	< .00058 J	< .0006 J	< .00058 J	< .00052 J
toluene	mg/kg	< .00089	< .00099	< .001 J	< .001 J	< .001 J	< .0009 J
trans-1,2-dichloroethene	mg/kg	< .00057	< .00064	< .00064 J	.011 J	< .00065 J	< .00058 J
trichloroethene	mg/kg	< .00044	< .00049	< .0005 J	.38 J	.55 J	< .00045 J
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .086	< .096	< .097	< .1	< .098	< .088
bis(2-ethylhexyl)phthalate	mg/kg	< .91	< 1	< 1	< 1.1	< 1	< .93
di-n-butyl phthalate	mg/kg	< .16	.28 J	.29 J	.35 J	.24 J	< .16
fluoranthene	mg/kg	< .16	< .18	< .18	< .19	< .18	< .16
phenanthrene	mg/kg	< .095	< .11	< .11	< .11	< .11	< .097
pyrene	mg/kg	< .14	< .15	< .15	< .16	< .16	< .14
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	< .031	< .031	< .03
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	< .057	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-9 (9'-11')	ISL-10 (0'-2')	ISL-10 (14'-16')	ISL-11 (0'-2')	ISL-11 (14'-16')	ISL-12 (1'-2')
Inorganics							
antimony	mg/kg	R	R	R	R	R	< 2.6
beryllium	mg/kg	.04 J	.14 J	.028 J	.18 J	.06 J	.25 J
cadmium	mg/kg	1.18	< .2	.3 J	1.17	.48 J	.4 J
chromium	mg/kg	9.59	5.16	5.16	28.8	10.6	11.8
copper	mg/kg	3.29	2.47	1.69	6.98	3.46	4.78
lead	mg/kg	4.53 J	5.17 J	1.98 J	6.4 J	3.82 J	10.7
mercury	mg/kg	R	R	R	R	R	.034 J
nickel	mg/kg	.98 J	.85 J	.84 J	3.81	1.9 J	5.21
selenium	mg/kg	.49 J	.29 J	.26 J	.51 J	.33 J	.26 J
silver	mg/kg	< .22	< .21	< .21	< .22	< .22	< .22
thallium	mg/kg	< .089	< .085	< .087	< .089	< .089	< .09
zinc	mg/kg	< 5.3	12.5	< 4.08	218	8.74	13.4
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .002	< .0019	< .0019	< .002	< .002	< .002
ethylbenzene	mg/kg	< .00085	< .00081	< .00083	< .00084	< .00084	< .00085
hexachlorobutadiene	mg/kg	< .0013	< .0012	< .0012	< .0012	< .0012	< .0013
m+p-xylene	mg/kg	NA	NA	NA	NA	NA	< .0026
naphthalene	mg/kg	< .0012	< .0011	< .0011	< .0012	< .0012	< .0012
o-xylene	mg/kg	< .0016	< .0015	< .0016	< .0016	< .0016	< .0016
tetrachloroethene	mg/kg	< .00055	< .00053	< .00054	< .00055	< .00055	< .00056
toluene	mg/kg	< .00096	< .00091	< .00093	< .00095	< .00095	< .00096
trans-1,2-dichloroethene	mg/kg	< .00062	< .00059	< .0006	< .00061	< .00061	< .00062
trichloroethene	mg/kg	< .00048	< .00045	< .00046	< .00047	< .00047	.0019 J
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .093	< .088	< .09	< .092	< .092	< .093
bis(2-ethylhexyl)phthalate	mg/kg	< .99	< .94	< .96	< .98	< .98	< .99
di-n-butyl phthalate	mg/kg	< .17	.28 J	< .17	.25 J	< .17	< .17
fluoranthene	mg/kg	< .17	< .16	< .17	< .17	< .17	< .17
phenanthrene	mg/kg	< .1	< .098	< .1	< .1	< .1	< .1
pyrene	mg/kg	< .15	< .14	< .14	< .15	< .15	< .15
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .03	< .024	< .024	< .024	< .024	< .024
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	< .057	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-12 (35'-36')	ISL-13 (0'-2')	ISL-13 (24'-26')	ISL-14 (.5'-2')	ISL-14 (35'-36.5')	ISL-15 (1'-2')
Inorganics							
antimony	mg/kg	< 2.5	R	R	< 2.2	< 2.2	< 2.6
beryllium	mg/kg	.02 J	.26 J	.018 J	.13 J	.028 J	.31 J
cadmium	mg/kg	< .21	.943	< .2	< .19	< .19	< .21
chromium	mg/kg	1.45	14.6	6.08	16	1.55	22.7
copper	mg/kg	< .82	5.93	1.17	3.8	< .73	5.79
lead	mg/kg	1.14	9.07 J	1.86 J	7.37	1.43	8.78
mercury	mg/kg	< .028	R	R	< .028	< .027	.1 J
nickel	mg/kg	.33 J	3.69	.78 J	1.4 J	.25 J	4.81
selenium	mg/kg	1.7 J	.771	< .081	.624	.33 J	.33 J
silver	mg/kg	< .22	< .22	< .21	< .19	< .19	< .22
thallium	mg/kg	< .088	.32 J	< .087	.33 J	< .087	< .091
zinc	mg/kg	< 2.2 J	18.2	< 4.43	< 6.4	< 1.5 J	42.6
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .002	< .002 J	< .0019	< .002	< .0019	< .002
ethylbenzene	mg/kg	< .00084	< .00085 J	< .00082	< .00085 J	< .00082	< .00087 J
hexachlorobutadiene	mg/kg	< .0012	< .0013 J	< .0012	< .0013	< .0012	< .0013
m+p-xylene	mg/kg	< .0026	NA	NA	< .0026 J	< .0025	< .0027 J
naphthalene	mg/kg	< .0012	< .0012 J	< .0011	< .0012	< .0011	< .0012
o-xylene	mg/kg	< .0016	< .0016 J	< .0016	< .0016	< .0016	< .0016
tetrachloroethene	mg/kg	< .00055	< .00056 J	< .00054	< .00056	< .00054	< .00057
toluene	mg/kg	< .00094	< .00096 J	< .00093	< .00096	< .00093	< .00098
trans-1,2-dichloroethene	mg/kg	< .00061	< .00062 J	< .0006	< .00062	< .0006	< .00063
trichloroethene	mg/kg	.0026 J	< .00048 J	< .00046	< .00048	< .00046	< .00048
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .092	< .093	< .09	< .093	< .09	< .095
bis(2-ethylhexyl)phthalate	mg/kg	< .97	< .99	< .95	< .99	< .95	< 1
di-n-butyl phthalate	mg/kg	< .17	.26 J	.24 J	< .17	< .16	< .17
fluoranthene	mg/kg	< .17	< .17	< .16	< .17	< .16	< .17
phenanthrene	mg/kg	< .1	< .1	< .1	< .1	< .1	< .11
pyrene	mg/kg	< .15	< .15	< .14	< .15	< .14	< .15
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	< .024	< .024	< .024
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	< .057	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-15 (25'-26')	ISL-16 (1'-2')	ISL-16 (30'-31')	ISL-17 (1'-2')	ISL-17 (20'-21')	ISL-18 (1'-2')
Inorganics							
antimony	mg/kg	< 2.4	< 2.5	< 2.9	< 2.5	< 2.5	< 2.6
beryllium	mg/kg	.019 J	.32 J	.674	.12 J	.029 J	.29 J
cadmium	mg/kg	< .2	< .21	< .24	< .2	< .21	< .22
chromium	mg/kg	2.51	17	31.9	10.3	5.85	18.3
copper	mg/kg	1.17	5.24	14.2	3.5	1.45	6.2
lead	mg/kg	.74	9.04	20.7	5.61	2.67	9.4
mercury	mg/kg	< .027	.1 J	< .033	.044 J	< .028	.13
nickel	mg/kg	< .85 J	5.45	5.96	2 J	2 J	5.23
selenium	mg/kg	.32 J	< .082	.33 J	.33 J	< .082	< .086
silver	mg/kg	< .21	< .22	< .25	< .21	< .22	< .23
thallium	mg/kg	< .086	< .088	.52 J	< .087	< .088	< .092
zinc	mg/kg	< 3.81	16.3	23.5	< 6.5	< 3.74	15.2
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .0019	< .002	< .0023	< .0019	< .002	< .0021
ethylbenzene	mg/kg	< .00082	< .00084	< .00098	< .00083	< .00084 J	< .00088 J
hexachlorobutadiene	mg/kg	< .0012	< .0012	< .0014	< .0012	< .0012	< .0013
m+p-xylene	mg/kg	< .0025	< .0026	< .003	< .0025	< .0026 J	< .0027 J
naphthalene	mg/kg	< .0011	< .0012	< .0014	< .0011	< .0012	< .0012
o-xylene	mg/kg	< .0015	< .0016	< .0018	< .0016	< .0016	< .0017
tetrachloroethene	mg/kg	< .00053	< .00055	< .00064	< .00054	< .00055	< .00057
toluene	mg/kg	< .00092	< .00094	< .0011	< .00093	< .00094	< .00099
trans-1,2-dichloroethene	mg/kg	< .00059	< .00061	< .00071	< .0006	< .00061	< .00064
trichloroethene	mg/kg	< .00046	.0013 J	.0014 J	< .00046	< .00047	< .00049
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .089	< .092	< .11	< .09	< .091	< .096
bis(2-ethylhexyl)phthalate	mg/kg	< .95	< .97	< 1.1	< .96	< .97	< 1
di-n-butyl phthalate	mg/kg	.21 J	< .17	< .2	< .17	< .17	< .18
fluoranthene	mg/kg	< .16	< .17	< .2	< .17	< .17	< .18
phenanthrene	mg/kg	< .099	< .1	< .12	< .1	< .1	< .11
pyrene	mg/kg	< .14	< .15	< .17	< .14	< .14	< .15
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	< .024	< .024	< .024
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	< .057	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-18 (55'-56')	ISL-19 (1'-2')	ISL-19 (70'-71')	ISL-20 (1'-2')	ISL-20-A (1'-2') DUP	ISL-21 (1'-2')
Inorganics							
antimony	mg/kg	< 2.5	< 2.6	< 2.5	< 2.5	< 2.6	< 2.5
beryllium	mg/kg	.028 J	.34 J	.024 J	.11 J	.13 J	.18 J
cadmium	mg/kg	< .21	.28 J	< .21	.662	.672	.31 J
chromium	mg/kg	5.68	24.3	1.56	21.7	20.8	21.5
copper	mg/kg	1.37	8.67	< .82	5.57	6.2	9.06
lead	mg/kg	2.44	10.3	4.89	8.78	8.99	6.47
mercury	mg/kg	< .028	.14	< .028	< .032	< .032	.067 J
nickel	mg/kg	4.1	7.12	< .062	4.45	5.1	7.74
selenium	mg/kg	< .082	< .086	.678	.32 J	.27 J	.31 J
silver	mg/kg	< .22	< .23	< .22	< .22	< .22	< .22
thallium	mg/kg	< .088	< .093	< .088	< .089	< .09	< .088
zinc	mg/kg	3.04	20.7	1.2 J	23	28.2	18.9
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .002	< .0021	< .002	< .002	< .002	< .002 J
ethylbenzene	mg/kg	< .00083	< .00088	< .00083	< .00084 J	< .00085 J	< .00084 J
hexachlorobutadiene	mg/kg	< .0012	< .0013	< .0012	< .0013	< .0013	< .0012 J
m+p-xylene	mg/kg	< .0026	< .0027	< .0026	< .0026 J	< .0026 J	< .0026 J
naphthalene	mg/kg	< .0012	< .0012	< .0012	< .0012	< .0012	< .0012 J
o-xylene	mg/kg	< .0016	< .0017	< .0016	< .0016	< .0016	< .0016 J
tetrachloroethene	mg/kg	< .00054	< .00057	< .00054	< .00055	< .00056	< .00055 J
toluene	mg/kg	< .00094	< .00099	< .00094	< .00095	< .00096	< .00094 J
trans-1,2-dichloroethene	mg/kg	< .0006	< .00064	< .00061	< .00061	< .00062	< .00061 J
trichloroethene	mg/kg	< .00047	< .00049	< .00047	.0069	.05	< .00047 J
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .091	< .096	< .091	< .18	< .19	< .092
bis(2-ethylhexyl)phthalate	mg/kg	< .97	< 1	< .97	< 2	< 2	< .97
di-n-butyl phthalate	mg/kg	< .17	< .18	< .17	< .34	< .34	< .17
fluoranthene	mg/kg	< .17	< .18	< .17	< .34	< .34	< .17
phenanthrene	mg/kg	< .1	< .11	< .1	< .2	< .21	< .1
pyrene	mg/kg	< .14	< .15	< .14	< .29	< .3	< .15
Explosive Residues							
2,4-dinitrotoluene	mg/kg	R	< .024	< .024	NA	NA	NA
nitrobenzene	mg/kg	R	< .057	< .057	NA	NA	NA
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	< .0029	< .0029	< .0029
4,4'-DDE	mg/kg	NA	NA	NA	< .00062	.00413	< .00062
4,4'-DDT	mg/kg	NA	NA	NA	.0012	.0012	< .0011
endrin	mg/kg	NA	NA	NA	< .00048	.00048	< .00048

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-21 (40'-41')	ISL-22 (1'-2')	ISL-22 (15'-16')	ISL-22-A (1'-2') DUP	ISL-23 (1'-2')	ISL-23 (15'-16')
Inorganics							
antimony	mg/kg	< 2.5	< 2.6	< 2.4	< 2.5	< 2.7	< 2.4
beryllium	mg/kg	< .018	.073 J	.056 J	.062 J	.091 J	.049 J
cadmium	mg/kg	< .21	.61	.26 J	.56 J	.627	.21 J
chromium	mg/kg	1 J	22.3	2.59	22.2	43.1	7.36
copper	mg/kg	< .83	4.97	3.04	4.74	6.42	2.17
lead	mg/kg	.622	6.3	2.01	5.32	5.92	1.59
mercury	mg/kg	< .028	.046 J	< .026	< .028	.047 J	.053 J
nickel	mg/kg	< .59 J	1.5 J	.43 J	2.66	< 3.96	.13 J
selenium	mg/kg	< .083	< .084	.24 J	.41 J	.4 J	.27 J
silver	mg/kg	< .22	< .22	< .2	< .22	< .23	< .21
thallium	mg/kg	< .089	< .09	< .083	< .089	< .093	< .084
zinc	mg/kg	1.1 J	5.89	5.1	7.32	7.73	3.41
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .002	< .002	< .0019	< .002	< .0021	< .0019
ethylbenzene	mg/kg	< .00085	< .00086	< .00079 J	< .00085	< .00089 J	< .00079
hexachlorobutadiene	mg/kg	< .0013	< .0013	< .0012	< .0013	< .0013	< .0012
m+p-xylene	mg/kg	< .0026	< .0026	< .0024 J	< .0026	< .0027 J	< .0024
naphthalene	mg/kg	< .0012	< .0012	< .0011	< .0012	< .0012	< .0011
o-xylene	mg/kg	< .0016	< .0016	< .0015	< .0016	< .0017	< .0015
tetrachloroethene	mg/kg	< .00055	< .00056	< .00052	< .00055	< .00058	< .00052
toluene	mg/kg	< .00096	< .00097	< .00089	< .00096	< .001	< .00089
trans-1,2-dichloroethene	mg/kg	< .00062	< .00062	< .00058	< .00062	< .00064	< .00058
trichloroethene	mg/kg	< .00048	< .00048	< .00044	< .00048	< .0005	< .00044
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .093	< .094	< .087	< .093	< .097	< .087
bis(2-ethylhexyl)phthalate	mg/kg	< .98	< 1	< .92	< .98	< 1	< .92
di-n-butyl phthalate	mg/kg	< .17	.23 J	.18 J	.25 J	< .18	< .16
fluoranthene	mg/kg	< .17	< .17	< .16	< .17	< .18	< .16
phenanthrene	mg/kg	< .1	< .1	< .096	< .1	< .11	< .096
pyrene	mg/kg	< .15	< .15	< .14	< .15	< .15	< .14
Explosive Residues							
2,4-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA	NA
nitrobenzene	mg/kg	NA	NA	NA	NA	NA	NA
Pesticides/PCBs							
4,4'-DDD	mg/kg	< .0029	< .003	< .0027	< .0029	< .0031	< .0027
4,4'-DDE	mg/kg	< .00062	.0012 J	< .00058	< .00062	< .00065	< .00058
4,4'-DDT	mg/kg	< .0012	< .0012	< .0011	< .0012	< .0012	< .0011
endrin	mg/kg	< .00048	< .00049	< .00045	< .00048	< .0005	< .00045

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-24 (1'-2')	ISL-24 (30'-31')	ISL-25 (1'-2')	ISL-25 (25'-26')	ISL-26 (1'-2')	ISL-26 (35'-37')
Inorganics							
antimony	mg/kg	< 2.6	< 2.4	< 2.5	< 2.4	< 2.5	< 2.4
beryllium	mg/kg	.14 J	< .017	.19 J	< .017	.18 J	.02 J
cadmium	mg/kg	< .21	< .2	< .2	< .2	< .2	< .2
chromium	mg/kg	16.8	2.31	8.27	3.16	11.9	3.85
copper	mg/kg	5.52	< .78	3.24	< .78	4.34	.85 J
lead	mg/kg	6.99	.636	9.61	.687	14.4	1.01
mercury	mg/kg	.092 J	< .027	.088 J	< .026	.055 J	< .027
nickel	mg/kg	4.21	< .4 J	2.23	< .46 J	2.71	< .26 J
selenium	mg/kg	.37 J	< .078	.38 J	< .078	< .081	< .08
silver	mg/kg	< .22	< .21	< .21	< .21	< .21	< .21
thallium	mg/kg	< .09	< .084	< .087	< .084	< .087	< .086
zinc	mg/kg	12.8	< 3.14	< 8.33	< 1.8 J	16.4	< 5.71
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .002	< .0019	< .0019	< .0019	< .0019	< .0019
ethylbenzene	mg/kg	< .00086	< .0008	< .00083	< .00079	< .00083	< .00082 J
hexachlorobutadiene	mg/kg	< .0013	< .0012	< .0012	< .0012	< .0012	< .0012
m+p-xylene	mg/kg	< .0026	< .0024	< .0026	< .0024	< .0025	< .0025 J
naphthalene	mg/kg	< .0012	< .0011	< .0011	< .0011	< .0011	< .0011
o-xylene	mg/kg	< .0016	< .0015	< .0016	< .0015	< .0016	< .0015
tetrachloroethene	mg/kg	< .00056	< .00052	< .00054	< .00052	< .00054	< .00053
toluene	mg/kg	< .00097	< .0009	< .00093	< .00089	< .00093	< .00092
trans-1,2-dichloroethene	mg/kg	< .00062	< .00058	< .0006	< .00058	< .0006	< .00059
trichloroethene	mg/kg	< .00048	< .00045	.0082	< .00044	.0019 J	< .00046
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .094	< .087	< .091	< .087	< .09	< .089
bis(2-ethylhexyl)phthalate	mg/kg	< 1	< .92	< .96	< .92	< .96	< .95
di-n-butyl phthalate	mg/kg	< .17	< .16	< .17	< .16	< .17	< .16
fluoranthene	mg/kg	< .17	< .16	< .17	< .16	< .17	< .16
phenanthrene	mg/kg	< .1	< .097	< .1	< .096	< .1	< .099
pyrene	mg/kg	< .15	< .14	< .14	< .14	< .14	< .14
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	< .024	< .024	< .024
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	< .057	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
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Parameter	Unit	ISL-26-A (1'-2') DUP	ISL-26-A (35'-37') DUP	ISL-27 (1'-2')	ISL-27 (30'-31')	ISL-28 (1'-2')	ISL-28 (35'-36')
Inorganics							
antimony	mg/kg	< 2.5	< 2.4	< 2.5	< 2.4	< 2.4	< 2.5
beryllium	mg/kg	.21 J	.017 J	.32 J	< .017	.22 J	.027 J
cadmium	mg/kg	< .2	< .2	< .21	< .2	.53 J	< .21
chromium	mg/kg	13.4	3.51	13.4	4.15	8.47	2.72
copper	mg/kg	5.21	.89 J	5.29	< .78	3.72	< .81
lead	mg/kg	14.5	1.63	11.6	1.27	6.5	1.55
mercury	mg/kg	.044 J	< .027	.067 J	< .026	.076 J	< .028
nickel	mg/kg	3.87	< .48 J	5.83	< .41 J	4.14	.61 J
selenium	mg/kg	< .081	< .08	.48 J	< .078	< .08	< .081
silver	mg/kg	< .21	< .21	< .22	< .21	< .21	< .22
thallium	mg/kg	.3 J	< .086	< .089	< .084	< .086	< .088
zinc	mg/kg	21.9	< .77 J	17.3	< 2.94	13.2	< 1.5 J
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .0019	< .0019	< .002	< .0019	< .0019	< .002
ethylbenzene	mg/kg	< .00082	< .00082	< .00084	< .00079	< .00081	< .00083 J
hexachlorobutadiene	mg/kg	< .0012	< .0012	< .0012	< .0012	< .0012	< .0012
m+p-xylene	mg/kg	< .0025	< .0025	< .0026	< .0024	< .0025	< .0026 J
naphthalene	mg/kg	< .0011	< .0011	< .0012	< .0011	< .0011	< .0012
o-xylene	mg/kg	< .0016	< .0015	< .0016	< .0015	< .0015	< .0016
tetrachloroethene	mg/kg	< .00054	< .00053	< .00055	< .00052	< .00053	< .00054
toluene	mg/kg	< .00093	< .00092	< .00095	< .00089	< .00092	< .00094
trans-1,2-dichloroethene	mg/kg	< .0006	< .00059	< .00061	< .00058	< .00059	< .0006
trichloroethene	mg/kg	.0011 J	< .00046	< .00047	< .00044	.0025 J	< .00047
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .09	< .089	< .092	< .087	< .089	< .091
bis(2-ethylhexyl)phthalate	mg/kg	< .95	< .95	< .98	< .92	< .94	< .96
di-n-butyl phthalate	mg/kg	< .16	< .16	< .17	< .16	< .16	< .17
fluoranthene	mg/kg	< .16	< .16	< .17	< .16	< .16	< .17
phenanthrene	mg/kg	< .1	< .099	< .1	< .096	< .099	< .1
pyrene	mg/kg	< .14	< .14	< .15	< .14	< .14	< .14
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	< .024	< .024	< .024
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	< .057	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-29 (1'-2')	ISL-29 (35'-36')	ISL-30 (1'-2')	ISL-30 (35'-36')	ISL-31 (0'-2')	ISL-31 (14'-16')
Inorganics							
antimony	mg/kg	< 2.5	< 2.4	< 2.4	< 2.4	R	R
beryllium	mg/kg	.16 J	.017 J	.16 J	.021 J	.22 J	.079 J
cadmium	mg/kg	.603	< .2	.31 J	< .2	.5 J	.37 J
chromium	mg/kg	12	1.23	5.23	1.25	7.32	13.6
copper	mg/kg	5.36	< .78	2.67	< .8	3.62	5.63
lead	mg/kg	5.87	1.37	5.16	1.85	5.22 J	4.87 J
mercury	mg/kg	.045 J	< .026	.032 J	< .027	.027 J	R
nickel	mg/kg	5.52	.32 J	2.74	.45 J	3.35	3.78
selenium	mg/kg	.28 J	< .078	< .079	< .08	.34 J	.31 J
silver	mg/kg	< .22	< .2	< .21	< .21	< .21	< .21
thallium	mg/kg	< .089	< .083	< .085	< .086	< .084	< .085
zinc	mg/kg	15.5	< 1.8 J	9.02	< 2 J	19.4	9.32
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .002	< .0019	< .0019	< .0019	< .0019	< .0019
ethylbenzene	mg/kg	< .00085 J	< .00079 J	< .00081	< .00082	< .0008	< .00081
hexachlorobutadiene	mg/kg	< .0013	< .0012	< .0012	< .0012	< .0012	< .0012
m+p-xylene	mg/kg	< .0026 J	< .0024 J	< .0025	< .0025	NA	NA
naphthalene	mg/kg	< .0012	< .0011	< .0011	< .0011	< .0011	< .0011
o-xylene	mg/kg	< .0016	< .0015	< .0015	< .0015	< .0015	< .0015
tetrachloroethene	mg/kg	< .00055	< .00052	< .00053	< .00053	< .00052	< .00053
toluene	mg/kg	< .00095	< .00089	< .00091	< .00092	< .0009	< .00091
trans-1,2-dichloroethene	mg/kg	< .00062	< .00058	< .00059	< .00059	< .00058	< .00059
trichloroethene	mg/kg	< .00047	.0032 J	< .00045	< .00046	< .00045	< .00045
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .093	< .087	< .088	< .089	< .087	< .089
bis(2-ethylhexyl)phthalate	mg/kg	< .98	< .92	< .93	< .95	< .93	< .94
di-n-butyl phthalate	mg/kg	< .17	< .16	< .16	.16 J	.29 J	< .16
fluoranthene	mg/kg	< .17	< .16	< .16	< .16	< .16	< .16
phenanthrene	mg/kg	< .1	< .096	< .098	< .099	< .097	< .098
pyrene	mg/kg	< .15	< .14	< .14	< .14	< .14	< .14
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	< .024	< .024	< .031
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	< .057	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-32 (0'-2')	ISL-32 (14'-16')	ISL-33 (1'-2')	ISL-33 (25'-26')	ISL-34 (0'-2')	ISL-34 (14'-16')
Inorganics							
antimony	mg/kg	R	R	< 2.5	< 2.5	R	R
beryllium	mg/kg	.13 J	< .017	.18 J	.048 J	.13 J	.056 J
cadmium	mg/kg	1.96	.3 J	.21 J	< .21	.644	.561
chromium	mg/kg	19.1	5.51	21.5	7.88	14.5	14.6
copper	mg/kg	7.54	< 2.78	7.08	2.61	7.68	4.75
lead	mg/kg	11.7 J	11.3 J	7.01	8.54	20.8 J	9.84 J
mercury	mg/kg	R	R	< .028	< .028	R	R
nickel	mg/kg	< 3.6	< 1.3 J	3.98	2.74	< 2 J	< 2.59
selenium	mg/kg	.47 J	< .079	< .083	< .081	< .082	< .082
silver	mg/kg	< .22	< .21	< .22	< .22	< .22	< .22
thallium	mg/kg	< .088	< .085	< .089	< .088	< .089	< .088
zinc	mg/kg	20	< 1.1 J	13.8	< 2.48	48.2	< 8.42
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .002	< .0019	< .002	< .002	< .002	< .002
ethylbenzene	mg/kg	< .00084	< .0008	< .00085 J	< .00083	< .00084	< .00084
hexachlorobutadiene	mg/kg	< .0012	< .0012	< .0013	< .0012	< .0012	< .0012
m+p-xylene	mg/kg	NA	NA	< .0026 J	< .0026	NA	NA
naphthalene	mg/kg	< .0012	< .0011	< .0012	< .0012	< .0012	< .0012
o-xylene	mg/kg	< .0016	< .0015	< .0016	< .0016	< .0016	< .0016
tetrachloroethene	mg/kg	< .00055	< .00053	< .00055	< .00054	< .00055	< .00055
toluene	mg/kg	.0024 J	< .00091	< .00096	< .00094	< .00095	< .00095
trans-1,2-dichloroethene	mg/kg	< .00061	< .00058	< .00062	< .0006	< .00061	< .00061
trichloroethene	mg/kg	< .00047	< .00045	< .00048	< .00047	< .00047	< .00047
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .091	< .088	< .093	< .091	< .092	< .092
bis(2-ethylhexyl)phthalate	mg/kg	< .97	< .93	< .98	< .96	< .98	< .97
di-n-butyl phthalate	mg/kg	< .17	.19 J	< .17	< .17	.21 J	.19 J
fluoranthene	mg/kg	< .17	< .16	< .17	< .17	< .17	< .17
phenanthrene	mg/kg	< .1	< .098	< .1	< .1	< .1	< .1
pyrene	mg/kg	< .14	< .14	< .15	< .14	< .15	< .15
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	< .024	< .024	< .031
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	< .057	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-35 (0'-2')	ISL-35 (19'-21')	ISL-35D (0'-2') DUP	ISL-36 (1'-2')	ISL-36 (45'-46')	ISL-37 (1'-2')
Inorganics							
antimony	mg/kg	R	R	R	< 2.5	< 2.4	< 2.6
beryllium	mg/kg	.12 J	< .018	.1 J	.094 J	< .017	.13 J
cadmium	mg/kg	1.24	< .21	1.15	.25 J	< .19	< .21
chromium	mg/kg	13.2	2.05	12.1	22.9	1.22	21.3
copper	mg/kg	4.72	< .92 J	< 4.06	4.47	< .77	7.4
lead	mg/kg	7.46 J	4.18 J	6.73 J	5.61	.63	6.16
mercury	mg/kg	R	.115 J	R	.034 J	< .026	.034 J
nickel	mg/kg	< 2.56	< .93 J	< 2.55	< 1.7 J	< .73 J	2.91
selenium	mg/kg	.26 J	< .083	< .081	.561	< .077	.571
silver	mg/kg	< .22	< .22	< .21	< .22	< .2	< .22
thallium	mg/kg	< .088	< .089	< .087	< .089	< .083	< .09
zinc	mg/kg	< 9.42	< 1.2 J	< 8.91	6.31	1.6 J	10.9
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .002	< .002	NA	< .002	< .0018	< .002
ethylbenzene	mg/kg	< .00084	< .00085	NA	< .00084	< .00079	< .00086 J
hexachlorobutadiene	mg/kg	< .0012	< .0013	NA	< .0012	< .0012	< .0013
m+p-xylene	mg/kg	NA	NA	NA	< .0026	< .0024	< .0026 J
naphthalene	mg/kg	< .0012	< .0012	NA	< .0012	< .0011	< .0012
o-xylene	mg/kg	< .0016	< .0016	NA	< .0016	< .0015	< .0016
tetrachloroethene	mg/kg	< .00055	< .00055	NA	< .00055	< .00051	< .00056
toluene	mg/kg	< .00094	< .00095	NA	< .00095	< .00089	< .00096
trans-1,2-dichloroethene	mg/kg	< .00061	< .00062	NA	< .00061	< .00057	< .00062
trichloroethene	mg/kg	< .00047	< .00047	NA	< .00047	< .00044	< .00048
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .091	< .093	< .082	< .092	R	< .094
bis(2-ethylhexyl)phthalate	mg/kg	< .97	< .98	< .87	< .98	R	< .99
di-n-butyl phthalate	mg/kg	< .17	.2 J	< .17	< .17	R	< .17
fluoranthene	mg/kg	< .17	< .17	< .15	< .17	R	< .17
phenanthrene	mg/kg	< .1	< .1	< .091	< .1	R	< .1
pyrene	mg/kg	< .14	< .15	< .13	< .15	R	< .15
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	R	R	R
nitrobenzene	mg/kg	< .057	< .057	< .057	R	R	R
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-37 (1'-2') DUP	ISL-37 (40'-41')	ISL-37 (40'-41') DUP	ISL-38 (1'-2')	ISL-38 (40'-41')	ISL-39 (1'-2')
Inorganics							
antimony	mg/kg	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.4
beryllium	mg/kg	.073 J	.035 J	.036 J	.24 J	.032 J	.32 J
cadmium	mg/kg	.32 J	< .2	< .2	.84	< .21	.34 J
chromium	mg/kg	15.9	2.51	4.2	8.29	2.39	15.8
copper	mg/kg	4.31	< .81	< .81	6.09	< .82	7.82
lead	mg/kg	2.95	1.44	2.53	19	1.78	15.8
mercury	mg/kg	< .027	< .028	< .028	.045 J	< .028	.087 J
nickel	mg/kg	2 J	< .62 J	< .75 J	3.24	< .063	< 4.3
selenium	mg/kg	< .08	< .081	< .081	< .082	< .082	.34 J
silver	mg/kg	< .21	< .21	< .21	< .22	< .22	< .21
thallium	mg/kg	< .086	< .087	< .087	< .088	< .088	< .086
zinc	mg/kg	5.7	.63 J	.68 J	16.6	1 J	24.1
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .0019	< .0019	< .0019	< .002	< .002	< .0019 J
ethylbenzene	mg/kg	< .00082 J	< .00083 J	< .00083 J	< .00084	< .00084	< .00082 J
hexachlorobutadiene	mg/kg	< .0012	< .0012	< .0012	< .0012	< .0012	< .0012 J
m+p-xylene	mg/kg	< .0025 J	< .0026 J	< .0025 J	< .0026	< .0026	< .0025 J
naphthalene	mg/kg	< .0011	< .0011	.016	< .0012	< .0012	< .0011 J
o-xylene	mg/kg	< .0016	< .0016	< .0016	< .0016	< .0016	< .0015 J
tetrachloroethene	mg/kg	< .00053	< .00054	< .00054	< .00055	< .00055	< .00053 J
toluene	mg/kg	< .00092	< .00093	< .00093	< .00095	< .00094	.002 J
trans-1,2-dichloroethene	mg/kg	< .00059	< .0006	< .0006	< .00061	< .00061	< .00059 J
trichloroethene	mg/kg	< .00046	< .00046	< .00046	.0083	.0055 J	< .00046 J
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .09	< .091	R	< .092	< .091	< .089
bis(2-ethylhexyl)phthalate	mg/kg	< .95	< .96	R	< .97	< .97	< .95
di-n-butyl phthalate	mg/kg	< .16	< .17	R	< .17	< .17	< .16
fluoranthene	mg/kg	< .16	< .17	R	< .17	< .17	< .16
phenanthrene	mg/kg	< .099	< .1	R	< .1	< .1	< .099
pyrene	mg/kg	< .14	< .14	R	< .15	< .14	< .14
Explosive Residues							
2,4-dinitrotoluene	mg/kg	R	< .024	< .024	R	R	< .024
nitrobenzene	mg/kg	R	< .057	< .057	R	R	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-39 (40'-41')	ISL-40 (1'-2')	ISL-40 (30'-31')	ISL-41 (1'-2')	ISL-41 (35'-36')	ISL-41-A (1'-2') DUP
Inorganics							
antimony	mg/kg	< 2.7	< 2.6	< 2.6	< 2.6	< 2.5	< 2.6
beryllium	mg/kg	.052 J	.096 J	.044 J	.21 J	.018 J	.3 J
cadmium	mg/kg	< .22	.71	< .21	1.23	< .21	1.05
chromium	mg/kg	5.55	24.7	9.95	36.2	4.32	26
copper	mg/kg	1.1 J	4.59	1.75	11.1	.97 J	14.2
lead	mg/kg	3.07	5.98	5.36	8.96	.51	11.1
mercury	mg/kg	< .03	< .033	< .033	< .033	< .032	< .034
nickel	mg/kg	< .24 J	1.5 J	< .064	2.97	.19 J	2.2 J
selenium	mg/kg	< .087	.45 J	.65	.31 J	< .083	.49 J
silver	mg/kg	< .23	< .22	< .22	< .22	< .22	< .23
thallium	mg/kg	< .093	< .091	< .09	< .091	< .09	< .092
zinc	mg/kg	1.1 J	6.14	2.1 J	12	1.6 J	11.8
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .0021 J	< .002	< .002 J	< .002 J	< .002	< .002
ethylbenzene	mg/kg	< .00089 J	< .00086 J	< .00086 J	< .00086 J	< .00085 J	< .00087
hexachlorobutadiene	mg/kg	< .0013 J	< .0013	< .0013 J	< .0013 J	< .0013	< .0013
m+p-xylene	mg/kg	< .0027 J	< .0027 J	< .0026 J	< .0027 J	< .0026 J	< .0027
naphthalene	mg/kg	< .0012 J	< .0012	< .0012 J	< .0012 J	< .0012	< .0012
o-xylene	mg/kg	< .0017 J	< .0016	< .0016 J	< .0016 J	< .0016	< .0017
tetrachloroethene	mg/kg	< .00058 J	< .00056	< .00056 J	< .00056 J	< .00056	< .00057
toluene	mg/kg	< .001 J	< .00097	< .00096 J	< .00097 J	< .00096	< .00098
trans-1,2-dichloroethene	mg/kg	< .00064 J	< .00063	< .00062 J	< .00063 J	< .00062	< .00063
trichloroethene	mg/kg	< .0005 J	< .00048	< .00048 J	< .00048 J	< .00048	< .00049
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .097	< .094	< .094	.21	< .093	.16 J
bis(2-ethylhexyl)phthalate	mg/kg	< 1	< 1	< .99	< 1	< .99	< 1
di-n-butyl phthalate	mg/kg	< .18	< .17	< .17	< .17	< .17	< .17
fluoranthene	mg/kg	< .18	< .17	< .17	< .17	< .17	< .17
phenanthrene	mg/kg	< .11	< .1	< .1	< .1	< .1	< .11
pyrene	mg/kg	< .15	< .15	< .15	< .15	< .15	< .15
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	< .024	< .024	< .024
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	< .057	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-42 (1'-2')	ISL-42 (32'-33')	ISL-43 (1'-2')	ISL-43 (19'-20')	ISL-43-A (1'-2') DUP	ISL-44 (1'-2')
Inorganics							
antimony	mg/kg	< 2.4	< 2.3	< 2.6	< 2.3	< 2.6	< 2.5
beryllium	mg/kg	.19 J	.025 J	.14 J	.02 J	.15 J	.27 J
cadmium	mg/kg	.29 J	< .19	.591	< .19	.53 J	.55 J
chromium	mg/kg	13.2	5.92	27.9	22.6	32.2	181
copper	mg/kg	4.32	1.13	8.32	1.5	8.51	9.18
lead	mg/kg	15.5	1.08	6.63	.874	7.66	7.24
mercury	mg/kg	.053 J	< .026	.046 J	< .026	.034 J	.057 J
nickel	mg/kg	< 3.61	< .3 J	< 4.2	< 1.1 J	5.69	8.74
selenium	mg/kg	< .078	< .076	.53 J	< .076	.53 J	.26 J
silver	mg/kg	< .21	< .2	< .22	< .2	< .22	< .22
thallium	mg/kg	< .084	< .082	< .09	< .081	< .09	< .089
zinc	mg/kg	15.9	1.5 J	13.2	1.6 J	14.9	21.9
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .0019 J	< .0018	< .002 J	< .0018	< .002 J	< .002 J
ethylbenzene	mg/kg	< .00079 J	< .00078 J	< .00086 J	< .00077 J	< .00086 J	< .00085 J
hexachlorobutadiene	mg/kg	< .0012 J	< .0012	< .0013 J	< .0011	< .0013 J	< .0013 J
m+p-xylene	mg/kg	< .0024 J	< .0024 J	< .0026 J	< .0024 J	< .0026 J	< .0026 J
naphthalene	mg/kg	< .0011 J	< .0011	< .0012 J	< .0011	< .0012 J	< .0012 J
o-xylene	mg/kg	< .0015 J	< .0015	< .0016 J	< .0015	< .0016 J	< .0016 J
tetrachloroethene	mg/kg	< .00052 J	< .00051	< .00056 J	< .0005	< .00056 J	< .00055 J
toluene	mg/kg	< .00089 J	< .00088	< .00097 J	< .00087	< .00097 J	< .00096 J
trans-1,2-dichloroethene	mg/kg	< .00058 J	< .00057	< .00062 J	< .00056	< .00062 J	< .00062 J
trichloroethene	mg/kg	< .00044 J	< .00044	< .00048 J	< .00043	< .00048 J	< .00048 J
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .087	< .085	< .094	< .084	.17 J	< .093
bis(2-ethylhexyl)phthalate	mg/kg	< .92	< .9	1.7	< .9	< .99	< .98
di-n-butyl phthalate	mg/kg	< .16	< .16	< .17	< .15	< .17	< .17
fluoranthene	mg/kg	< .16	< .16	< .17	< .15	< .17	< .17
phenanthrene	mg/kg	< .096	< .094	< .1	< .094	< .1	.11 J
pyrene	mg/kg	< .14	< .13	< .15	< .13	< .15	< .15
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	< .024	.178 J	< .024
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	.302 J	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-44 (50'-51')	ISL-45 (1'-2')	ISL-45 (50'-51')	ISL-46 (1'-2')	ISL-46 (14'-15')	ISL-47 (1'-2')
Inorganics							
antimony	mg/kg	< 2.3	< 2.6	< 2.6	2.9 J	< 2.5	< 2.6
beryllium	mg/kg	< .017	.082 J	< .019	.29 J	.091 J	.35 J
cadmium	mg/kg	< .19	1.05	< .22	.605	.38 J	1
chromium	mg/kg	2.74	33.4	12.1	22.4	29.8	19.4
copper	mg/kg	< .77	6.68	8.26	7.55	5.59	8.07
lead	mg/kg	.657	6.97	4.91	8.19	6.22	11.5
mercury	mg/kg	< .026	< .033	< .034	.057 J	.055 J	.092 J
nickel	mg/kg	< .059	3.01	.39 J	6.79	< 2.36 J	8.57
selenium	mg/kg	< .077	.5 J	.43 J	.38 J	.3 J	< .084
silver	mg/kg	< .2	< .22	< .23	< .22	< .22	< .22
thallium	mg/kg	< .082	< .09	< .092	< .34 J	< .088	.33 J
zinc	mg/kg	.81 J	12.6	2.3 J	17.9	6.87	23.3
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .0018 J	< .002 J	< .0021 J	< .002 J	< .002	< .002
ethylbenzene	mg/kg	< .00078 J	< .00086 J	< .00088 J	< .00085 J	< .00083	< .00086
hexachlorobutadiene	mg/kg	< .0012 J	< .0013 J	< .0013 J	< .0013 J	< .0012	< .0013
m+p-xylene	mg/kg	< .0024 J	< .0026 J	< .0027 J	< .0026 J	< .0026	< .0026
naphthalene	mg/kg	< .0011 J	< .0012 J	< .0012 J	< .0012 J	< .0012	< .0012
o-xylene	mg/kg	< .0015 J	< .0016 J	< .0017 J	< .0016 J	< .0016	< .0016
tetrachloroethene	mg/kg	< .00051 J	< .00056 J	< .00057 J	< .00056 J	< .00054	< .00056
toluene	mg/kg	< .00088 J	< .00097 J	< .00099 J	< .00096 J	< .00094	< .00097
trans-1,2-dichloroethene	mg/kg	< .00057 J	< .00062 J	< .00064 J	< .00062 J	< .0006	< .00062
trichloroethene	mg/kg	< .00044 J	< .00048 J	< .00049 J	< .00048 J	< .00047	< .00048
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .086	< .094	< .096	< .093	< .091	< .094
bis(2-ethylhexyl)phthalate	mg/kg	< .91	< .99	< 1	< .99	< .97	3.3
di-n-butyl phthalate	mg/kg	< .16	< .17	< .18	1.6	< .17	< .17
fluoranthene	mg/kg	< .16	< .17	< .18	< .17	< .17	< .17
phenanthrene	mg/kg	< .095	< .1	< .11	< .1	< .1	< .1
pyrene	mg/kg	< .14	< .15	< .15	< .15	< .14	< .15
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	< .024	< .024	R
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	< .057	R
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-47 (14'-15')	ISL-48 (0'-2')	ISL-48 (29'-31')	ISL-49 (1'-2')	ISL-49 (12'-13')	ISL-50 (14'-15')
Inorganics							
antimony	mg/kg	< 2.6	R	R	< 2.4	< 2.6	< 2.5
beryllium	mg/kg	.023 J	.22 J	< .017	.28 J	.024 J	.064 J
cadmium	mg/kg	.29 J	1.15	< .2	.707	< .22	.26 J
chromium	mg/kg	12.5	12.2	4.73	16.7	7.7	30.1
copper	mg/kg	3.2	5.15	< 1.11	4.91	2.32	5.23
lead	mg/kg	6.2	7.66 J	1.04 J	8.13	7.31	4.27
mercury	mg/kg	.034 J	R	R	.032 J	.047 J	< .028
nickel	mg/kg	< .92	< 3.28	< .37 J	6.53	< .72 J	< 2.62
selenium	mg/kg	< .084	.47 J	< .079	.27 J	< .087	< .083
silver	mg/kg	< .22	< .22	< .21	< .21	< .23	< .22
thallium	mg/kg	< .091	< .088	< .085	.32 J	< .093	< .089
zinc	mg/kg	2.33	< 10.8	< 1.6 J	16.6	2.2 J	7.16
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .002	< .002	< .0019	< .0019	< .0021	< .002 J
ethylbenzene	mg/kg	< .00086	< .00083	< .00081	< .0008	< .00088 J	< .00084 J
hexachlorobutadiene	mg/kg	< .0013	< .0012	< .0012	< .0012	< .0013	< .0012 J
m+p-xylene	mg/kg	< .0027	NA	NA	< .0025	< .0027 J	< .0026 J
naphthalene	mg/kg	< .0012	< .0012	< .0011	< .0011	< .0012	< .0012 J
o-xylene	mg/kg	< .0016	< .0016	< .0015	< .0015	< .0017	< .0016 J
tetrachloroethene	mg/kg	< .00056	< .00054	< .00053	< .00052	< .00058	< .00055 J
toluene	mg/kg	< .00097	< .00094	< .00091	< .0009	< .001	< .00095 J
trans-1,2-dichloroethene	mg/kg	< .00063	< .0006	< .00059	< .00058	< .00064	< .00061 J
trichloroethene	mg/kg	< .00048	< .00047	< .00045	.0063 J	< .0005	< .00047 J
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .094	< .091	< .089	< .088	< .097	< .092
bis(2-ethylhexyl)phthalate	mg/kg	< 1	< .97	< .94	1.7	< 1	< .98
di-n-butyl phthalate	mg/kg	< .17	.18 J	.17 J	< .16	< .18	< .17
fluoranthene	mg/kg	< .17	< .17	< .16	< .16	< .18	< .17
phenanthrene	mg/kg	< .1	< .1	< .098	< .097	< .11	< .1
pyrene	mg/kg	< .15	< .14	< .14	< .14	< .15	< .15
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	R	< .024	< .024
nitrobenzene	mg/kg	< .057	< .057	< .057	R	< .057	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-50 (3'-4')	ISL-51 (1'-2')	ISL-51 (45'-46')	ISL-52 (.5'-2')	ISL-52 (45'-46')	ISL-53 (.5'-2')
Inorganics							
antimony	mg/kg	< 2.5	< 2.7	< 2.5	< 2.2	< 2.5	< 2.2
beryllium	mg/kg	.15 J	.13 J	< .018	.21 J	.031 J	.15 J
cadmium	mg/kg	.52 J	.755	< .21	< .19	< .2	< .19
chromium	mg/kg	27.8	34.8	2.09	21.2	9.29	26.9
copper	mg/kg	6.92	8.14	< .81	7.8	.88 J	7.21
lead	mg/kg	8.97	7.57	.943	11.4	1.31	9.38
mercury	mg/kg	.056 J	.096 J	< .028	< .028	NA	< .029
nickel	mg/kg	< 3.09	4.1	.47 J	6.39	2.1 J	3.87
selenium	mg/kg	.28 J	1.1 J	< .082	< .083	< .08	1.14
silver	mg/kg	< .22	.25 J	< .22	< .19	< .21	< .19
thallium	mg/kg	< .089	< .095	< .088	< .089	< .086	.33 J
zinc	mg/kg	14.7	13.1	< 1.2 J	18.9	1.6 J	18.3
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .002 J	< .0021 J	< .002 J	< .002	< .0019	< .002
ethylbenzene	mg/kg	< .00084 J	< .0009 J	< .00083 J	.0017 J	< .00082 J	< .00086 J
hexachlorobutadiene	mg/kg	< .0012 J	< .0013 J	< .0012 J	< .0013	< .0012	< .0013
m+p-xylene	mg/kg	< .0026 J	< .0028 J	< .0026 J	.0093	< .0025 J	< .0026 J
naphthalene	mg/kg	< .0012 J	< .0013 J	< .0012 J	< .0012	< .0011	< .0012
o-xylene	mg/kg	< .0016 J	< .0017 J	< .0016 J	.0045 J	< .0016	< .0016
tetrachloroethene	mg/kg	< .00055 J	< .00059 J	< .00054 J	< .00055	< .00054	< .00056
toluene	mg/kg	< .00095 J	< .001 J	< .00094 J	< .00096	< .00092	< .00097
trans-1,2-dichloroethene	mg/kg	< .00061 J	< .00066 J	< .0006 J	< .00062	< .0006	< .00062
trichloroethene	mg/kg	< .00047 J	< .0005 J	< .00047 J	< .00048	< .00046	< .00048
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .092	< .099	< .091	< .093	< .09 J	< .094
bis(2-ethylhexyl)phthalate	mg/kg	< .98	< 1	< .97	< .98	< .95 J	< 1
di-n-butyl phthalate	mg/kg	< .17	< .18	< .17	< .17	< .16 J	< .17
fluoranthene	mg/kg	< .17	< .18	< .17	< .17	< .16 J	< .17
phenanthrene	mg/kg	< .1	< .11	< .1	< .1	< .099 J	< .1
pyrene	mg/kg	< .15	< .16	< .14	< .15	< .14 J	< .15
Explosive Residues							
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	< .024	R	< .024
nitrobenzene	mg/kg	< .057	< .057	< .057	< .057	R	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-53 (30'-31')	ISL-54 (.5'-2')	ISL-54 (45'-46')	ISL-55 (1'-2')	ISL-55 (40'-41')	ISL-56 (1'-2')
Inorganics							
antimony	mg/kg	< 2.2	< 2.5	< 2.4	< 2.5	< 2.5	< 2.5
beryllium	mg/kg	.025 J	.13 J	.022 J	.21 J	.029 J	.13 J
cadmium	mg/kg	< .19	.567	< .2	.25 J	< .2	< .21
chromium	mg/kg	2.04	22.5	5.93	19	1.33	18.1
copper	mg/kg	< .73	6.21	.9 J	5.95	< .81	4.17
lead	mg/kg	1.63	9.24	2.69	10.3	2.53	3.99
mercury	mg/kg	< .027	< .028	< .027	.077 J	< .028	< .028
nickel	mg/kg	< .056	3.27	.68 J	4.48	< .28 J	< 1 J
selenium	mg/kg	< .08	.36 J	< .079	< .081	< .081	< .081
silver	mg/kg	< .19	< .22	< .21	< .21	< .21	< .22
thallium	mg/kg	< .086	.29 J	< .085	< .087	< .087	< .088
zinc	mg/kg	< 1.3 J	326	5.44	538	1.5 J	< 4.65
Volatile Organics							
cis-1,2-dichloroethene	mg/kg	< .0019	< .002	< .0019	< .002	< .0019	< .002 J
ethylbenzene	mg/kg	< .00082	< .00085 J	< .00081	< .00084 J	< .00083 J	< .00083 J
hexachlorobutadiene	mg/kg	< .0012	< .0013	< .0012	< .0012	< .0012	< .0012 J
m+p-xylene	mg/kg	< .0025	< .0026 J	< .0025	< .0026 J	< .0025 J	< .0026 J
naphthalene	mg/kg	< .0011	< .0012	< .0011	< .0012	< .0011	< .0012 J
o-xylene	mg/kg	< .0015	< .0016	< .0015	< .0016	< .0016	< .0016 J
tetrachloroethene	mg/kg	< .00053	< .00055	< .00053	< .00055	< .00054	< .00054 J
toluene	mg/kg	< .00092	< .00095	< .00091	< .00094	< .00093	< .00094 J
trans-1,2-dichloroethene	mg/kg	< .00059	< .00061	< .00059	< .00061	< .0006	< .0006 J
trichloroethene	mg/kg	< .00046	< .00047	< .00045	< .00047	< .00046	.0041 J
Semivolatile Organics							
benzo(b)fluoranthene	mg/kg	< .089	< .092	< .088	< .091	< .09	< .091
bis(2-ethylhexyl)phthalate	mg/kg	< .95	< .98	5.9	< .96	< .96	< .96
di-n-butyl phthalate	mg/kg	< .16	< .17	< .16	< .17	< .17	< .17
fluoranthene	mg/kg	< .16	< .17	< .16	< .17	< .17	< .17
phenanthrene	mg/kg	< .099	< .1	< .098	< .1	< .1	< .1
pyrene	mg/kg	< .14	< .15	< .14	< .14	< .14	< .14
Explosive Residues							
2,4-dinitrotoluene	mg/kg	R	R	R	< .024	< .024	< .024
nitrobenzene	mg/kg	R	R	R	< .057	< .057	< .057
Pesticides/PCBs							
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-56 (50'-51')	ISL-57 (1'-2')	ISL-57 (55'-56')	ISL-58 (1'-2')	ISL-58 (55'-56')	ISL-59 (1'-2')	ISL-59 (55'-56')
Inorganics								
antimony	mg/kg	< 2.5	< 2.5	< 2.4	< 2.5	< 2.4	< 2.5	< 2.5
beryllium	mg/kg	.093 J	.099 J	.024 J	.17 J	.025 J	.11 J	.042 J
cadmium	mg/kg	< .21	.64	< .2	.898	< .2	.43 J	< .21
chromium	mg/kg	15	24.8	9.91	19.3	2.62	26.6	18
copper	mg/kg	3.61	6.54	.82 J	5.63	< .8	5.66	2.03
lead	mg/kg	2.23	8.83	1.19	6.76	1.96	11.4	2.59
mercury	mg/kg	< .028	.034 J	< .027	.033 J	< .027	.1 J	< .028
nickel	mg/kg	1.4 J	4.84	3.43	4.04	.16 J	< 1.8 J	3.45
selenium	mg/kg	< .082	.55 J	< .08	.31 J	< .08	.4 J	< .083
silver	mg/kg	< .22	< .22	< .21	< .21	< .21	< .22	< .22
thallium	mg/kg	< .088	< .089	< .086	.37 J	< .086	< .09	< .089
zinc	mg/kg	< 4.66	8.98	.9 J	12.2	< 2.27	7.77	2.1 J
Volatile Organics								
cis-1,2-dichloroethene	mg/kg	< .002 J	< .002	< .0019 J	< .0019	< .0019	< .002 J	< .002
ethylbenzene	mg/kg	< .00084 J	< .00085 J	< .00081 J	< .00083	< .00082	< .00085 J	< .00085 J
hexachlorobutadiene	mg/kg	< .0012 J	< .0013	< .0012 J	< .0012	< .0012	< .0013 J	< .0013
m+p-xylene	mg/kg	< .0026 J	< .0026 J	< .0025 J	< .0026	< .0025	< .0026 J	< .0026 J
naphthalene	mg/kg	< .0012 J	< .0012	< .0011 J	< .0012	< .0011	< .0012 J	< .0012
o-xylene	mg/kg	< .0016 J	< .0016	< .0015 J	< .0016	< .0015	< .0016 J	< .0016
tetrachloroethene	mg/kg	< .00055 J	< .00055	< .00053 J	< .00054	< .00053	< .00056 J	< .00055
toluene	mg/kg	< .00094 J	< .00096	< .00092 J	.0016 J	< .00092	< .00096 J	< .00095
trans-1,2-dichloroethene	mg/kg	< .00061 J	< .00062	< .00059 J	< .0006	< .00059	< .00062 J	< .00061
trichloroethene	mg/kg	< .00047 J	< .00048	< .00046 J	.0078	< .00046	< .00048 J	.0012
Semivolatile Organics								
benzo(b)fluoranthene	mg/kg	< .092	< .093	< .089	< .091	< .089	< .093	< .092
bis(2-ethylhexyl)phthalate	mg/kg	< .97	< .99	< .94	< .96	< .95	< .99	< .98
di-n-butyl phthalate	mg/kg	< .17	< .17	< .16	< .17	.18 J	< .17	< .17
fluoranthene	mg/kg	< .17	< .17	< .16	< .17	< .16	< .17	< .17
phenanthrene	mg/kg	< .1	< .1	< .099	< .1	< .099	< .1	< .1
pyrene	mg/kg	< .15	< .15	< .14	< .14	< .14	< .15	< .15
Explosive Residues								
2,4-dinitrotoluene	mg/kg	< .024	< .024	< .024	R	R	< .024	< .024
nitrobenzene	mg/kg	< .057	< .057	< .057	R	R	< .057	< .057
Pesticides/PCBs								
4,4'-DDD	mg/kg	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 4-2 (continued)
Allied Industrial Park
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-60 (1'-2')	ISL-60 (35'-36')	ISL-61 (1'-2')	ISL-62 (1'-2')	ISL-62 (15'-16')	ISL-63 (1'-2')	ISL-63 (40'-41')
Inorganics								
antimony	mg/kg	< 2.6	3.3 J	< 2.5	< 2.6	< 2.6	< 2.5	< 2.4
beryllium	mg/kg	.18 J	< .017	.14 J	.16 J	.036 J	.13 J	< .017
cadmium	mg/kg	.678	< .2	.36 J	.21 J	< .21	.31 J	< .19
chromium	mg/kg	20.7	3.28	9.71	10.7	8.42	17.4	2.75
copper	mg/kg	7.14	< .78	4.93	3.69	1.59	6.52	< .77
lead	mg/kg	8.94	.748	15.2	5.81	3.07	6.41	.462
mercury	mg/kg	.08 J	< .027	.044 J	< .028	< .028	.056 J	< .026
nickel	mg/kg	4.76	.21 J	3	2.28 J	.68 J	< 4.39	< .28 J
selenium	mg/kg	.883	< .079	.48 J	< .084	< .084	< .083	< .077
silver	mg/kg	< .22	< .21	< .21	< .22	< .22	< .22	< .2
thallium	mg/kg	< .091	< .084	.41 J	< .09	< .09	< .089	< .083
zinc	mg/kg	12	< .56	16.2	8.34	< 2.34	12.6	1.7 J
Volatile Organics								
cis-1,2-dichloroethene	mg/kg	< .002	< .0019	< .0019	< .002	< .002 J	< .002	< .0018
ethylbenzene	mg/kg	< .00086	< .0008 J	< .00083	< .00085	< .00085 J	< .00084	< .00079 J
hexachlorobutadiene	mg/kg	< .0013	< .0012	< .0012	.0047 J	< .0013 J	< .0012	< .0012
m+p-xylene	mg/kg	< .0026	< .0025 J	< .0026	< .0026	< .0026 J	< .0026	< .0024 J
naphthalene	mg/kg	< .0012	< .0011	< .0011	< .0082 J	< .0012 J	< .0012	< .0011
o-xylene	mg/kg	< .0016	< .0015	< .0016	< .0016	< .0016 J	< .0016	< .0015
tetrachloroethene	mg/kg	< .00056	< .00052	< .00054	< .00056	< .00056 J	< .00055	< .00051
toluene	mg/kg	< .00097	< .0009	< .00093	< .00096	< .00096 J	< .00095	< .00089
trans-1,2-dichloroethene	mg/kg	< .00063	< .00058	< .0006	< .00062	< .00062 J	< .00061	< .00057
trichloroethene	mg/kg	< .00048	< .00045	.0062	< .00048	< .00048 J	< .00047	< .00044
Semivolatile Organics								
benzo(b)fluoranthene	mg/kg	< .094	< .088	< .091	< .093	< .093	< .092	< .086
bis(2-ethylhexyl)phthalate	mg/kg	< 1	< .93	< .96	< .99	< .99	< .98	< .91
di-n-butyl phthalate	mg/kg	.21 J	.21 J	< .17	< .17	< .17	< .17	< .16
fluoranthene	mg/kg	.17 J	< .16	< .17	< .17	< .17	< .17	< .16
phenanthrene	mg/kg	.22	< .097	< .1	< .1	< .1	< .1	< .096
pyrene	mg/kg	.15 J	< .14	< .14	< .15	< .15	< .15	< .14
Explosive Residues								
2,4-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA	< .024	< .024
nitrobenzene	mg/kg	NA	NA	NA	NA	NA	< .057	< .057
Pesticides/PCBs								
4,4'-DDD	mg/kg	.0031 J	< .0028	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	< .00063	< .00059	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	< .0012	< .0011	NA	NA	NA	NA	NA
endrin	mg/kg	< .00049	< .00046	NA	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable
DUP indicates the sample is a duplicate.

Table 5-1
Groundwater Sampling and Analytical Requirements
Allied Industrial Park
Macon, Georgia
Rust Project No. 33941.000

Matrix	Field Samples	QC Samples	QA Samples	Total Samples	Analysis	Protocol	Analytical Procedures	Holding Time	Preservation Requirements	Sample (1) Containers
Groundwater from Plant Operations, Explosive Compounds, & Offsite Sources	54	5	5	64	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C Add HCl or NaHSO4 to pH <2	2-40 mL glass septa vial
	54	5	5	64	SVOC/PAH	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	2-1 L amber glass
	54	5	5	64	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days 28 days for mercury	HNO3 to pH<2	1-1L glass or plastic
	54	5	5	64	Explosive Residues	SW-846	EPA 8330	7/40 days	Ice to 4 degrees C	2-1L amber glass
Groundwater from PCB Sites	4	1	1	8	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C Add HCl to pH<2 or NaHSO4	2-40 mL glass septa vial
	4	1	1	6	SVOC/PAH	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	2-1L amber glass
	4	1	1	6	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days 28 days for mercury	HNO3 to pH<2	1-1L glass or plastic
	4	1	1	6	Pesticides/ PCBs	SW-846	EPA 8080	7/40 days	Ice to 4 degrees C	2-1L amber glass
Groundwater from Background	2	0	0		VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C Add HCl or NaHSO4 to pH <2	2-40 mL glass septa vial
	2	0	0		SVOC/PAH	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	2-1 L amber glass
	2	0	0		Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days 28 days for mercury	HNO3 to pH<2	1-1L glass or plastic
	2	0	0		Explosive Residues	SW-846	EPA 8330	7/40 days	Ice to 4 degrees C	2-1L amber glass

(1) Per EM-200-1-3, Table I-1, 31 March 95 except soil sample container requirements which have been reduced per USACE approval.

Table 5-2
Allied Industrial Park
Groundwater Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	IGW-1	IGW-2	IGW-2-A DUP	IGW-3	IGW-5	IGW-6
Inorganics							
antimony	mg/L	< .022	< .022	< .022	< .022	< .022	< .022
arsenic	mg/L	< .049	< .049	< .049	< .049	< .049	< .049
beryllium	mg/L	.0016 J	.0016 J	.00021 J	.0015 J	.0017 J	.00074 J
cadmium	mg/L	.00508	.00978	< .0019	< .0019	.0042 J	.00647
chromium	mg/L	1.11	1.93	.329	1.05	1.49	1.02
copper	mg/L	.463	1.05	.193	.171	.148	.102
lead	mg/L	.11	.082	.014	.047	.049	.044
mercury	mg/L	.0012	.0007	.0003	.0005	.0003	.0005
nickel	mg/L	.368	.489	.119	.267	.263	.129
selenium	mg/L	.0045 J	< .00074	< .00074	< .00074	.0036 J	< .00074
thallium	mg/L	< .00079	< .00079	< .00079	< .00079	< .00079	< .00079
zinc	mg/L	.425	.583	.194	.151	.211	.171
Volatile Organics							
1,1-dichloroethene	mg/L	< .00048	< .00048	< .00048	< .00048	< .00048 J	< .00048
1,2,4-trimethylbenzene	mg/L	< .00056	< .00056	< .00056	< .00056	< .00056 J	< .00056
bromomethane	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049 J	< .00049
chloroform	mg/L	< .0014	< .0014	< .0014	< .0014	< .0014 J	< .0014
chloromethane	mg/L	< .002	< .002	< .002	< .002	< .002 J	< .002
cis-1,2-dichloroethene	mg/L	< .0018	< .0018	< .0018	< .0018	< .0018 J	< .0018
methylene chloride	mg/L	< .00075	< .00075	< .00075	< .00075	< .00075 J	< .00075
tetrachloroethene	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049 J	< .00049
toluene	mg/L	< .00085	< .00085	< .00085	< .00085	< .00085 J	< .00085
trans-1,2-dichloroethene	mg/L	< .00055	< .00055	< .00055	< .00055	< .00055 J	< .00055
trichloroethene	mg/L	< .00042	< .00042	< .00042	.0073	< .00042 J	< .00042
vinyl chloride	mg/L	< .00047	< .00047	< .00047	< .00047	< .00047 J	< .00047
Semivolatile Inorganics							
a,a-dimethylphenethylamine	mg/L	< .0044	< .0044	< .0044	< .0044 J	< .0044	< .0044
bis(2-ethylhexyl)phthalate	mg/L	< .067	< .026	< .026	< .026 J	< .026	< .026
phenol	mg/L	< .0038	< .0038	< .0038	< .0038 J	< .0038	< .0038
Explosive Residues							
2,6-dinitrotoluene	mg/L	< .0041	< .0041	< .0041	< .0041 J	< .0041	< .0041
Pesticides/PCB's							
No Detections							

mg/L = milligrams per liter
J = indicates an estimated value
R = indicates data rejected during validation as unusable
DUP indicates sample is a duplicate

Table 5-2 (continued)
Allied Industrial Park
Groundwater Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	IGW-7	IGW-8	IGW-9	IGW-10	IGW-11	IGW-12
Inorganics							
antimony	mg/L	< .022	< .022	< .022	< .022	< .022	< .022
arsenic	mg/L	< .049	NA	NA	NA	.076 J	< .049
beryllium	mg/L	< .00016	.0023 J	.00052 J	.00088 J	< .00016	.00031 J
cadmium	mg/L	< .0019	.0166	.0121	.0276	< .0019	< .0019
chromium	mg/L	.154	.326	.0632	.204	< .0045	1.62
copper	mg/L	.0487	.103	< .0385	.0609	< .0073	.367
lead	mg/L	.0035	.121	.032	.027	< .00089	.018
mercury	mg/L	< .00005	.0012	.0012	.0008	< .00005	.0005
nickel	mg/L	.0488	.0438	.0288	.0211	.0073 J	.498
selenium	mg/L	< .00074	< .00074	< .00074	.003 J	.0029 J	< .00074
thallium	mg/L	< .00079	< .00079	< .00079	< .00079	< .00079 J	< .00079
zinc	mg/L	.0912	< .139	< .0685	< .0749	< .0252	.0993
Volatile Organics							
1,1-dichloroethene	mg/L	< .00048 J	< .00048 J	.0078 J	< .00048	< .00048	< .00048
1,2,4-trimethylbenzene	mg/L	< .00056 J	< .00056 J	.0023 J	< .00056	< .00056	< .00056
bromomethane	mg/L	< .00049 J	< .00049 J	< .00049 J	< .00049	< .00049	< .00049
chloroform	mg/L	< .0014 J	< .0014 J	< .0014 J	< .0014	< .0014	< .0014
chloromethane	mg/L	< .002 J	< .002 J	< .002 J	< .002	< .002	< .002
cis-1,2-dichloroethene	mg/L	< .0018 J	.0054 J	6.3 J	< .0018	< .0018	< .0018
methylene chloride	mg/L	< .00075 J	.011 J	.011 J	.012	< .00075	< .00075
tetrachloroethene	mg/L	< .00049 J	.0034 J	.0044 J	< .00049	< .00049	< .00049
toluene	mg/L	< .00085 J	< .00085 J	< .00085 J	< .00085	< .00085	< .00085
trans-1,2-dichloroethene	mg/L	< .00055 J	< .00055 J	.0037 J	< .00055	< .00055	< .00055
trichloroethene	mg/L	< .00042 J	11 J	62 J	.017	< .00042	.03
vinyl chloride	mg/L	< .00047 J	< .00047 J	.08 J	< .00047	< .00047	< .00047
Semivolatile Inorganics							
a,a-dimethylphenethylamine	mg/L	< .0044	< .0044	< .0044	< .0044	< .0044	< .0044
bis(2-ethylhexyl)phthalate	mg/L	< .026	< .026	< .026	< .026	< .026	< .026
phenol	mg/L	R	.022	< .0038	< .0038	< .0038	.008
Explosive Residues							
2,6-dinitrotoluene	mg/L	< .0041	< .0041	< .0041	< .0041	< .0041	< .0041
Pesticides/PCB's							
No Detections							

mg/L = milligrams per liter
J = indicates an estimated value
R = indicates data rejected during validation as unusable
DUP indicates sample is a duplicate

Table 5-2 (continued)
Allied Industrial Park
Groundwater Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	IGW-13	IGW-14	IGW-15	IGW-16	IGW-17	IGW-18
Inorganics							
antimony	mg/L	< .022	< .022	< .022	< .022	< .022	< .022
arsenic	mg/L	NA	< .049	< .049	< .049	< .049	< .049
beryllium	mg/L	.00016 J	.00019 J	.00034 J	.00018 J	.0012 J	.00021 J
cadmium	mg/L	.00667	< .0019	< .0019	< .0019	.0248	< .0019
chromium	mg/L	.0359	.17	.58	.459	.999	.204
copper	mg/L	.0706	.18	.162	.144	.288	.396
lead	mg/L	.0055	.0063	.018	.15	.18	.013
mercury	mg/L	< .00005	< .00005	.0004	.0002 J	.0022	.0003
nickel	mg/L	.0307	.0872	.181	.145	.16	.0849
selenium	mg/L	.0023 J	.0032 J	.0024 J	< .00074	.0028 J	< .00074
thallium	mg/L	< .00079	< .00079	< .00079	< .00079	< .00079	< .00079
zinc	mg/L	1.61	< .0449	.0682	.0691	.0837	< .0393
Volatile Organics							
1,1-dichloroethene	mg/L	< .00048	< .00096	< .00048	< .00048	< .00048	< .00048
1,2,4-trimethylbenzene	mg/L	< .00056	< .00112	< .00056	< .00056	< .00056	< .00056
bromomethane	mg/L	< .00049	< .00098	< .00049	< .00049	< .00049	< .00049
chloroform	mg/L	< .0014	< .0028	< .0014	.0014 J	< .0014	< .0014
chloromethane	mg/L	< .002	.0047 J	< .002	< .002	< .002	< .002
cis-1,2-dichloroethene	mg/L	< .0018	< .0036	< .0018	< .0018	< .0018	< .0018
methylene chloride	mg/L	< .00075	< .0015	< .00075	< .00075	< .00075	< .00075
tetrachloroethene	mg/L	< .00049	< .00098	.001 J	< .00049	< .00049	< .00049
toluene	mg/L	< .00085	< .0017	< .00085	< .00085	< .00085	< .00085
trans-1,2-dichloroethene	mg/L	< .00055	< .0011	< .00055	< .00055	< .00055	< .00055
trichloroethene	mg/L	.018	.34	.0019 J	.0035 J	5.1	< .00042
vinyl chloride	mg/L	< .00047	< .00094	< .00047	< .00047	< .00047	< .00047
Semivolatile Inorganics							
a,a-dimethylphenethylamine	mg/L	< .0044	< .0044	.014	< .0044	< .0044	< .0044
bis(2-ethylhexyl)phthalate	mg/L	< .026	< .026	< .026	< .026	< .026	< .026
phenol	mg/L	< .0038	< .0038	.004 J	< .0038	< .0038	< .0038 J
Explosive Residues							
2,6-dinitrotoluene	mg/L	< .0041	< .0041	.012	< .0041	< .0041	< .0041
Pesticides/PCB's							
No Detections							

mg/L = milligrams per liter
J = indicates an estimated value
R = indicates data rejected during validation as unusable
DUP indicates sample is a duplicate

Table 5-2 (continued)
Allied Industrial Park
Groundwater Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	IGW-19	IGW-21	IGW-22	IGW-23	IGW-24	IGW-25
Inorganics							
antimony	mg/L	< .022	< .022	< .022	< .022	< .022	.025 J
arsenic	mg/L	< .049	< .049	< .049	< .049	< .049	< .049
beryllium	mg/L	.00024 J	.0014 J	.00055 J	.00075 J	< .00016	.0015 J
cadmium	mg/L	.0029 J	.0024 J	< .0019	< .0019	.0257	.0025 J
chromium	mg/L	.706	1.98	1.79	1.2	.74	3.22
copper	mg/L	.32	.345	.231	.247	.152	.553
lead	mg/L	.041	.071	.037	.043	.055	.0703
mercury	mg/L	.0005	.0003	< .00005	.0005	.0004	.0008
nickel	mg/L	.208	.479	.518	.309	.176	.875
selenium	mg/L	< .00074	< .00074	< .00074	< .00074	.0029 J	.0024 J
thallium	mg/L	< .00079	< .00079	< .00079	< .00079	< .00079	< .00079
zinc	mg/L	< .0343	.175	.124	.107	< .0505	.126
Volatile Organics							
1,1-dichloroethene	mg/L	< .00048	< .00048	< .00048	< .00048	< .00048	< .00048
1,2,4-trimethylbenzene	mg/L	< .00056	< .00056	< .00056	< .00056	< .00056	< .00056
bromomethane	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049
chloroform	mg/L	< .0014	< .0014	< .0014	< .0014	< .0014	< .0014
chloromethane	mg/L	< .002	< .002	< .002	< .002	< .002	< .002
cis-1,2-dichloroethene	mg/L	< .0018	< .0018	< .0018	< .0018	.044	< .0018
methylene chloride	mg/L	< .00075	< .00075	< .00075	< .00075	< .00075	< .00075
tetrachloroethene	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049
toluene	mg/L	< .00085	< .00085	< .00085	< .00085	< .00085	< .00085
trans-1,2-dichloroethene	mg/L	< .00055	< .00055	< .00055	< .00055	< .00055	< .00055
trichloroethene	mg/L	< .00042	< .00042	< .00042	< .00042	.34	< .00042
vinyl chloride	mg/L	< .00047	< .00047	< .00047	< .00047	< .00047	< .00047
Semivolatile Inorganics							
a,a-dimethylphenethylamine	mg/L	< .0044	< .0044	< .0044	< .0044	< .0044	< .0044
bis(2-ethylhexyl)phthalate	mg/L	< .026	.048 J	< .026	< .026	< .026	< .026
phenol	mg/L	< .0038 J	< .0038	< .0038	< .0038	< .0038	< .0038
Explosive Residues							
2,6-dinitrotoluene	mg/L	< .0041	< .0041	< .0041	< .0041	< .0041	< .0041
Pesticides/PCB's							
No Detections							

mg/L = milligrams per liter
J = indicates an estimated value
R = indicates data rejected during validation as unusable
DUP indicates sample is a duplicate

Table 5-2 (continued)
Allied Industrial Park
Groundwater Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	IGW-26	IGW-26-A DUP	IGW-27	IGW-28	IGW-29	IGW-30
Inorganics							
antimony	mg/L	< .022	< .022	< .022	< .022	< .022	< .022
arsenic	mg/L	< .049	< .049	< .049	< .049	< .049	< .049
beryllium	mg/L	.00065 J	.00017 J	.0011 J	.0002 J	.00038 J	.0005 J
cadmium	mg/L	.00505	< .0019	.018	< .0019	.0042 J	.0107
chromium	mg/L	.871	.354	1.31	1.29	.719	.967
copper	mg/L	.696	.16	.759	.282	.196	.195
lead	mg/L	.017	.0045	.051	.012	.02	.068
mercury	mg/L	.0004	.0003	.0034	.0004	.0004	.0008
nickel	mg/L	.392	.147	.48	.447	.248	.258
selenium	mg/L	.0033 J	.0024 J	.0025 J	< .00074	< .00074	.0059
thallium	mg/L	< .00079	< .00079	< .00079	< .00079	< .00079	< .00079
zinc	mg/L	< .0634	< .0348	.136	.284	< .0625	< .0371
Volatile Organics							
1,1-dichloroethene	mg/L	< .00048	< .00048	< .00048	< .00048	< .00048	< .00048
1,2,4-trimethylbenzene	mg/L	< .00056	< .00056	< .00056	< .00056	< .00056	< .00056
bromomethane	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049
chloroform	mg/L	< .0014	< .0014	< .0014	< .0014	< .0014	< .0014
chloromethane	mg/L	< .002	< .002	< .002	< .002	< .002	< .002
cis-1,2-dichloroethene	mg/L	< .0018	< .0018	< .0018	.011	< .0018	< .0018
methylene chloride	mg/L	< .00075	< .00075	< .00075	< .00075	< .00075	< .00075
tetrachloroethene	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049
toluene	mg/L	< .00085	< .00085	< .00085	< .00085	< .00085	.0072
trans-1,2-dichloroethene	mg/L	< .00055	< .00055	< .00055	< .00055	< .00055	< .00055
trichloroethene	mg/L	.0065	.0016 J	.0065	.3	.091	.55
vinyl chloride	mg/L	< .00047	< .00047	< .00047	< .00047	< .00047	< .00047
Semivolatile Inorganics							
a,a-dimethylphenethylamine	mg/L	< .0044	< .0044	< .0044	< .0044	< .0044	< .0044
bis(2-ethylhexyl)phthalate	mg/L	.032 J	.044 J	< .026	< .026	< .026	.032 J
phenol	mg/L	< .0038	< .0038	< .0038	< .0038	< .0038	.007
Explosive Residues							
2,6-dinitrotoluene	mg/L	< .0041	< .0041	< .0041	< .0041	< .0041	< .0041
Pesticides/PCB's							
No Detections							

mg/L = milligrams per liter
J = indicates an estimated value
R = indicates data rejected during validation as unusable
DUP indicates sample is a duplicate

Table 5-2 (continued)
Allied Industrial Park
Groundwater Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	IGW-31	IGW-32	IGW-33	IGW-34	IGW-35	IGW-35D DUP
Inorganics							
antimony	mg/L	< .022	< .022	< .022	< .022	< .022	< .022
arsenic	mg/L	NA	< .049	< .049	< .049	< .049	.061 J
beryllium	mg/L	< .00016	.0002 J	.00026 J	< .00016	< .00016	< .00016
cadmium	mg/L	.00511	.0067	< .0019	.0022 J	< .0019	< .0019
chromium	mg/L	.205	.101	.536	< .0045	.0526	< .0045
copper	mg/L	.0779	.0113	.0766	.0098 J	.0273	.0102
lead	mg/L	.0064	.0078	.015	.0041	.0058	< .00089
mercury	mg/L	< .00005	< .00005	< .00005	.0002 J	< .00005	< .00005
nickel	mg/L	.0544	.011 J	.148	< .0056	.0217	< .0056
selenium	mg/L	< .00074	< .00074 J	< .00074	< .00074 J	< .00074 J	< .00074 J
thallium	mg/L	< .00079	< .00079 J	< .00079	< .00079 J	< .00079 J	< .00079 J
zinc	mg/L	2.71	.261	< .0539	< .0232	.157	< .015 J
Volatile Organics							
1,1-dichloroethene	mg/L	< .00048	< .00048	< .00048	< .00048	< .00048	< .000475
1,2,4-trimethylbenzene	mg/L	< .00056	< .00056	< .00056	< .00056	< .00056	< .000555
bromomethane	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .000485
chloroform	mg/L	< .0014	< .0014	< .0014	< .0014	< .0014	< .00136
chloromethane	mg/L	< .002	< .002	< .002	< .002	< .002	< .00202
cis-1,2-dichloroethene	mg/L	< .0018	< .0018	< .0018	< .0018	< .0018	< .00176
methylene chloride	mg/L	< .00075	< .00075	< .00075	< .00075	< .00075	< .00075
tetrachloroethene	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049
toluene	mg/L	< .00085	< .00085	< .00085	< .00085	< .00085	< .000845
trans-1,2-dichloroethene	mg/L	< .00055	< .00055	< .00055	< .00055	< .00055	< .000545
trichloroethene	mg/L	.02	.0049 J	.062	.015	< .00042	< .00042
vinyl chloride	mg/L	< .00047	< .00047	< .00047	< .00047	< .00047	< .00047
Semivolatile Inorganics							
a,a-dimethylphenethylamine	mg/L	< .0044	< .0044	< .0044	< .0044	< .0044	< .0044
bis(2-ethylhexyl)phthalate	mg/L	< .026	< .026	< .064	< .026	< .026	< .026
phenol	mg/L	< .0038	< .0038	< .0038	< .0038	< .0038	< .0038
Explosive Residues							
2,6-dinitrotoluene	mg/L	< .0041	< .0041	< .0041	< .0041	< .0041	< .0041
Pesticides/PCB's							
No Detections							

mg/L = milligrams per liter
J = indicates an estimated value
R = indicates data rejected during validation as unusable
DUP indicates sample is a duplicate

Table 5-2 (continued)
Allied Industrial Park
Groundwater Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	IGW-36	IGW-37	IGW-37 DUP	IGW-38	IGW-39	IGW-39-A DUP
Inorganics							
antimony	mg/L	< .022	< .022	< .022	< .022	< .022	< .022
arsenic	mg/L	< .049	< .049	< .049	< .049	< .049	< .049
beryllium	mg/L	.001 J	.00023 J	.00024 J	.00022 J	.00038 J	.00042 J
cadmium	mg/L	< .0019	< .0019	< .0019	< .0019	< .0019	.0021 J
chromium	mg/L	1.58	.134	.124	.202	.871	.611
copper	mg/L	.49	.064	.046	1.15	.189	.223
lead	mg/L	.0502	.0063	.0059	.021	.012	.019
mercury	mg/L	< .00005	.0003	< .00005	< .00005	.0003	< .00005
nickel	mg/L	.36	.0416	.0388	.155	.25	.204
selenium	mg/L	< .00074	< .00074	< .00074	< .00074	< .00074	< .00074
thallium	mg/L	< .00079	< .00079	< .00079	< .00079	< .00079	< .00079
zinc	mg/L	< .0695	< .027 J	< .019 J	< .0872	< .0343	< .0497
Volatile Organics							
1,1-dichloroethene	mg/L	< .00048	< .00048	< .00048	< .00048	< .00048	< .00048
1,2,4-trimethylbenzene	mg/L	< .00056	< .00056	< .00056	< .00056	< .00056	< .00056
bromomethane	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049
chloroform	mg/L	< .0014	< .0014	< .0014	< .0014	< .0014	< .0014
chloromethane	mg/L	< .002	< .002	< .002	< .002	< .002	< .002
cis-1,2-dichloroethene	mg/L	< .0018	< .0018	< .0018	< .0018	< .0018	< .0018
methylene chloride	mg/L	< .00075	< .00075	< .00075	< .00075	< .00075	< .00075
tetrachloroethene	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049
toluene	mg/L	< .00085	< .00085	< .00085	< .00085	< .00085	< .00085
trans-1,2-dichloroethene	mg/L	< .00055	< .00055	< .00055	< .00055	< .00055	< .00055
trichloroethene	mg/L	< .00042	< .00042	< .00042	.053 J	< .00042	< .00042
vinyl chloride	mg/L	< .00047	< .00047	< .00047	< .00047	< .00047	< .00047
Semivolatile Inorganics							
a,a-dimethylphenethylamine	mg/L	< .0044 J	< .0044	< .0044	< .0044	< .0044	< .0044
bis(2-ethylhexyl)phthalate	mg/L	< .026 J	< .026	< .026	< .026	< .029 J	< .026
phenol	mg/L	< .0038 J	< .0038 J	< .0038 J	< .0038 J	< .0038	< .0038
Explosive Residues							
2,6-dinitrotoluene	mg/L	< .0041 J	< .0041	< .0041	< .0041	< .0041	< .0041
Pesticides/PCB's							
No Detections							

mg/L = milligrams per liter
J = indicates an estimated value
R = indicates data rejected during validation as unusable
DUP indicates sample is a duplicate

Table 5-2 (continued)
Allied Industrial Park
Groundwater Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	IGW-40	IGW-41	IGW-42	IGW-43	IGW-44	IGW-45
Inorganics							
antimony	mg/L	< .022	< .022	< .022	.028 J	< .022	< .022
arsenic	mg/L	< .049	< .049	< .049	< .049	< .049	< .049
beryllium	mg/L	.00047 J	.0011 J	.00047 J	.00036 J	.00018 J	.0019 J
cadmium	mg/L	< .0019	< .0019	< .0019	.0039 J	< .0019	.0025 J
chromium	mg/L	.786	1.34	.949	3.46	.186	1.01
copper	mg/L	.154	.136	.269	.444	.0584	.246
lead	mg/L	.028	.041	.026	.063	.0076	.09
mercury	mg/L	.0002 J	< .00005	.0005	.0005	.0003	.0007
nickel	mg/L	.209	.261	.255	.606	.0716	.205
selenium	mg/L	< .00074	< .00074	< .00074	.0067	< .00074	< .00074
thallium	mg/L	< .00079	< .00079	< .00079	< .00079	< .00079	< .00079
zinc	mg/L	.148	.226	.0969	.0769	< .0406	.182
Volatile Organics							
1,1-dichloroethene	mg/L	< .00048	< .00048	< .00048	< .00048	< .00048	< .00048
1,2,4-trimethylbenzene	mg/L	< .00056	< .00056	< .00056	< .00056	< .00056	< .00056
bromomethane	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049
chloroform	mg/L	< .0014	< .0014	< .0014	< .0014	< .0014	< .0014
chloromethane	mg/L	< .002	< .002	< .002	< .002	< .002	< .002
cis-1,2-dichloroethene	mg/L	< .0018	< .0018	< .0018	< .0018	< .0018	< .0018
methylene chloride	mg/L	< .00075	< .00075	< .00075	< .00075	< .00075	< .00075
tetrachloroethene	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049
toluene	mg/L	< .00085	< .00085	< .00085	< .00085	< .00085	< .00085
trans-1,2-dichloroethene	mg/L	< .00055	< .00055	< .00055	< .00055	< .00055	< .00055
trichloroethene	mg/L	< .00042	< .00042	< .00042	< .00042	< .00042	< .00042
vinyl chloride	mg/L	< .00047	< .00047	< .00047	< .00047	< .00047	< .00047
Semivolatile Inorganics							
a,a-dimethylphenethylamine	mg/L	< .0044	< .0044	< .0044	< .0044	< .0044	< .0044
bis(2-ethylhexyl)phthalate	mg/L	< .026	< .026	< .056	< .026	< .026	< .047 J
phenol	mg/L	< .0038	< .0038	< .0038	< .0038	< .0038	< .0038
Explosive Residues							
2,6-dinitrotoluene	mg/L	< .0041	< .0041	< .0041	< .0041	< .0041	< .0041
Pesticides/PCB's							
No Detections							

mg/L = milligrams per liter
J = indicates an estimated value
R = indicates data rejected during validation as unusable
DUP indicates sample is a duplicate

Table 5-2 (continued)
Allied Industrial Park
Groundwater Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	IGW-46	IGW-47	IGW-48	IGW-49	IGW-51	IGW-52
Inorganics							
antimony	mg/L	< .022	< .022	< .022	< .022	< .022	< .022
arsenic	mg/L	< .049	< .049	< .049	< .049	< .049	< .049
beryllium	mg/L	.00072 J	.0013 J	.00024 J	.0011 J	< .00016	.0004 J
cadmium	mg/L	< .0019	< .0019	< .0019	< .0019	< .0019	< .0019
chromium	mg/L	1.47	1.28	.351	.63	.258	.627
copper	mg/L	.291	.167	.0758	.214	.082	.437
lead	mg/L	.029	.05	.017	.053	.004	.075
mercury	mg/L	.0002 J	.0003	< .00005	.0003	.0002 J	< .00005
nickel	mg/L	.453	.194	.116	.136	.0894	.208
selenium	mg/L	< .00074	< .00074	.0026 J	< .00074	.0027 J	< .00074
thallium	mg/L	< .00079	< .00079	< .00079	< .00079	< .00079	< .00079
zinc	mg/L	.0835	.064	< .0491	.187	.0796	< .0494
Volatile Organics							
1,1-dichloroethene	mg/L	< .00048	< .00048 J	< .00048	< .00048	< .00048	< .00048
1,2,4-trimethylbenzene	mg/L	< .00056	< .00056 J	< .00056	< .00056	< .00056	< .00056
bromomethane	mg/L	< .00049	< .00049 J	< .00049	< .00049	< .00049	< .00049
chloroform	mg/L	< .0014	< .0014 J	< .0014	< .0014	< .0014	.0014 J
chloromethane	mg/L	< .002	< .002 J	< .002	< .002	< .002	< .002
cis-1,2-dichloroethene	mg/L	< .0018	< .0018 J	< .0018	< .0018	< .0018	< .0018
methylene chloride	mg/L	< .00075	< .00075 J	< .00075	< .00075	< .00075	< .00075
tetrachloroethene	mg/L	< .00049	< .00049 J	< .00049	< .00049	< .00049	< .00049
toluene	mg/L	< .00085	< .00085 J	< .00085	< .00085	< .00085	< .00085
trans-1,2-dichloroethene	mg/L	< .00055	< .00055 J	< .00055	< .00055	< .00055	< .00055
trichloroethene	mg/L	< .00042	< .00042 J	< .00042	.0018 J	< .00042	.13
vinyl chloride	mg/L	< .00047	< .00047 J	< .00047	< .00047	< .00047	< .00047
Semivolatile Inorganics							
a,a-dimethylphenethylamine	mg/L	< .0044	< .0044	< .0044	< .0044	< .0044	< .0044
bis(2-ethylhexyl)phthalate	mg/L	< .026	< .026	< .029 J	< .026	< .026	< .026
phenol	mg/L	< .0038	< .0038	< .0038	R	< .0038	< .0038
Explosive Residues							
2,6-dinitrotoluene	mg/L	< .0041	< .0041	< .0041	< .0041	< .0041	< .0041
Pesticides/PCB's							
No Detections							

mg/L = milligrams per liter
J = indicates an estimated value
R = indicates data rejected during validation as unusable
DUP indicates sample is a duplicate

Table 5-2 (continued)
Allied Industrial Park
Groundwater Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	IGW-53	IGW-54	IGW-55	IGW-56	IGW-57	IGW-58
Inorganics							
antimony	mg/L	< .022	< .022	< .022	< .022	< .022	< .022
arsenic	mg/L	< .049	< .049	< .049	< .049	< .049	< .049
beryllium	mg/L	.0011 J	.00039 J	.0016 J	.0019 J	.00047 J	.001 J
cadmium	mg/L	.0046 J	< .0019	< .0019	.0021 J	< .0019	< .0019
chromium	mg/L	.893	.675	2.77	.512	.689	2.47
copper	mg/L	3.51	.316	.86	.214	.173	.482
lead	mg/L	.14	.017	.045	.065	.028	.204
mercury	mg/L	.0003	< .00005	.0003	.0005	< .00005	< .00005
nickel	mg/L	.443	.151	.891	.133	.2	.606
selenium	mg/L	< .00074	< .00074	< .00074	< .00074	< .00074	< .00074
thallium	mg/L	< .00079	< .00079	< .00079	< .00079	< .00079	< .00079
zinc	mg/L	.243	< .0518	< .106	.181	< .0661	< .0475
Volatile Organics							
1,1-dichloroethene	mg/L	< .00048	< .00048	< .00048	< .00048	< .00048	< .00048
1,2,4-trimethylbenzene	mg/L	< .00056	< .00056	< .00056	< .00056	< .00056	< .00056
bromomethane	mg/L	< .00049	.0027 J	< .00049	< .00049	< .00049	< .00049
chloroform	mg/L	< .0014	< .0014	< .0014	< .0014	< .0014	< .0014
chloromethane	mg/L	< .002	< .002	< .002	< .002	< .002	< .002
cis-1,2-dichloroethene	mg/L	< .0018	< .0018	< .0018	< .0018	< .0018	< .0018
methylene chloride	mg/L	< .00075	< .00075	< .00075	< .00075	< .00075	< .00075
tetrachloroethene	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049
toluene	mg/L	< .00085	< .00085	< .00085	< .00085	< .00085	< .00085
trans-1,2-dichloroethene	mg/L	< .00055	< .00055	< .00055	< .00055	< .00055	< .00055
trichloroethene	mg/L	.02	< .00042	.11 J	< .00042	.012	< .00042
vinyl chloride	mg/L	< .00047	< .00047	< .00047	< .00047	< .00047	< .00047
Semivolatile Inorganics							
a,a-dimethylphenethylamine	mg/L	< .0044	< .0044	< .0044	< .0044	< .0044	< .0044
bis(2-ethylhexyl)phthalate	mg/L	< .026	< .026	< .026	< .026	< .026	< .026
phenol	mg/L	< .0038	< .0038	< .0038	< .0038	< .0038	< .0038 J
Explosive Residues							
2,6-dinitrotoluene	mg/L	< .0041	< .0041	< .0041	< .0041	< .0041	< .0041
Pesticides/PCB's							
No Detections							

mg/L = milligrams per liter
J = indicates an estimated value
R = indicates data rejected during validation as unusable
DUP indicates sample is a duplicate

Table 5-2 (continued)
Allied Industrial Park
Groundwater Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	IGW-59	IGW-60	IGW-60-A DUP	IGW-61	IGW-62	IGW-63
Inorganics							
antimony	mg/L	< .022	< .022	< .022	< .022	< .022	< .022
arsenic	mg/L	< .049	< .049	< .049	< .049	< .049	< .049
beryllium	mg/L	.00081 J	.00017 J	.00029 J	.00483	.00031 J	.00018 J
cadmium	mg/L	< .0019	< .0019	< .0019	.0126	< .0019	.0119
chromium	mg/L	1.16	.434	.421	1	.577	.864
copper	mg/L	.259	.0517	.0446	.382	.252	.081
lead	mg/L	.027	.0043	.0038	.22	.015	.017
mercury	mg/L	< .00005	< .00005	< .00005	.0032	.0004	< .00005
nickel	mg/L	.326	.214	.195	.229	.233	.377
selenium	mg/L	.0029 J	< .00074	< .00074	.0046 J	.0028 J	< .00074
thallium	mg/L	< .00079	< .00079	< .00079	< .00079	.0029 J	< .00079
zinc	mg/L	< .062	< .0371	< .0348	.34	.205	< .0629
Volatile Organics							
1,1-dichloroethene	mg/L	< .00048	< .00048	< .00048	< .00048	< .00048	< .00048 J
1,2,4-trimethylbenzene	mg/L	< .00056	< .00056	< .00056	< .00056	< .00056	< .00056 J
bromomethane	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049 J
chloroform	mg/L	< .0014	< .0014	< .0014	< .0014	< .0014	< .0014 J
chloromethane	mg/L	< .002	< .002	< .002	< .002	< .002	< .002 J
cis-1,2-dichloroethene	mg/L	< .0018	< .0018	< .0018	< .0018	< .0018	< .0018 J
methylene chloride	mg/L	< .00075	< .00075	< .00075	< .00075	< .00075	.031 J
tetrachloroethene	mg/L	< .00049	< .00049	< .00049	< .00049	.0014 J	< .00049 J
toluene	mg/L	< .00085	< .00085	< .00085	< .00085	< .00085	< .00085 J
trans-1,2-dichloroethene	mg/L	< .00055	< .00055	< .00055	< .00055	< .00055	< .00055 J
trichloroethene	mg/L	< .00042	< .00042	< .00042	< .00042	< .00042	.57 J
vinyl chloride	mg/L	< .00047	< .00047	< .00047	< .00047	< .00047	< .00047 J
Semivolatile Inorganics							
a,a-dimethylphenethylamine	mg/L	< .0044	< .0044	< .0044	< .0044	< .0044	< .0044
bis(2-ethylhexyl)phthalate	mg/L	< .026	.044 J	.055	< .026	< .026	.054
phenol	mg/L	< .0038	< .0038	< .0038	< .0038	< .0038	< .0038
Explosive Residues							
2,6-dinitrotoluene	mg/L	< .0041	< .0041	< .0041	< .0041	< .0041	< .0041
Pesticides/PCB's							
No Detections							

mg/L = milligrams per liter
J = indicates an estimated value
R = indicates data rejected during validation as unusable
DUP indicates sample is a duplicate

Table 6-1
Surface Water and Sediment Sampling and Analytical Requirements
Allied Industrial Park
Macon, Georgia
Rust Project No. 33941.000

Matrix	Field Samples	QC Samples	QA Samples	Trip Blanks	Total Samples	Analysis	Protocol	Analytical Procedures	Holding Time	Preservation Requirements	Sample (1) Containers	Total Containers
Surface Water Offsite Source from Drainage Ditches	3	1	1	2	7	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C Add HCl to pH<2 or NaHSO4	2-40 mL glass septa vial	14
	3	1	1	0	5	SVOC/PAH	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	2-1L amber glass	10
	3	1	1	0	5	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days, 28 days for mercury	HNO3 to pH<2	1-1L glass or plastic	5
Sediment from Drainage Ditches	6	1	1	0	8	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C	1-125 mL glass septa vial	8
	6	1	1	0	8	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days, 28 days for mercury	Ice to 4 degrees C	1-4 oz glass	8
	6	1	1	0	8	SVOC/PAH	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	1-4 oz glass	8

(1) Per EM-200-1-3, Table I-1, 31 March 95 except soil sample container requirements which have been reduced per USACE approval.

Table 6-2
Allied Industrial Park
Surface Water Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISW-4	ISW-4Q	ISW-5	ISW-6
Inorganics					
copper	mg/L	.015	.0155	.0111	.0142
lead	mg/L	< .00089	.0031	< .00089	< .00089
mercury	mg/L	< .00005	.0002 J	< .00005	< .00005
selenium	mg/L	.0023 J	< .00074	< .00074	< .00074
zinc	mg/L	.184	.178	.167	.215
Volatile Organics					
paracymene	mg/L	.0018 J	.002 J	.0016 J	.0015 J
toluene	mg/L	.0014 J	.0015 J	.0014 J	.0014 J
Semivolatile Organics					
4-methylphenol	mg/L	.026	.025	.037	.022
nitrobenzene	mg/L	< .0053	.01 J	< .0053	< .0053

mg/L = milligrams per kilogram
J = indicates an estimated value

Table 6-3
Allied Industrial Park
Sediment Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISD-1	ISD-2	ISD-3	ISD-4	ISD-4Q	ISD-5	ISD-6
Inorganics								
beryllium	mg/kg	.16 J	.13 J	.36 J	.15 J	.21 J	.14 J	.16 J
cadmium	mg/kg	2.3	1.18	2.57	1	1.03	.917	1.32
chromium	mg/kg	89.7	15.8	36	71.1	50.1	93.9	14.7
copper	mg/kg	37.1	9.24	21.8	45.6	28.2	29.2	13.2
lead	mg/kg	128	56	204	36.6	20.2	49.4	19.6
mercury	mg/kg	.047 J	.29	.09 J	.041 J	.038 J	.04 J	< .031
nickel	mg/kg	5.61	3.46	9.31	8.01	3.6	2.73	3.66
selenium	mg/kg	.52 J	< .079	.56 J	< .1	< .093	< .098	< .092
silver	mg/kg	14	< .21	< .25	< .27	< .24	< .26	< .24
thallium	mg/kg	< .12	< .085	.35 J	< .11	< .099	< .11	< .099
zinc	mg/kg	183	98.6	169	214	139	157	138
Volatile Organics								
methylene chloride	mg/kg	< .0012	< .00081 J	.0046 J	< .001 J	< .00094 J	< .001 J	< .00094
paracymene	mg/kg	< .00099	< .00069 J	< .00081	.014 J	.014 J	.018 J	.018
toluene	mg/kg	< .0013	< .00091 J	< .0011	.0036 J	.0068 J	.0031 J	.065
trichloroethene	mg/kg	< .00066	< .00045 J	.005 J	< .00058 J	< .00053 J	< .00056 J	< .00053
Semivolatile Organics								
2-methyl naphthalene	mg/kg	< .12	< .084	< .1	< .11	< .098	.5	< .098
4-methylphenol	mg/kg	< .11	< .078	< .092	.22 J	.23	< .48	.14 J
acenaphthene	mg/kg	< .22	< .15	< .18	.62	< .18	3.2	< .18
anthracene	mg/kg	< .15	< .11	< .13	.76	< .12	4.6	< .12
benzo(a)pyrene	mg/kg	< .2	< .14	< .17	.81	< .16	5.4	< .16
benzo(b)fluoranthene	mg/kg	.23 J	< .089	.1 J	1.2	.12 J	7.2	.21
benzo(k)fluoranthene	mg/kg	< .22	< .15	< .18	.39	< .18	2.4	< .18
bis(2-ethylhexyl)phthalate	mg/kg	3.1	< .94	< 1.1	< 1.2	< 1.1	< 6	< 1.1
chrysene	mg/kg	< .25	< .17	< .2	1.1	< .2	6.8	.25
dibenz(a,h)anthracene	mg/kg	< .2	< .14	< .17	< .18	< .16	.85	< .16
dibenzofuran	mg/kg	< .19	< .13	< .15	.19 J	< .15	.92	< .15
fluoranthene	mg/kg	< .23	< .16	< .19	2.3	.19 J	20	.48
fluorene	mg/kg	< .19	< .13	< .15	.37	< .15	2.1	< .15
indeno(1,2,3-cd)pyrene	mg/kg	< .19	< .13	< .15	.43	< .15	2.8	< .15
naphthalene	mg/kg	< .13	< .09	< .11	.29	< .1	1.3	< .1
phenanthrene	mg/kg	< .14	< .098	< .12	3	.15 J	19	.4
pyrene	mg/kg	< .2	< .14	< .17	1.7	< .16	11	.28

mg/kg = milligrams per kilogram
J = indicates an estimated value

APPENDIX A

SUBSURFACE DRILL LOGS

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 1010897.74	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING : 659436.27	ISL-1
		GROUND ELEV 330.3	SHEET 1 OF
		M.P. ELEV. .	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) .	
DRILL RIG TYPE : DPT		STATIC (TOC) .	4/13/96 / 4/13/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	SAND (SP): soft, brown to orange, slightly moist, mostly coarse sand, trace silt			
	X	2	N/A	100	0	SAND (SP): loose, orange to tan to white, slightly moist, mostly sand (coarse to medium), trace silt			
10	X	3	N/A	100	0	SAND (SP): same as above, moist			
	X	4	N/A	100	0	SAND (SP): same as above, moist			
20	X	5	N/A	100	0	SAND (SP): same as above, saturated			
									water sample collected from 27' to 28' on 4/13/96
30						DPT completed at 28 feet			
40									
50									
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010937.13	BORING NO. ISL-2
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 65975154	
		GROUND ELEV. : 347.1	SHEET 1 OF 1
		M.P ELEV	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	4/15/96 / 4/15/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	⊠	1	N/A	100	0	SANDY SILT (ML): soft, dark brown to brown, moist, mostly silt, some sand			
	⊠	2	N/A	100	0				
	⊠	3	N/A	100	0	CLAYEY SAND (SC): hard, dark reddish brown to orange to gray, dry, mostly sand, some clay			
10	⊠	4	N/A	100	0	SAND with CLAY (SP-SC): hard, dark red brown to orange, dry, mostly sand, few clay			
	⊠	5	N/A	100	0	SAND with GRAVEL (SP-GM): very hard, dark reddish			
	⊠	6	N/A	100	0	brown/ orange/ tan/ white (quartz), dry, mostly sand, little gravel			
20	⊠	7	N/A	100	0	SAND (SP): loose, orange/ tan, dry, mostly sand, trace clay			
	⊠	8	N/A	100	0	SAND (SP): same as above			
30	⊠	9	N/A	100	0	SAND with CLAY (SP-SC): medium hard, dark brown/ gray/ tan, moist, mostly sand, few clay			
	⊠	10	N/A	100	0	SAND (SP): loose, orange/ tan, moist, mostly sand (medium to fine)			
40	⊠	11	N/A	100	0	SAND (SP): loose, pink/ white, saturated, mostly coarse sand			water sample collected from 39' to 40' on 4/15/96
						CPT completed at 40 feet			tip refusal at 40'
50									
60									
70									

ISL-2.log

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RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1010682.22	BORING NO. ISL-3
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 659646.48	
		GROUND ELEV. . 344.2	SHEET 1 OF 1
		M.P. ELEV. .	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR . Fugro	Tube Push	TIME OF DRILLING (bls) :	4/14/96 / 4/15/96
DRILL RIG TYPE . DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	100	0	SILTY SAND (SM): loose, dark brown, moist, mostly sand, some silt, trace clay			
	☒	2	N/A	100	0	SILTY SAND (SM): same as above			
10	☒	3	N/A	100	0	SAND with GRAVEL (SP/GP): very hard, dark brown to white (quartz), dry, mostly sand, little gravel (.5" to 2")			
	☒	4	N/A	100	0	SAND with GRAVEL (SP/GP): as above			
20	☒	5	N/A	100	0	SAND (SP): loose, rust to orange, slightly moist, mostly sand, trace clay and silt			
	☒	6	N/A	100	0	SAND (SP): same as above, tan and white			
30	☒	7	N/A	100	0	SAND (SP): same as above, a bit finer			
	☒	8	N/A	100	0	SAND (SP): loose, tan to white, moist, mostly coarse sand, nearly wet			
40	☒	9	N/A	N/A	N/A				no recovery for sample 9, tip refusal at 40'
						CPT completed at 45 feet		▬	water sample collected from 44' to 45' on 4/15/96
50									
60									
70									

ISL-3.log

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RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1010507.52	BORING NO. ISL-4
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 660078.18	
		GROUND ELEV.. 345.1	SHEET 1 OF 1
		M.P. ELEV. :	DRILLING
LOGGED BY . Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (dls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/14/96 / 4/16/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	SANDY SILT (ML): loose, dark brown/ orange/ black, slightly moist, mostly silt, some sand, cinders present in road fill			
	X	2	N/A	100	0	SAND with SILT (SP-SM): loose, rust brown, slightly moist, mostly sand, few silt and clay			
10	X	3	N/A	100	0	SAND with GRAVEL (SP-GP): very hard, rust brown to white (quartz), dry, mostly sand, little gravel			Offset CPT boring attempted on 4/16/96 with refusal at 12 feet.
	X	4	N/A	N/A	N/A				
	X	5	N/A	N/A	N/A				
						CPT refusal at 12 feet			
20									
30									
40									
50									
60									
70									

ISL-4.log

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RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010729.50	BORING NO. ISL-5
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 660319.88	
		GROUND ELEV.: 346.8	SHEET 1 OF 1
		M.P. ELEV.	DRILLING
LOGGED BY: Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR: Fugro	Tube Push	TIME OF DRILLING (bls):	4/18/96 / 4/18/96
DRILL RIG TYPE: DPT		STATIC (TOC):	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	100	0	CLAY (CL): stiff, reddish orange with tan mottles, silty clay, dry			
	☒	2	N/A	100	0	CLAY (CL): same as above			
10	☒	3	N/A	100	0	CLAYEY SILT (ML): reddish orange, clayey silt with little sand			
	☒	4	N/A	100	0	SILTY SAND (SM): white, very fine, silty sand to silt, very micaeous			
20	☒	5	N/A	100	0	SAND (SP): loose, white, very fine sand, moist, one interbed 1-inch thick bed of silt			
	☒	6	N/A	50	0	SAND (SP): loose, white, fine to medium sand, clean			
30	☒	7	N/A	0	0				no sample taken because tool did not release
	☒	8	N/A	100	0	SAND (SP): white, medium to coarse sand with rare clay balls (rip up clast)			
40	☒	9	N/A	100	0	SAND (SP): white and reddish white, layered, medium sand, clean, one 2-inch bed of light grayish white silty clay (CL) at top of spoon			
	☒	10	N/A	100	0	SAND (SP): white fine sand as above			Tip refusal for soil sampler at 42' on 4/18/96. Continue to push with smaller diameter water sampling tool. No additional soil samples collected
50								▓	water sample collected from 54' to 55' on 4/18/96
						CPT completed at 55 feet			
60									
70									

ISL-5.cpg

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RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010713.97	BORING NO. ISL-6
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 660483.72	
		GROUND ELEV : 347.2	SHEET 1 OF
		M.P. ELEV :	DRILLING
LOGGED BY : Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	4/18/96 / 4/18/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	100	0	CLAYEY SILT (ML): stiff, moist, little sand, trace pea gravel			
	☒	2	N/A	100	0	CLAYEY SILT (ML): stiff, reddish with white splotches, clayey and sandy silt, dry			
10	☒	3	N/A	70	0	SAND (SP): loose, reddish tan, clean, fine, poorly graded sand, moist, trace pea gravel			
	☒	4	N/A	100	0	SAND (SW-GP): reddish oxidized, well graded, fine to medium sand with large gravel (> 1-inch diameter)			
20	☒	5	N/A	100	0	SAND (SP): very soft, white, micaeous, fine sand with silt (5 to 10 %), homogeneous, moist			
	☒	6	N/A	100	0	SAND (SP): loose, white with layers of reddish orange, oxidized fine to medium clean sand			
30	☒	7	N/A	100	0	SAND (SP): loose, tanish white, fine to medium, clean, sand, moist			
	☒	8	N/A	100	0	SAND (SP): loose, grayish tan, fine to coarse sand with pea gravel, one thin bed of clayey sand (SC) near the middle of the spoon			
40	☒	9	N/A	100	0	SAND (SP): loose, reddish tan, fine to medium sand, very clean			
	☒	10	N/A	100	0	SAND (SP): same as above, wet			
50									
						DPT completed at 56 feet			water sample collected from 55' to 56' on 4/18/96
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010677.58	BORING NO. ISL-7
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 660596.87	
		GROUND ELEV : 346.7	SHEET 1 OF 1
		M.P ELEV	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/16/96 / 4/18/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL / SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	SILTY SAND (SM): hard, dark red brown to tan/ gray, dry, mostly sand, some silt, trace clay			
	X	2	N/A	100	0	SILTY SAND (SM): same as above, loose, dark red brown			
10	X	3	N/A	100	0	SAND (SP): loose, dark red brown, dry, mostly fine sand			
	X	4	N/A	100	0	SAND with GRAVEL (SP-GP): very hard, dark red/ orange to tan/ white, dry (powder), mostly fine sand, little gravel (quartz)			Tip refusal for soil sampler at 16.5' on 4/16/96. Push with smaller diameter water sampling tool in offset boring. No additional soil samples collected.
	X	5	N/A	N/A	N/A				
20									
30									
40									
50									
60						CPT completed at 60 feet			water sample collected from 59' to 60' on 4/18/96
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 1010129.61	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING : 658796.30	ISL-8
		GROUND ELEV : 312.9	SHEET 1 OF 1
		M.P. ELEV :	DRILLING
LOGGED BY : Cathy Adams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : TEG	2' Split-Spoon	TIME OF DRILLING (bls) : 4.0 ft.	12/6/95 / 12/6/95
DRILL RIG TYPE : SP-15		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	2	CLAY (CL): brown, contains organic debris, wet		▽	
	X	2	N/A	100	2	CLAYEY SAND (SC): brown, wet			
10	X	3	N/A	100	30	CLAYEY SAND (SC): tan to brown, medium grained, wet			
								■	water sample collected from 12' to 15' on 12/6/95
						CPT completed at 15 feet			
20									
30									
40									
50									
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010148.44	BORING NO. ISL-9
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 65896133	
		GROUND ELEV. 315.9	SHEET 1 OF 1
		M.P. ELEV.	DRILLING
LOGGED BY : David Heller	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : TEG	2" Split-Spoon	TIME OF DRILLING (bls) : 16.0 ft.	12/6/95 / 12/6/95
DRILL RIG TYPE : SP-15		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	SILTY SAND (SM): brown, medium grained, loose, dry			
	X	2	N/A	100	0	light brown, medium to fine quartz sand, dry, loosely packed			
10	X	3	N/A	100	8	CLAYEY SILT (ML): red, damp, soft, somewhat plastic			
	X	4	N/A	100	2	SANDY SILT (ML): orange brown, fine sand, moist to wet at 16', containing clay, soft		▽	water sample collected from 17' to 20' on 12/6/95
20						CPT completed at 20 feet			
30									
40									
50									
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010203.42	BORING NO. ISL-10
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 658985.44	
		GROUND ELEV.: 316.5	SHEET 1 OF 1
		M.P. ELEV.:	DRILLING
LOGGED BY : David Heller	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : TEG	2' Split-Spoon	TIME OF DRILLING (bls) : 14-15 ft.	12/6/95 / 12/6/96
DRILL RIG TYPE : SP-15		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	SANDY SILT (ML): brown, dry, fine sand, mostly quartz, organics			
	X	2	N/A	100	0	CLAYEY SILT (ML): light brown, little sand, soft			
10	X	3	N/A	100	>1	SANDY SILT (ML): light orange, densely packed, moist, medium to fine grained quartz, soft			
	X	4	N/A	100	2	SANDY SILT (ML): orange brown, some clay, medium to fine sand, medium hardness, wet			
20						CPT completed at 20 feet			water sample collected from 17' to 20' on 12/6/95
30									
40									
50									
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1010248.51	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 659006.05	ISL-11
		GROUND ELEV : 317.9	SHEET 1 OF 1
		M.P. ELEV.	DRILLING
LOGGED BY : Cathy Adams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : TEG	2' Split-Spoon	TIME OF DRILLING (bls) : 20 ft.	12/6/95 / 12/8/95
DRILL RIG TYPE : SP-15		STATIC (TOC) .	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	SILTY SAND (SM): orange to brown, some organic debris, wet, medium grained			
	X	2	N/A	100	0				
10	X	3	N/A	100	0				
	X	4	N/A	100	0	CLAYEY SAND (SC): orange, medium grained, wet			
20								▽	Did not take water sample on 12/6/95 because of rain. On 12/8/95 pushed to 20'. Barely wet. Went back down to 23'.
						CPT completed at 23 feet			water sample collected from 20' to 23' on 12/8/95
30									
40									
50									
60									
70									

ISL-11.log

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RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DRILLING METHOD (S) DPT	NORTHING : 1009379.85 EASTING : 659974.43 GROUND ELEV. : 328.2 M.P. ELEV. :	BORING NO. ISL-12 SHEET 1 OF 1
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S) Tube Push	WATER LEVEL DATA TIME OF DRILLING (bls) :	DRILLING DATE STARTED 4/9/96 / DATE COMPLETED 4/9/96
DRILLING CONTRACTOR : Fugro		STATIC (TOC) :	
DRILL RIG TYPE : DPT			

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	SANDY SILT (ML): soft, brown, moist, mostly silt, some sand			
	X	2	N/A	100	0	SAND with CLAY (SP-SC): dense, gray with pink/ brown, slightly moist, poorly graded, mostly coarse to fine sand, few clay and silt			
10	X	3	N/A	100	0	SAND (SP): loose, brown to tan, slightly moist, poorly graded, mostly sand, trace silt			
	X	4	N/A	100	0	SAND (SP): same as above, poorly graded, some perched water			
20	X	5	N/A	100	0	CLAY (CL): dense, gray, dry, lean, mostly clay, perched water above clay			
	X	6	N/A	100	0	SAND (SP): loose, white to gray, moist, poorly graded, mostly coarse sand, trace clay			
30	X	7	N/A	100	0	SAND (SP): loose, brown to tan, red, moist, poorly graded, mostly sand, trace silt			
	X	8	N/A	90	0	SAND (SP): loose, white/ pink, moist, poorly graded, mostly coarse sand, trace clay			
40	X	9	N/A	80	0	SAND (SP): loose, white, saturated, poorly graded mostly coarse sand			
						CPT completed at 46 feet			water sample collected from 45' to 46' on 4/9/96
50									
60									
70									

ISL-12.log

salvar95.pct - 06/13/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DRILLING METHOD (S) DPT	NORTHING 1009335.99 EASTING 660646.29 GROUND ELEV.: 330.2 M.P. ELEV.:	BORING NO. ISL-13 SHEET 1 OF 1
LOGGED BY : David Heller	SAMPLING METHOD (S)	WATER LEVEL DATA	DRILLING DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : TEG	2' Split-Spoon	TIME OF DRILLING (bls) : 37 ft.	12/5/95 / 12/5/95
DRILL RIG TYPE : SP-15		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	80	0	CLAYEY SILT (ML): brown, medium to fine quartz sand, dry			
	X	2	N/A	60	7	CLAYEY SILT (ML): tan, abundant quartz sand, medium to fine grained, subangular, dry			
10	X	3	N/A	100	11	SANDY SILT (ML): tan, medium to fine grained, subangular, quartz sand with clay, dry SILTY SAND (SM): yellow brown, medium quartz sand, dry			
	X	4	N/A	95	16	SILTY SAND (SM): brown, tan, medium to fine quartz mica sand			
20	X	5	N/A	100	4	SILTY SAND (SM): gray, medium grained SILTY SAND (SM): white, medium grained, well graded, quartz and mica, dry			
	X	6	N/A	100	70	SILTY SAND (SM): white, medium to fine quartz, feldspar, mica, moist, some clay			
30	X	7	N/A	100	24	SAND (SW): gray, white, medium size quartz and feldspar, some silt			
	X	8	N/A	100	20			▽	
40								■	water sample collected from 39' to 42' on 12/5/95
						CPT completed at 42 feet			
50									
60									
70									

ISL-13.log

solvor95.pgt - 08/13/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 100941329	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING : 661237.29	ISL-14
		GROUND ELEV. 334.3	SHEET 1 OF 1
		M.P. ELEV.	DRILLING
LOGGED BY : M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	3/25/96 / 3/26/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	20	0				
	X	2	N/A	40	0	SAND (SC): firm, reddish brown/ orangish brown mottled, moist, mostly fine sand, little clay			
10	X	3	N/A	100	0	SILT with CLAY (MH): moderately soft, reddish brown/ brown mottled, mostly silt, some clay, little fine sand, dry			
	X	4	N/A	100	0	SILTY SAND (SM): loose, reddish brown/ brown mottled, mostly fine sand, some silt, few clay, dry			
20	X	5	N/A	90	0	SAND (SP): moderately stiff, tan/ pink/ yellowish brown mottled, moist, mostly medium sand, little silt, few clay			
	X	6	N/A	90	.1	SAND (SP): loose, yellowish brown/ pink/ tan mottled, moist, mostly medium sand, little clay, few silt, few coarse sand			
30	X	7	N/A	80	.1	SAND (SP): same as above			
	X	8	N/A	90	.1	SANDY CLAY (CL): moderately stiff, tan/ pink mottled, moist, mostly clay, some medium sand			
40	X	9	N/A	90	.1	SAND (SP): loose, tan, wet, mostly medium sand, little fine sand, few clay			water sample collected from 44' to 45' on 3/26/96
						CPT completed at 45 feet			
50									
60									
70									

ISL-14.log

solvor95.dot - 05/03/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1009536.50	BORING NO. ISL-15
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941.310	DPT	EASTING . 661799.34	
		GROUND ELEV. : 320.0	SHEET 1 OF 1
		M.P. ELEV. .	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	4/9/96 / 4/9/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL / SCREEN INTERVAL	REMARKS
	⊠	1	N/A	80	0	SANDY SILT (ML): soft, brown, moist, mostly silt, some sand			
	⊠	2	N/A	100	0	CLAYEY SAND (SC): dense, mottled gray and pink, moist, mostly sand, some clay and silt			
10	⊠	3	N/A	100	0	SAND (SP): firm, mottled gray, pink and tan, moist, poorly graded, mostly sand, trace silt and clay			
	⊠	4	N/A	100	0	SAND (SP): same as above, poorly graded			
20	⊠	5	N/A	100	0	SAND with CLAY (SP-SC): firm, mottled pink, brown and tan, moist, poorly graded, mostly sand, few clay and silt			
	⊠	6	N/A	100	0	SAND with CLAY (SP-SC): same as above, mostly tan			
30	⊠	7	N/A	80	0	SAND (SP): loose, white, wet, poorly graded, mostly sand, trace clay and silt			saturated at 30-31'
40						CPT completed at 40 feet		▬	water sample collected from 39' to 40' on 4/9/96
50									
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1009820.48	BORING NO. ISL-16	
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 662069.09		
		GROUND ELEV 326.0	SHEET 1 OF 1	
		M.P. ELEV.	DRILLING	
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED	DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :		
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/9/96	4/9/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	N/A	0	SANDY SILT (ML): soft, brown, mostly silt, some sand, moist			
	X	2	N/A	N/A	0	SILTY SAND (SM): soft, brown to tan, moist, mostly sand, some silt, few clay			
10	X	3	N/A	N/A	0	CLAYEY SAND (SC): dense, dark brown to tan, moist, mostly sand, some clay and silt			
	X	4	N/A	N/A	0	CLAYEY SAND (SC): medium dense, dark brown to tan, moist, mostly sand, some clay, trace silt			
20	X	5	N/A	N/A	0	SAND (SP): loose, orange/ pink/ tan, moist, poorly graded, mostly sand, trace gravel and silt			
	X	6	N/A	N/A	0	CLAY (CL): dense, gray to brown to tan, moist, lean, mostly clay, trace sand			
30	X	7	N/A	N/A	0	CLAY (CL): dense, brown to tan, moist, lean, mostly clay, trace silt and sand			
	X	8	N/A	0	N/A				wet, no recovery
40						CPT completed at 40 feet			water sample collected from 39' to 40' on 4/9/96
50									
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1008989.06	BORING NO. ISL-17
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 659160.91	
		GROUND ELEV 315.5	SHEET 1 OF 1
		M.P. ELEV	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/11/96 / 4/11/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	70	0	SILTY SAND (SM): soft, brown, moist, mostly sand, some silt			
	☒	2	N/A	80	0	SILTY SAND (SM): same as above			
10	☒	3	N/A	90	0	SAND with CLAY (SP-SC): loose, orange to pink to white, moist, mostly sand, few clay and silt			
	☒	4	N/A	100	0	SAND with SILT (SP-SM): loose, tan to white, moist, mostly sand, few silt			
20	☒	5	N/A	100	0	SAND with CLAY (SP-SC): loose, brown to tan, very moist, mostly sand, few clay and silt			
	☒	6	N/A	80	0	SAND (SP): loose, gray to white, saturated, mostly sand, trace clay			
30									
						CPT completed at 34 feet			water sample collected from 33' to 34' on 4/11/96
40									
50									
60									
70									

ISL-17.log

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RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1011447.25	BORING NO. ISL-18
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 660533.99	
		GROUND ELEV. 376.2	SHEET 1 OF 2
		M.P. ELEV.	DRILLING
LOGGED BY : M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (DIS) :	3/31/96 / 3/31/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	70	0	SILTY CLAY (CH): soft, brown, moist to wet, mostly clay, some silt			
	☒	2	N/A	100	0	CLAYEY SILT (ML): dense, reddish brown, some tan and gray mottling, dry, mostly silt, little clay, few fine sand			
10	☒	3	N/A	100	0	CLAYEY SILT (ML): same as above			
	☒	4	N/A	90	0	SILTY CLAY (CL): stiff, gray, tan and reddish brown mottled, dry, mostly clay, some silt			
20	☒	5	N/A	60	0	SILTY SAND (SM): loose, orangish brown, dry, mostly fine sand, some silt, few clay			
	☒	6	N/A	50	0	SAND (SP): top 8" are sand, loose, orangish brown, dry, mostly fine sand bottom 2" are CLAY (CL), stiff, purple/ brown/ gray/ tan mottled, dry, mostly clay			
30	☒	7	N/A	50	0	SAND (SP): loose, yellowish gray, dry, mostly fine sand, few fine gravel			
	☒	8	N/A	100	0	SILTY SAND (SM): loose, light brown, dry, mostly fine sand, little silt, small zone of reddish brown silty clay			
40	☒	9	N/A	90	0	SAND (SW): loose, orangish brown, dry, mostly fine sand, some medium to coarse sand, little gravel			
	☒	10	N/A	100	0	SILTY SAND (SM): loose, tan/ gray, dry to moist, mostly fine to medium sand, some silt, little clay			
50	☒	11	N/A	90	0	SANDY CLAY (CH): firm, gray/ tan, moist, mostly clay, little fine sand			
	☒	12	N/A	100	0	SANDY CLAY (CL): firm, beige, moist, mostly clay, little fine sand			Tip refusal for soil sampler. Push with smaller diameter water sampling tool. No additional soil samples collected.
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 1011447.25	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 3394130	DPT	EASTING : 660533.99	ISL-18
		GROUND ELEV. : 376.2	SHEET 2 OF 2
		M.P. ELEV.	DRILLING
LOGGED BY : M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	3/31/96 / 3/31/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
80						SANDY CLAY (CL): firm, beige, moist, mostly clay, little fine sand			
						CPT completed at 82 feet			water sample collected from 81' to 82' on 3/31/96
90									
100									
110									
120									
130									
140									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1011441.14	BORING NO. ISL-19
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 660803.89	
		GROUND ELEV. 378.3	SHEET 1 OF 2
		M.P. ELEV. .	DRILLING
LOGGED BY . M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR . Fugro	Tube Push	TIME OF DRILLING (bls) .	3/30/96 / 3/30/96
DRILL RIG TYPE . DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	⊠	1	N/A	70	0	SILTY CLAY (CH): soft, reddish brown, moist, mostly clay, some silt			
	⊠	2	N/A	90	0	SILT (ML): stiff, reddish brown, slight gray mottling, dry, mostly silt, few clay			
10	⊠	3	N/A	100	0	SILT (ML): same as above, little fine sand			
	⊠	4	N/A	100	0	SILT (ML): same as above			
20	⊠	5	N/A	100	0	SILTY CLAY (CL): dense, pink and gray mottled and yellowish tan, dry, mostly clay, some silt			
	⊠	6	N/A	90	0	SILTY CLAY (CL): same as above			
30	⊠	7	N/A	60	0	SAND (SP): loose, orangish brown, dry, mostly fine sand			
	⊠	8	N/A	90	0	SAND (SM): loose, orangish brown, dry, mostly fine sand to fine gravel, few clay			
40	⊠	9	N/A	90	0	SAND (SP): loose, orangish brown, dry, mostly fine sand			
	⊠	10	N/A	80	0	SAND (SP): loose, yellowish brown, dry, mostly fine sand, few fine gravel			
50	⊠	11	N/A	70	0	SILTY SAND (SM): loose, light gray, moist, mostly fine sand, some silt, micaceous			
	⊠	12	N/A	100	0	CLAY (CL): very stiff, gray and pink mottled, dry, mostly hard clay			
60	⊠	13	N/A	100	0	SILTY SAND (SM): loose, beige, dry, mostly fine sand, some silt			
	⊠	14	N/A	100	0	SAND (SW): moderately dense, tan, moist, mostly fine sand to fine gravel, little silt			
70		15	N/A	80	0	SILTY SAND (SM): dense, beige, moist, mostly fine to coarse sand, little gravel, little silt, few clay			

ISL-19.log

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 101144.14	BORING NO. ISL-19
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 660803.89	
		GROUND ELEV. 378.3	SHEET 2 OF 2
		M.P. ELEV.	DRILLING
LOGGED BY : M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	3/30/96 / 3/30/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
80	X					SILTY SAND (SM) dense, beige, moist, mostly fine to coarse sand, little gravel, little silt, few clay			
						CPT completed at 81 feet			water sample collected from 80' to 81' on 3/30/96
90									
100									
110									
120									
130									
140									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 101089828	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 659942.47	ISL-20
		GROUND ELEV. 350.4	SHEET 1 OF 1
		M.P. ELEV.	DRILLING
LOGGED BY : Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR Fugro	Tube Push	TIME OF DRILLING (bls)	4/18/96 / 4/18/96
DRILL RIG TYPE : DPT		STATIC (TOC)	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	CLAY (CL): very soft, reddish brown, some organic rich soil, moist			
	X	2	N/A	10	0	CLAY (CL): same as above, very soft, moist			
10	X	3	N/A	10	0	CLAYEY SAND (SC): soft, reddish brown, moist			
	X	4	N/A	15	0	CLAYEY SAND (SC): same as above with concrete? and gravel at base of spoon			tip refusal at 15', offset boring Offset boring penetrated to 20', but could not retrieve sample. Third offset boring had tip refusal at 15', and broke rod.
						CPT refusal at 16 feet			
20									
30									
40									
50									
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 1010835.99	BORING NO. ISL-21
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941.310	DPT	EASTING : 660053.08	
		GROUND ELEV. : 350.1	SHEET 1 OF 1
		M.P. ELEV :	DRILLING
LOGGED BY : Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	4/19/96 / 4/19/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL / SCREEN INTERVAL	REMARKS
	⊠	1	N/A	100	0	SILTY CLAY (CL): soft, reddish brown, moist			
	⊠	2	N/A	100	0	SILTY CLAY (CL): stiff, reddish orange			
10	⊠	3	N/A	100	0	CLAYEY SAND (SC): stiff, reddish orange with 10 - 20% clay, gravel near middle of spoon			
	⊠	4	N/A	100	0	CLAYEY SAND (SC): loose, reddish brown, 10 - 15% clay and 15 - 25% gravel intermixed			very hard between 15' and 20'
20	⊠	5	N/A	100	0	SAND (SP): loose, white to light pink, very fine sand with a trace of silt			
	⊠	6	N/A	100	0	SAND (SP): tan and reddish pink, fine sand, trace mica, moist, bottom 3 inches of spoon is light gray to white CLAYEY SILT (ML)			
30	⊠	7	N/A	100	0	SAND (SP): white, fine clean sand, moist			
	⊠	8	N/A	100	0	SAND (SP): same as above, coarser grained, fine to medium grained sand			
40	⊠	9	N/A	100	0	SAND (SP): same as above, white, fine clean sand, moist			
	⊠	10	N/A	50	0	SAND (SP): same as above, wet, loose, saturated			
50						CPT completed at 51 feet		WS	water sample collected from 50' to 51' on 4/19/96
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010716.51	BORING NO. ISL-22
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 660755.41	
		GROUND ELEV 352.9	SHEET 1 OF 1
		M.P ELEV	DRILLING
LOGGED BY : Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	4/19/96 / 4/19/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	⊠	1	N/A	100	0	SILTY CLAY (CL): soft, deep reddish orange, moist			
	⊠	2	N/A	100	0	SILTY CLAY (CL): soft, reddish orange, moist			
10	⊠	3	N/A	100	0	SILTY SAND (SM): soft to loose, reddish orange, fine to medium grained, moist			
	⊠	4	N/A	100	0	SAND with SILTY SAND (SP/SM): loose, reddish orange, bedded medium clean sand and fine silty sand, moist			
20	⊠	5	N/A	60	0	SILTY SAND with GRAVEL (SP-SM): loose, dry			Tip refusal for soil sampler at 20 feet on 4/19/96. Push with small diameter water sampling tool in offset boring. No additional soil samples collected.
30									
40									
50									
						CPT completed at 57 feet			Water sample collected from 56' to 57' on 4/19/96
60									
70									

ISL-22.dg

solvor95.bct - 10/3/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 1010734.21	BORING NO. ISL-23
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941.310	DPT	EASTING : 560812.68	
		GROUND ELEV . 352.0	SHEET 1 OF
		M.P. ELEV.	DRILLING
LOGGED BY : Lester Wilams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Type Push	TIME OF DRILLING (DIS) :	
DRILL RIG TYPE : DPT		STATIC (TOC) .	4/19/96 / 4/19/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	CLAY (CL): stiff, reddish clay with white to gray mottles, dry			
	X	2	N/A	100	0	CLAY (CL): same as above, more silty			
10	X	3	N/A	100	0	SAND (SP): loose, reddish-orange, fine to medium sand with a 1-inch layer of non-cemented sands			
	X	4	N/A	100	0	SAND (SP): tanish orange, fine to medium sand with SILT: SAND (SM)			
20	X	5	N/A	50	0	SAND with GRAVEL (SW/GW): loose, tan, fine sand and gravel, silty			Tip refusal for soil sampler at 20 feet on 4/19/96. Push with small diameter water sampling tool in offset boring. No additional soil samples collected.
30									
40									
50									
60						DPT completed at 60 feet			water sample collected from 59' to 60' on 4/19/96
70									

ISL-23.log

salvar96.bat - 28/3/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1009879.07	BORING NO. ISL-24
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941.310	DPT	EASTING . 659134.53	
		GROUND ELEV. : 331.4	SHEET 1 OF 1
		M.P. ELEV. .	DRILLING
LOGGED BY . Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/12/96 / 4/12/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	90	0	SANDY CLAY (CL): hard, dark reddish brown to gray, slightly moist, mostly clay, some sand and silt			
	X	2	N/A	90	0	SAND (SP): loose, brown to orange, slightly moist, mostly sand, trace silt and clay			
10	X	3	N/A	100	0	SAND with SILT (SP-SM): loose, dark brown to orange to tan to white, slightly moist, mostly coarse sand, few silt			
	X	4	N/A	90	0	SAND with SILT (SP-SM): same as above, mostly orange and tan			
20	X	5	N/A	90	0	CLAYEY SAND (SC): hard/loose, pink to gray to white, slightly moist, mostly coarse sand, some clay			
	X	6	N/A	100	0	SAND with CLAY (SP-SC): loose, pink to gray to white, slightly moist, mostly coarse sand, few clay and silt			
30	X	7	N/A	90	0	SAND (SP): loose, rust brown to orange, moist, mostly coarse sand			
						SAND (SP): same as above, saturated			
40								X	water sample collected from 45' to 46' on 4/12/96
						DPT completed at 46 feet			
50									
60									
70									

ISL-24.log

salvcr95.pct - 08/31/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 1010037.44	BORING NO. ISL-25
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING : 659223.83	
		GROUND ELEV : 330.5	SHEET 1 OF *
		M.P. ELEV. :	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	4/12/96 / 4/12/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	⊠	1	N/A	100	0	SANDY SILT (ML): soft, brown, moist, mostly silt, some sand			
	⊠	2	N/A	100	0	CLAYEY SAND (SC): hard, dark reddish brown to tan to gray, moist, mostly sand, some clay			
10	⊠	3	N/A	100	0	CLAYEY SAND (SC): same as above			
	⊠	4	N/A	100	0	SAND (SP): loose, gray to tan, moist, mostly fine to medium sand, trace silt			
20	⊠	5	N/A	100	0	SAND (SP): same as above, some orange/brown			
	⊠	6	N/A	100	0	SAND (SP): loose, orange to tan, moist, mostly coarse sand, trace silt			
30	⊠	7	N/A	100	0	SAND (SP): same as above, saturated			
40						DPT completed at 40 feet			water sample collected from 39' to 40' on 4/12/96
50									
60									
70									

ISL-25.log

saiver95.pct - 05/13/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S):	NORTHING: 1009968.67	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING: 659399.01	ISL-26
		GROUND ELEV.: 335.1	SHEET 1 OF 1
		M.P. ELEV.:	DRILLING
LOGGED BY: Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR: Fugro	Tube Push	TIME OF DRILLING (bls):	
DRILL RIG TYPE: DPT		STATIC (TOC):	4/11/96 / 4/11/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL / SCREEN INTERVAL	REMARKS
	☒	1	N/A	100	0	SANDY SILT (ML): soft, brown, moist, mostly silt, some sand			
	☒	2	N/A	100	0	SANDY CLAY (CL): hard, reddish brown to orange, slightly moist, mostly clay, some sand and silt			
10	☒	3	N/A	100	0	SAND (SP): loose, red to brown to orange and tan, slightly moist, mostly sand, trace silt			
	☒	4	N/A	100	0	SILTY SAND (SM): loose, light brown to white, slightly moist, mostly sand, some silt, trace clay			
20	☒	5	N/A	100	0	SILTY SAND (SM): loose, light brown to tan to white, slightly moist, mostly sand, some silt			
	☒	6	N/A	100	0	SAND (SP): loose, gray to white, slightly moist, mostly sand, trace silt			
30	☒	7	N/A	100	0	SAND (SP): same as above			
	☒	8	N/A	100	0	SAND with SILT (SP-SM): loose, brown to tan to white, moist, mostly sand, few silt			
40	☒	9	N/A	100	0	SAND with SILT (SP-SM): same as above, saturated			
								▮	water sample collected from 46' to 47' on 4/11/96
50						CPT completed at 47 feet			
60									
70									

ISL-26.log

Drvar95.dat - 08/13/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1009799.37	BORING NO. ISL-27
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 659406.12	
		GROUND ELEV. 332.1	SHEET 1 OF 1
		M.P. ELEV.	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/11/96 / 4/11/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	90	0	SANDY CLAY (CL): medium dense, brown to dark brown, moist, mostly clay, some silt and sand.			
	X	2	N/A	100	0	SAND with SILT (SP-SM): loose, rust orange, moist, mostly sand, few silt			
10	X	3	N/A	100	0	SAND with SILT (SP-SM): loose, orange to tan to white, moist, mostly sand, few silt			
	X	4	N/A	100	0	SAND with SILT (SP-SM): loose, tan to white, moist, mostly sand, few silt			
20	X	5	N/A	100	0	SAND (SP): loose, gray to white, moist, mostly mostly sand, trace silt			
	X	6	N/A	100	0	SAND (SP): same as above, white			
30	X	7	N/A	100	0	SAND (SP): same as above, orange to white			
	X	8	N/A	100	0	SAND (SP): same as above, rust orange to white, saturated			
40									
						CPT completed at 45 feet			water sample collected from 44' to 45' on 4/11/96
50									
60									
70									

ISL-27.log

scwo95.dot - 05/31/96

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 1009043.85	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941.310	DPT	EASTING : 659528.90	ISL-28
		GROUND ELEV. : 332.9	SHEET 1 OF 1
		M.P ELEV.	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/10/96 / 4/10/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	80	0	SILTY SAND (SM): soft, brown, moist, mostly sand, some silt			
	☒	2	N/A	100	0	SILTY SAND (SM): same as above			
10	☒	3	N/A	100	0	SANDY CLAY (CL): hard, dark reddish brown, slightly moist, mostly clay, some sand, trace gravel			
	☒	4	N/A	100	0	SAND (SP): hard, orange to tan, slightly moist, mostly sand, trace silt and gravel			
20	☒	5	N/A	100	0	SAND with SILT (SP-SM): loose, orange to tan, white, moist, mostly sand, few silt			
	☒	6	N/A	100	0	SAND with SILT (SP-SM): same as above			
30	☒	7	N/A	100	0	CLAYEY SAND (SC): medium dense, gray to pink, moist, mostly sand, some clay			
	☒	8	N/A	100	0	SAND with CLAY (SP-SC): loose, white to gray, moist to wet, mostly sand, few clay			
40	☒	9	N/A	100	0	SAND with CLAY (SP-SC): same as above, saturated			
50						CPT completed at 50 feet		■	water sample collected from 49' to 50' on 4/10/96
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1009089.77	BORING NO. ISL-29
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 659653.88	
		GROUND ELEV. 332.6	SHEET 1 OF 1
		M.P. ELEV. :	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/10/96 / 4/10/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL / SCREEN INTERVAL	REMARKS
	☒	1	N/A	90	0	SANDY SILT (ML): soft, brown, slightly moist, mostly silt, some sand			
	☒	2	N/A	90	0	SANDY CLAY (CL): hard, dark reddish brown, dry, mostly clay, some silt and sand			
10	☒	3	N/A	100	0	SILTY SAND (SM): hard, dark reddish brown to tan, slightly moist, mostly sand, some silt and clay			
	☒	4	N/A	100	0	SILTY SAND (SM): same as above, some silt			
20	☒	5	N/A	100	0	SAND with SILT (SP-SM): loose, orange to tan to white, moist, mostly sand, few silt			
	☒	6	N/A	100	0	CLAY (CL): very hard, gray, dry, mostly clay, trace sand			
30	☒	7	N/A	100	0	SAND with CLAY (SP-SC): loose, gray to white, moist, mostly sand, few clay and silt			
	☒	8	N/A	90	0	SAND (SP): loose, gray to white, moist, mostly sand, trace clay			
40	☒	9	N/A	90	0	SAND (SP): same as above, saturated			
50						CPT completed at 50 feet		■	water sample collected from 49' to 50' on 4/10/96
60									
70									

ISL-29.log

solver95.par - 06/13/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 1009048.40	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941.310	CPT	EASTING : 659767.03	ISL-3C
		GROUND ELEV. : 333.7	SHEET 1 OF
		M.P. ELEV. :	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	4/10/96 / 4/10/96
DRILL RIG TYPE : CPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	80	0	SILTY SAND (SM): soft, brown, slightly moist, mostly sand, some silt			
	X	2	N/A	100	0	SANDY CLAY (CL): dense, dark reddish brown to gray, slightly moist, lean, mostly clay, some sand			
10	X	3	N/A	100	0	SAND with CLAY (SP-SC): loose, dark brown to tan, slightly moist, mostly sand, few clay			
	X	4	N/A	100	0	SAND with CLAY (SP-SC): same as above, more tan and white colored			
20	X	5	N/A	100	0	SAND with CLAY (SP-SC): same as above			
	X	6	N/A	100	0	SAND (SP): loose, white to tan, slightly moist, mostly sand, trace silt			
30	X	7	N/A	100	0	SAND (SP): same as above, all white, trace clay (kaolinite			
	X	8	N/A	100	0	SAND (SP): same as above			
40	X	9	N/A	100	0	SAND (SP): same as above, saturated			
50						CPT completed at 50 feet			water sample collected from 49' to 50' on 4/10/96
60									
70									

ISL-3C.log

sdwcr96.pdt - 05 3 1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1008933.67	BORING NO. ISL-31
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 659675.83	
		GROUND ELEV. : 331.5	SHEET 1 OF 1
		M.P ELEV. .	DRILLING
LOGGED BY : Cathy Adams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : TEG	2' Split-Spoon	TIME OF DRILLING (bls) : 39.45 ft.	12/5/95 / 12/5/95
DRILL RIG TYPE . SP-15		STATIC (TOC) .	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	12	SILTY SAND (SM): brown, plant debris, moist			
	X	2	N/A	100	10	SANDY CLAY (SC): orange, hard, moist			
10	X	3	N/A	100	12	SANDY CLAY (SC): orange, weathered quartz fragments, moist, soft			
	X	4	N/A	70	22	SILTY SAND (SM): orange, medium sized quartz fragments, medium sand, soft, moist			
20	X	5	N/A	80	3	SILTY SAND (SM): light gray, medium to fine grained, quartz sand, some coarse feldspar, moist			
	X	6	N/A	75	2	SILTY SAND (SM): same as above, mixed with brown silt			
30	X	7	N/A	100	8	SAND (SW): white to gray, medium grained, moist			
	X	8	N/A	100	8	SAND (SW): same as above, with feldspar		▽	water at 39.45' using water tape
40	X	9	N/A	100	2	SAND (SW): brown, coarse grained, wet			water sample collected from 40' to 43' on 12/5/95
						DPT completed at 43 feet			
50									
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1009244.50	BORING NO
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 662382.75	ISL-32
		GROUND ELEV. 316.00	SHEET 1 OF 1
		M.P. ELEV.	DRILLING
LOGGED BY : David Heller	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : TEG	2' Split-Spoon	TIME OF DRILLING (bls)	12/8/95 / 12/8/95
DRILL RIG TYPE : SP-15		STATIC (TOC)	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL / SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	CLAYEY SILT (ML): orange, dry, hard			
	X	2	N/A	100	0	CLAYEY SILT (ML): red, dry, hard			
10	X	3	N/A	100	0	CLAY (CH): red tan, some fine sand, dry, hard			
	X	4	N/A	80	0	SILTY SAND (SM): white, medium grained quartz sand in feldspar silt matrix, damp			
20	X	5	N/A	50	0	SAND (SP): tan white, coarse quartz sand, subrounded, wet, with gravel			water sample collected from 22' to 25' on 12/8/95
						DPT completed at 25 feet			
30									
40									
50									
60									
70									

ISL-32.log

salvor95.dat - 12/3/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1009334.26	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 662535.09	ISL-33
		GROUND ELEV. : 316.0	SHEET 1 OF 1
		M.P. ELEV. .	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) .	4/12/96 / 4/12/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	SANDY SILT (ML): soft, brown, moist, mostly silt, some sand			
	X	2	N/A	100	0	SANDY SILT (ML): loose, reddish brown to orange, slightly moist, mostly silt, some clay and sand			
10	X	3	N/A	100	0	CLAYEY SAND (SC): hard, dark reddish brown to gray, slightly moist, mostly sand, some clay			
	X	4	N/A	100	0	CLAYEY SAND (SC): same as above			
20	X	5	N/A	100	0	CLAY (CL): very hard, dark reddish brown to gray, slightly moist to dry, mostly clay, trace sand			
	X	6	N/A	100	0	SAND with GRAVEL (SP): loose, orange to tan to white, moist, mostly coarse sand, few gravel, trace silt			
30	X	7	N/A	100	0	SAND with GRAVEL (SP): same as above, saturated			
40						CPT completed at 40 feet			water sample collected from 39' to 40' on 4/12/96
50									
60									
70									

ISL-33.log

sdvcr95.pdt - 08/13/96

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 1009002.71	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING : 662462.23	ISL-34
		GROUND ELEV. : 309.3	SHEET 1 OF 1
		M.P. ELEV. :	DRILLING
LOGGED BY : David Heller	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : TEG	2" Split-Spoon	TIME OF DRILLING (bls) : 21 ft.	12/8/95 / 12/8/95
DRILL RIG TYPE : SP-15		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	80	0	CLAYEY SILT (ML): dark brown/ brown, organics, hard, damp			
	X	2	N/A	100	0	SILTY SAND (SM): yellow orange, medium quartz sand, hard, dry			
10	X	3	N/A	90	0	CLAY (CH): tan red, medium quartz sand, hard SILTY SAND (SM): white, medium grained quartz sand in feldspar silty matrix, very hard			
	X	4	N/A	90	6	SILTY CLAY (CL): tan white, very hard, dry SILTY SAND (SM): white, medium to coarse quartz sand, some quartz gravel, very hard			
20	X	5	N/A	5	0	SANDY GRAVEL (SP-GM): white, quartz gravel and sand in feldspar silt, wet			water sample collected from 21' to 24' on 12/8/95
						CPT completed at 24 feet			
30									
40									
50									
60									
70									

ISL-34.log

sdlwor95.dot - 05/13/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1009034.06	BORING NO. ISL-35
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 662293.31	
		GROUND ELEV. . 307.4	SHEET 1 OF
		M.P. ELEV.	DRILLING
LOGGED BY David Heller	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : TEG	2' Split-Spoon	TIME OF DRILLING (bls) : 18.5 ft.	12/7/95 / 12/7/95
DRILL RIG TYPE . SP-15		STATIC (TOC) .	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	SILT (ML): dark brown, moist, soft, organics			
						CLAYEY SILT (ML): yellow brown, soft, damp			
	X	2	N/A	100	0	SANDY SILT (ML): tan brown, 20% fine sands, soft, dry			
10	X	3	N/A	100	0	GRAVELLY SAND (SP-GM): brown, coarse quartz sand, subangular, dry			
	X	4	N/A	50	:	GRAVELLY SAND (SP-GM): white, medium to coarse sand, mixed with gravel, quartz with feldspar, damp			
	X	5	N/A	95	:	SANDY GRAVEL (SP-GP): tan orange, broken quartz rock			
20	X	6	N/A	100	4	GRAVELLY SAND (SP-GM): tan red, medium to fine sandy quartz, some quartz gravel, moist to wet		▽	water at 18.5' using water tape
								▬	screen set at 22' - 25'
									water sample collected from 22' to 25' on 12/7/95
						CPT completed at 25 feet			
30									
40									
50									
60									
70									

ISL-35.log

salvar95.pdt - 19 3 1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1010843.01	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 661952.87	ISL-36
		GROUND ELEV. : 349.4	SHEET 1 OF
		M.P. ELEV. .	DRILLING
LOGGED BY . M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR . Fugro	Tube Push	TIME OF DRILLING (bls) :	4/2/96 / 4/2/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	100	0	SILT (ML): firm, reddish brown with some gray and tan mottling, dry, mostly silt, few clay, few fine sand			
	☒	2	N/A	70	0	SAND (SW): loose, orangish brown, dry, mostly fine to medium sand, little coarse sand and gravel			
10	☒	3	N/A	80	0	SAND (SP): loose, yellowish tan, dry, mostly fine sand, little silt			
	☒	4	N/A	70	0	SAND (SW): loose, light brown, dry, mostly fine sand, little medium to coarse sand, little gravel			
20	☒	5	N/A	80	0	SANDY CLAY (CL): firm, yellowish gray, moist to wet, mostly clay, some fine sand, little silt, micaceous			
	☒	6	N/A	100	0	CLAY (CL): stiff, light gray, dry, mostly powdery clay			
30	☒	7	N/A	90	0	SAND (SP): loose, beige, dry, mostly fine sand, some silt, micaceous			
	☒	8	N/A	90	0	SILTY CLAY (CL): firm, orangish tan, moist to wet, mostly clay, some silt, little fine sand			
40	☒	9	N/A	100	0	SANDY CLAY (CL): stiff, pinkish gray, moist, mostly clay, some fine sand			
	☒	10	N/A	90	0	SAND (SP): loose, beige, dry to moist, mostly fine sand, little medium sand			
50	☒	11	N/A	50	0	SILTY SAND (SM): loose, orangish tan, wet, mostly fine to medium sand, little silt			
						CPT completed at 53 feet		▮	water sample collected from 52' to 53' on 4/2/96
60									
70									

ISL-36.cpt

solvcr35.pdt - 08/13/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1010723.68	BORING NO. ISL-37
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 662003.58	
		GROUND ELEV. . 348.8	SHEET 1 OF 1
		M.P. ELEV. .	DRILLING
LOGGED BY : M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) .	4/1/96 / 4/1/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	80	0	SILT (ML): firm, reddish brown and tan, moist, mostly silt, little clay, few fine sand			
	X	2	N/A	90	0	SANDY SILT (ML): soft, orangish brown, moist, mostly silt, some fine sand, few clay			
10	X	3	N/A	90	0	SAND (SW): loose, orangish brown, dry, mostly fine to medium sand, little silt, few fine gravel			
	X	4	N/A	80	0	SAND (SW): loose, orangish brown, dry, mostly fine to coarse sand, little fine gravel			
20	X	5	N/A	90	0	CLAYEY SILT (ML): firm, pink and beige, moist, mostly silt, little sticky clay, micaceous			
	X	6	N/A	90	0	CLAYEY SILT (ML): same as above			
30	X	7	N/A	90	0	SANDY SILT (ML): loose, yellowish tan, moist, mostly silt, little fine sand, few coarse sand and fine gravel			
	X	8	N/A	70	0	SILTY SAND (SM): moderately dense, beige, moist, mostly fine to medium sand, some silt, few clay			
40	X	9	N/A	100	.4	SANDY CLAY (CL): stiff, beige and light gray, moist, mostly clay, some fine sand			
	X	10	N/A	90	0	SAND (SP): moderately dense, pink, moist, mostly fine to medium sand, little coarse sand, bottom 1-inch very iron rich			
50	X	11	N/A	100	0	SAND (SP): loose, tan, wet, mostly medium sand, little fine and coarse sand, few silt and clay			
						CPT completed at 54 feet		I	water sample collected from 53' to 54' on 4/1/96
60									
70									

ISL-37.log

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RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1010634.29	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 661984.79	ISL-38
		GROUND ELEV. : 348.0	SHEET 1 OF
		M.P. ELEV. :	DRILLING
LOGGED BY : M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	4/1/96 / 4/2/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL / SCREEN INTERVAL	REMARKS
	X	1	N/A	40	0	SILT (ML): soft, brown, moist, mostly silt			
	X	2	N/A	80	0	SILTY SAND (SM): loose, reddish brown, dry, mostly fine to coarse sand, some silt			
10	X	3	N/A	90	0	SILTY SAND (SM): same as above			
	X	4	N/A	80	0	SILTY SAND (SM): same as above			
20	X	5	N/A	90	0	SILTY SAND (SM): moderately dense, reddish tan, dry, mostly fine to medium sand, some silt, few clay			
	X	6	N/A	90	0	CLAYEY SILT (ML): stiff, pink and gray, dry, mostly silt, some clay			
30	X	7	N/A	70	0	SILTY SAND (SM): loose, beige, dry, mostly fine sand, little silt			
	X	8	N/A	90	0	SANDY CLAY (CL): stiff, gray with tan and pink, moist to wet, mostly clay, some fine sand			
40	X	9	N/A	90	0	SANDY CLAY (CL): same as above			
	X	10	N/A	80	0	SAND (SP): moderately dense, beige and pink, moist, mostly fine sand			
50	X	11	N/A	100	0	SILTY SAND (SM): loose, beige, wet, mostly fine to medium sand, little silt, few clay			
						CPT completed at 54 feet			water sample collected from 53' to 54' on 4/2/96
60									
70									

ISL-38.log

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DRILLING METHOD (S) DPT	NORTHING 1010646.38 EASTING 661907.71 GROUND ELEV.: 350.2 M.P. ELEV.	BORING NO. ISL-39 SHEET 1 OF 1
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DRILLING: DATE STARTED 4/16/96; DATE COMPLETED 4/17/96
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	100	0	SILTY SAND (SM): soft, dark brown, dry, mostly sand, some silt			
	☒	2	N/A	100	0	SILTY SAND (SM): soft, light brown to tan, moist, mostly sand, some silt			
10	☒	3	N/A	100	0	SAND with GRAVEL (SP): very hard, dark red/ brown/ white, mostly coarse sand, few gravel			
	☒	4	N/A	100	0	SAND (SP): loose, dark red brown, moist, mostly coarse sand, trace gravel			
20	☒	5	N/A	100	0	SAND (SP): loose, tan/ light gray/ white, moist, mostly sand			
	☒	6	N/A	100	0	SAND with CLAY (SP-SC): medium hard, light gray to white, moist, mostly fine sand, few clay			
30	☒	7	N/A	100	0	SAND (SP): loose, rust brown to tan, moist, mostly fine sand			
	☒	8	N/A	100	0	SAND with SILT (SP-SM): loose, tan, moist, mostly fine sand, few silt			
40	☒	9	N/A	100	0	CLAY (CL): very hard, gray and purple, dry, mostly clay			
	☒	10	N/A	N/A	N/A	CLAYEY SAND (SC): soft, light brown/ tan, saturated, mostly fine sand, some clay			
50									
60						DPT completed at 60 feet			water sample collected from 59' to 60' on 4/17/96
70									

ISL-39.log

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RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1010694.97	BORING NO. ISL-40
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 660858.07	
		GROUND ELEV. . 348.4	SHEET 1 OF 1
		M.P. ELEV. :	DRILLING
LOGGED BY : Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/18/96 / 4/18/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	CLAY (CL): stiff, red with few white splotches			
	X	2	N/A	100	0	CLAY (CL): same as above			
10	X	3	N/A	100	0	SAND (SP): loose, fine poorly graded sand, moist, clean			
	X	4	N/A	100	0	SILTY SAND (SM): loose, reddish, fine silty sand bedded with loose sand and gravel			
20	X	5	N/A	100	0	SILTY SAND (SM): soft, gray/ white and reddish orange, fine micaceous silty sand, moist			
	X	6	N/A	100	0	SILTY SAND (SM): soft, light tan to reddish tan, fine, micaceous silty sand, moist			
30	X	7	N/A	100	0	SILTY CLAY (CL): light tan to gray with red mottles, homogeneous, massive, dry			
	X	8	N/A	20	0	SAND with SILTY SAND (SP/SM): loose, fine clean sand bedded with silty sand, wet			Tip refusal for soil sampler at 35' on 4/18/96. Continue to push with smaller diameter water sampling tool. No additional soil samples collected.
40									
50									
						CPT completed at 56 feet			water sample collected from 55' to 56' on 4/18/96
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 1010703.85	BORING NO. ISL-41
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 661088.31	
		GROUND ELEV. : 349.2	SHEET 1 OF 1
		M.P. ELEV. :	DRILLING
LOGGED BY : Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	4/18/96 / 4/18/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	⊠	1	N/A	100	0	CLAY (CL): stiff, red/ orange/ gray/ white mottled			
	⊠	2	N/A	100	0	top 8" is stiff, brown to tan brown with red mottles, CLAYEY SILT (CL-ML) bottom 4" is loose, CLAYEY SAND (SC)			
10	⊠	3	N/A	100	0	CLAY (CL): stiff, light gray and red mottled with red stained (healed) fractures, silty, dry			
	⊠	4	N/A	100	0	SAND (SW): orange, fine to medium grained clean sand with gravel (10 - 15%)			
20	⊠	5	N/A	100	0	SILT (ML): firm, white to grayish white, very micaceous, sandy silt (10 - 15% sand), dry to moist			
	⊠	6	N/A	100	0	SAND (SP): white, scattered oxidized areas, clean, micaceous, fine sand with 5 - 10% silt			
30	⊠	7	N/A	100	0	SILT (ML): interlayered brown and reddish brown silts, moist			
	⊠	8	N/A	100	0	SILTY SAND (SM): tan, fine silty sand, wet			Tip refusal for soil sampler at 35' on 4/18/96. Push with smaller diameter water sampling toolin offset boring. No additional soil samples collected.
40									
50									
								▮	water sample collected from 57' to 58' on 4/18/96
60						CPT completed at 58 feet			
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010596.21	BORING NO. ISL-42
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 661370.13	
		GROUND ELEV.: 367.6	SHEET 1 OF 2
		M.P. ELEV.	DRILLING DATE STARTED / DATE COMPLETED
LOGGED BY: Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	
DRILLING CONTRACTOR: Fugro	Tube Push	TIME OF DRILLING (bls):	
DRILL RIG TYPE: DPT		STATIC (TOC):	4/17/96 / 4/17/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	70	0	SANDY SILT (ML): soft, brown, moist, trace clay			
	X	2	N/A	100	0	SANDY CLAY (CL): stiff, reddish brown with pockets of light gray, 20 - 30% fine to medium sand			
10	X	3	N/A	100	0	SILTY CLAY (CL): stiff, reddish orange with tan splotches, trace mica			
	X	4	N/A	100	0	SILT (ML): firm, reddish orange, homogeneous			
20	X	5	N/A	100	.3	SILTY CLAY (CL): firm to stiff, reddish orange with tan splotches, trace sand (5 - 10%)			
	X	6	N/A	100	0	SILT (ML): firm, reddish orange with few 1-inch beds of fine, moist, tan sand			
30	X	7	N/A	100	0	SAND (SP): loose, light tan to reddish tan, clean, moist			
	X	8	N/A	100	0	SAND (SP): loose, light tan, clean sand with large gravel (1 - 2")			Tip refusal for soil sampler at 35' on 4/17/96. Push with smaller diameter water sampling tool in offset boring. No additional soil samples collected.
40									
50									
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010596.21	BORING NO. ISL-42
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 561370.13	
		GROUND ELEV.: 367.6	SHEET 2 OF 2
		M.P. ELEV.	DRILLING
LOGGED BY : Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/17/96 / 4/17/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
						SAND (SP): loose, light tan, clean sand with large gravel (1 - 2")			
						CPT completed at 75 feet			water sample collected from 74' to 75' on 4/17/96
80									
90									
100									
110									
120									
130									
140									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1010440.73	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 661097.48	ISL-43
		GROUND ELEV. 348.9	SHEET 1 OF 1
		M.P. ELEV .	DRILLING
LOGGED BY : Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (Dls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/17/96 / 4/17/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	70	0	CLAYEY SILT (ML): firm, reddish with gray			
	X	2	N/A	80	0				
10	X	3	N/A	80	0				
	X	4	N/A	50	0				
20	X	5	N/A	20	0				Tip refusal for soil sampler at 21' on 4/17/96. Push with smaller diameter water sampling tool in offset boring. No additional soil samples collected.
30									
40									
50									
						CPT completed at 56 feet			water sample collected from 55' to 56' on 4/17/96
60									
70									

ISL-43.log

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RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1010448.64	BORING NO. ISL-44
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 660725.20	
		GROUND ELEV. : 349.2	SHEET 1 OF 1
		M.P. ELEV.	DRILLING
LOGGED BY : Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) .	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/17/96 / 4/17/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	50	0	CLAYEY SILT (ML): soft, reddish brown, few clay (5 - 10% clay), moist			
	☒	2	N/A	100	0	CLAYEY SILT (ML): same as above, moist			
10	☒	3	N/A	100	0	CLAY (CL): stiff, reddish orange with light tan to brownish tan mottles			
	☒	4	N/A	100	0	SANDY CLAY (CL): stiff, reddish with tan splotches, 30 - 40% sand			
20	☒	5	N/A	100	0	top 6" reddish orange CLAY (CL) bottom 6" very stiff, tan, fine CLAYEY SAND (SC) with gray clay lamina			
	☒	6	N/A	100	0	SILT (ML): firm, greyish white silt with rare purple flasers of clay, purple root marks, dry			
30	☒	7	N/A	100	0	SAND (SP): loose, white, fine, poorly graded sand, very clean, dry			
	☒	8	N/A	100	0	SILT (ML): white to grayish white silt, homogeneous with one pocket of sand at top of spoon, dry			
40	☒	9	N/A	100	0	SILTY SAND (SM): white, fine to medium silty sand, moist, 5 - 10% clay			
	☒	10	N/A	100	0	SAND (SP): white, fine sand, clean, unconsolidated, homogeneous, moist			
50	☒	11	N/A	20	0	SAND (SP): same as above, moist to wet			
						CPT completed at 58 feet			water sample collected from 57' to 58' on 4/17/96
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DRILLING METHOD (S) DPT	NORTHING 1010592.02 EASTING 660603.30 GROUND ELEV 348.8 M.P. ELEV.	BORING NO. ISL-45 SHEET 1 OF 1
LOGGED BY : Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	DRILLING DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (dis) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/17/96 / 4/18/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	100	0	CLAYEY SILT (ML): soft, reddish orange, moist, 10 - 20% clay			
	☒	2	N/A	100	0	CLAYEY SAND (SC): stiff, reddish orange with some clay (30 - 40% clay), dry			
10	☒	3	N/A	100	0	CLAYEY SAND (SC): same as above, dry			
	☒	4	N/A	100	0	SAND with GRAVEL (SP-GW): light tan, fine sand with 20 - 30% coarse gravel, dry			
20	☒	5	N/A	100	0	SILTY SAND (SM): white and reddish orange, thinly bedded fine grained silty sand, micaceous, dry			
	☒	6	N/A	100	0	SAND (SP): loose, white and reddish white, fine sand, clean			
30	☒	7	N/A	100	0	SILT (ML): firm, light gray and purple, homogeneous silt, one pocket of sand			
	☒	8	N/A	100	0	CLAYEY SAND (SC): firm, white, clayey sand with 15 - 20% clay, moist, homogeneous			
40	☒	9	N/A	0	N/A	no recovery			
	☒	10	N/A	100	0	SAND (SP): loose, white, fine sand, clean, moist			
50	☒	11	N/A	100	0	SAND (SP): loose, white, fine sand, wet, one lamina of silty sand, very clean			
						CPT completed at 57 feet			Water sample collected from 56' to 57' on 4/18/96
60									
70									

ISL-45.log

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RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010239.08	BORING NO. ISL-46
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 360715.53	
		GROUND ELEV. 345.9	SHEET 1 OF
		M.P. ELEV. :	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/15/96 / 4/15/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	SILTY SAND (SM): loose, dark brown to rust, moist, mostly sand, some silt			
	X	2	N/A	100	0	SILTY SAND (SM): same as above, tan to light brown			
10	X	3	N/A	100	0	SAND with CLAY (SP-SC): medium hard, dark reddish brown to tan/ gray, moist to dry, mostly sand, few clay			
	XX	4	N/A	100	0	SAND with GRAVEL (SP/GP): very hard, orange to tan, white, quartz, mostly sand, few gravel, trace clay and silt			Tip refusal for soil sampler at 15.5' on 4/15/96. Push with smaller diameter water sampling tool in offset boring. No additional soil samples collected.
	XX	5	N/A	N/A	N/A				
20									
30									
40									
50								■	water sample collected from 55' to 56' on 4/15/96
						DPT completed at 56 feet			
60									
70									

ISL-46.log

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RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1010249.76	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 660883.23	ISL-47
		GROUND ELEV. : 346.0	SHEET 1 OF 1
		M.P. ELEV. :	DRILLING
LOGGED BY : M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR . Fugro	Tube Push	TIME OF DRILLING (bls) .	4/3/96 / 4/17/96
DRILL RIG TYPE . DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	80	0	SILT (ML): soft, brown, moist, mostly silt			
	X	2	N/A	100	0	CLAYEY SILT (ML): firm, reddish brown, gray and tan mottled, mostly silt, some clay			
10	X	3	N/A	100	0	CLAYEY SILT (ML): same as above, stiff			
	X	4	N/A	80	0	SAND (SW): dense, reddish brown, dry, mostly fine to coarse sand, little fine gravel			Tip refusal for soil sampler at 16.3' on 4/3/96. Push with smaller diameter water sampling tool in offset boring. No additional soil samples collected.
20									
30									
40									
50									
						CPT completed at 56 feet			water sample collected from 55' to 56' on 4/17/96
60									
70									

ISL-47.log

solvc95.pct - 05/13/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010108.75	BORING NO. ISL-48
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 660793.62	
		GROUND ELEV. 345.8	SHEET 1 OF 1
		M.P. ELEV	DRILLING
LOGGED BY : David Heller	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : TEG	2' Split-Spoon	TIME OF DRILLING (bls) :	12/7/95 / 4/12/96
DRILL RIG TYPE SP-15		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL / SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	SILT (ML): red brown,			
						CLAYEY SILT (ML): red orange, dry, hard			
	X	2	N/A	100	0	CLAYEY SILT (ML): brown, soft, moist			
10	X	3	N/A	100	3	CLAYEY SILT (ML): red, some fine to medium sand, hard, dry			
	X	4	N/A	100	1	CLAYEY SILT (ML): mottled tan and red, some fine quartz sand, hard, dry			
20	X	5	N/A	95	0	SANDY SILT (ML): red, with clay, medium grained quartz sand, subangular, hard, dry			
	X	6	N/A	95	0	CLAYEY SILT (ML): red, some fine sand, dry, very hard			
30	X	7	N/A	80	4	CLAYEY SILT (ML): tan orange, little to no sand, dry, hard			
	X	8	N/A	100	1				Attempted to take water sample from 32.5' to 35.5', but hole is dry.
40									Tip refusal for soil sampler at 35.5' on 12/7/95. Push with smaller diameter water sampling tool in offset boring. No additional soil samples collected.
50									
									water sample collected from 54' to 55' on 4/12/96
60						DPT completed at 55 feet			
70									

ISL-48.log

sdlvcr95.pat - 05 3 1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 1010239.88	BORING NO. ISL-49
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 560999.63	
		GROUND ELEV. : 346.5	SHEET 1 OF 1
		M.P. ELEV. :	DRILLING
LOGGED BY : M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/3/96 / 4/17/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	80	0	SANDY SILT (ML): soft, dark brown, dry, mostly silt, little fine sand, few clay			
	X	2	N/A	100	0	SANDY SILY (ML): firm, orangish brown, dry, mostly silt, some fine sand			
10	X	3	N/A	100	0	SILTY CLAY: stiff, gray and reddish brown, dry, mostly clay, little silt, few fine sand			
									No refusal for soil sampler at 14' on 4/3/96. Push with smaller diameter water sampling tool in offset boring. No additional soil samples collected.
20									
30									
40									
50									
						CPT completed at 56 feet			water sample collected from 55' to 56' on 4/17/96
60									
70									

ISL-49.log

solver95.dat - 05/13/1998

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941.310	DRILLING METHOD (S) DPT	NORTHING 1010218.19 EASTING 661182.96 GROUND ELEV 346.9 M.P. ELEV	BORING NO. ISL-5C SHEET 1 OF 1
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DRILLING: DATE STARTED 4/16/96; DATE COMPLETED 4/16/96
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
						rock and gravel fill (road bed)			
		1	N/A	N/A	N/A	SILTY SAND (SM): soft, dark red brown, moist, mostly sand, some silt			
		2	N/A	N/A	N/A	SILTY SAND (SM): same as above			
10		3	N/A	N/A	N/A	SAND with CLAY (SP-SC): hard, dark red brown/ gray, dry, mostly sand, few/ little clay			
		4	N/A	N/A	N/A				
		5	N/A	N/A	N/A	SAND with GRAVEL (SP/GP): very hard, dark red brown/ gray/ white, quartz, mostly sand, little gravel (.5 - 2" gravel)			
		6	N/A	N/A	N/A				
		7	N/A	N/A	N/A				
20						DPT refusal at 15.5 feet			
30									
40									
50									
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DRILLING METHOD (S) DPT	NORTHING : 1010097.39 EASTING : 661149.10 GROUND ELEV. : 346.0 M.P. ELEV.	BORING NO. ISL-51 SHEET : OF :
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DRILLING DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	4/14/96 / 4/14/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
		1	N/A	N/A	N/A	SANDY CLAY (CL): soft, dark reddish brown, slightly moist, mostly clay, some silt and sand			
		2	N/A	N/A	N/A	SANDY SILT (ML): soft, dark brown to dark gray, slightly moist, mostly silt, some clay and sand			
10		3	N/A	N/A	N/A	SANDY SILT (ML): same as above, rust to orange, trace gravel			
		4	N/A	N/A	N/A	SAND with GRAVEL (SP/GP): hard, orange to tan to			
		5	N/A	N/A	N/A	white, dry, mostly sand, some gravel (5 - 3"),			
		6	N/A	N/A	N/A	zone is 15 - 18', near refusal			
20		7	N/A	N/A	N/A	SAND with CLAY (SP-SC): medium hard, orange to tan to white, slightly moist, mostly sand, few clay and silt			
		8	N/A	N/A	N/A	SAND (SP): loose, light orange to tan, slightly moist, mostly medium sand, trace clay			
30		9	N/A	N/A	N/A	SAND (SP): same as above, dark orange/ rust			
		10	N/A	N/A	N/A	CLAY with SAND (CL): hard, mottled pink and gray, slightly moist, mostly clay, few sand			
40		11	N/A	N/A	N/A	SAND with CLAY (SP-SC): loose, pink and gray to white, slightly moist, mostly sand, few clay			
		12	N/A	N/A	N/A	SAND with CLAY (SP-SC): same as above, moist			
50		13	N/A	N/A	N/A	SAND (SP): loose, tan to white, saturated, mostly coarse sand			
60						CPT completed at 60 feet			water sample collected from 59' to 60' on 4/14/96
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DRILLING METHOD (S) DPT	NORTHING 1010209.46 EASTING 661299.73 GROUND ELEV. 346.3 M.P. ELEV.	BORING NO. ISL-52 SHEET 1 OF 1
LOGGED BY : M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DRILLING
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	DATE STARTED: 3/21/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	DATE COMPLETED: 3/28/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	90	0	SILTY CLAY (CL): moderately stiff, brown/ reddish brown mottled, dry, mostly clay, some silt			
	X	2	N/A	90	0	SILTY CLAY (CL): same as above			
10	X	3	N/A	90	0	SILTY CLAY (CL): stiff, reddish brown/ gray mottled, dry, mostly clay, some silt			
	X	4	N/A	80	0	GRAVELLY SAND (SW): very dense, orangish brown, mostly medium sand, some gravel, grains of feldspar and quartz to 1.5 cm			DPT refusal at 16.5' offset boring on 3/28/96 penetration cone.
20	X	5	N/A	90	0	SILTY CLAY (CL): firm, reddish brown/ brown/ gray mottled, dry, mostly clay, some silt			
	X	6	N/A	90	0	SILT (ML): loose, beige, dry, mostly silt, little fine sand, few clay			
30	X	7	N/A	90	0	CLAYEY SAND (SC): moderately dense, beige, dry to moist, mostly fine sand, some clay			
	X	8	N/A	60	0	CLAYEY SAND (SC): loose, beige, wet, mostly fine sand, some clay			
40	X	9	N/A	100	0	SILTY CLAY (CH): soft, pink and gray, wet, mostly clay, little silt			
	X	10	N/A	90	0	top 7" SANDY CLAY (CH) - firm, gray and pink, wet, mostly clay, little fine to medium sand bottom 5" SAND (SW) - loose, beige, moist, mostly fine to medium sand, few fine gravel			
50	X	11	N/A	N/A	N/A	SAND (SW): loose, beige and yellowish orange, wet, mostly fine to coarse sand, few silt, few clay			water sample collected from 53' to 54' on 3/28/96
						DPT completed at 54 feet			
60									
70									

ISL-52.log

salvcr95.pdt - 06/13/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010207.52	BORING NO. ISL-53
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 661388.53	
		GROUND ELEV. : 346.6	SHEET 1 OF 1
		M.P. ELEV.	DRILLING
LOGGED BY : M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	3/26/96 / 3/27/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	⊠	1	N/A	70	0	SILTY CLAY (CL): firm, reddish brown/ brown mottled, mostly clay, some silt, dry			
	⊠	2	N/A	80	0	SILTY CLAY (CL): stiff, reddish brown/ brown mottled, mostly clay, little silt, little medium sand, top 3" predominantly sand, dry			
10	⊠	3	N/A	80	0	SANDY SILT (ML): loose, reddish brown, dry, mostly silt, some medium sand, few clay, gravel in bottom 5"			
	⊠	4	N/A	90	0	GRAVELLY SAND (SW): moderately dense, reddish brown, dry, mostly sand, little fine gravel, little silt			
20	⊠	5	N/A	100	0	CLAYEY SAND (SP): dose, light gray, 4" light orangish brown zone, moist, mostly medium sand, some clay			
	⊠	6	N/A	100	0	SILT (ML): loose, light gray, moist, mostly silt, few clay, few fine sand			
30	⊠	7	N/A	100	0	SILT (ML): same as above			
	⊠	8	N/A	70	0	SANDY CLAY (CL): moderately stiff, gray/ reddish brown, moist, wet at bottom, mostly clay, zones with some medium sand			
40									
50									
						CPT completed at 55 feet			water sample collected from 54' to 55' on 3/27/96
60									
70									

ISL-53.log

salvc95.pct - 05/13/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DRILLING METHOD (S) DPT	NORTHING 1010148.77 EASTING 661404.86 GROUND ELEV. 346.7 M.P. ELEV.	BORING NO. ISL-54 SHEET 1 OF DRILLING DATE STARTED 3/27/96 DATE COMPLETED 3/27/96
LOGGED BY M. Taylor	SAMPLING METHOD (S) Tube Push	WATER LEVEL DATA TIME OF DRILLING (bls) STATIC (TOC)	
DRILLING CONTRACTOR Fugro			
DRILL RIG TYPE DPT			

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	75	0	SILTY CLAY (CH): soft, reddish brown/ brown mottled, moist, mostly clay, some silt			
	☒	2	N/A	80	0	CLAYEY SILT (ML): stiff, reddish brown/ gray/ tan mottled, dry, mostly silt, little clay, little fine sand			
10	☒	3	N/A	80	0	CLAYEY SILT (ML): same as above			
	☒	4	N/A	70	0	GRAVELLY SAND (SW): dense, orangish brown and tan, dry, mostly fine to coarse sand, some gravel, grains of quartz and feldspar up to 1.5 cm			
20	☒	5	N/A	90	0	SANDY CLAY (CL): loose, gray and pink, moist, mostly sticky clay, some medium sand			
	☒	6	N/A	90	0	CLAY (CL): stiff, gray and pink, mostly powdery clay, few silt, slight mica			
30	☒	7	N/A	90	0	SAND (SP): loose, beige, mostly fine sand, few clay			
	☒	8	N/A	100	0	SAND (SP): loose, gray, moist to wet, mostly medium sand, little clay, top 3" and bottom 1" are stiff, gray and purple clay			
40	☒	9	N/A	90	0	SANDY CLAY (CH): moderately stiff, gray and purple, moist to wet, mostly clay, little fine to medium sand			
	☒	10	N/A	90	0	top 6" SANDY CLAY (CH) - firm, light purplish gray, moist to wet, mostly clay, little fine sand bottom 6" SAND (SP) - loose, gray and orangish brown, moist, mostly fine sand, few clay			
50	☒	11	N/A	90	0	SAND (SW): loose, beige and gray, wet, mostly fine to coarse sand, few clay		▮	water sample collected from 53' to 54' on 3/27/96
						CPT completed at 54 feet			
60									
70									

ISL-54.log

savan96.bat - 06/13/96

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010149.42	BORING NO. ISL-55
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 661300.99	
		GROUND ELEV. 346.8	SHEET 1 OF 1
		M.P. ELEV.	DRILLING
LOGGED BY : M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	3/27/96 / 3/28/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	90	0	SILT (ML): soft, brown and reddish brown, dry, mostly silt, little clay, few fine sand			
	X	2	N/A	90	0	CLAYEY SILT (ML): soft, orangish brown, dry, mostly silt, some clay			
10	X	3	N/A	90	0	SILTY CLAY (CL): stiff, reddish brown/ orangish brown/ gray mottled, dry, mostly clay, little silt			
	X	4	N/A	90	0	GRAVELLY SAND (SW): dense, reddish brown, dry, mostly fine to coarse sand, some gravel, grains of quartz and feldspar			
20	X	5	N/A	70	0	CLAYEY SAND (SC): loose, beige and orangish tan, moist, mostly fine sand, some clay, few medium sand, micaceous			
	X	6	N/A	90	0	top 5" SANDY CLAY (CL) - loose, orangish brown, moist, mostly clay, some medium sand bottom 6" CLAY (CL) - stiff, gray to pink, dry, mostly powdery clay			
30	X	7	N/A	90	0	SAND (SP): loose, gray and yellowish orange, dry to moist, mostly fine sand, little silt			
	X	8	N/A	90	0	top 7" SAND (SP) - loose, gray, moist, mostly fine sand, few clay bottom 4" CLAY (CL) - stiff, gray and purple, dry, powdery clay			
40	X	9	N/A	90	.2	SILTY SAND (SM): moderately dense, beige, dry, mostly fine sand, some silt, little clay			
	X	10	N/A	80	0	top 6" SANDY CLAY (CH) - soft, gray to pink, moist, mostly clay, some fine sand bottom 6" SAND (SP) - loose, beige, moist, mostly fine sand			
50	X	11	N/A	70	0	SAND (SW): loose, beige, moist to wet, mostly fine to coarse sand			
						CPT completed at 54 feet		ISL-55	water sample collected from 53' to 54' on 3/28/96
60									
70									

ISL-55.log

scivor95.dot - 06/13/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 1010374.16	BORING NO. ISL-56
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING : 661636.04	
		GROUND ELEV. : 353.3	SHEET 1 OF
		M.P. ELEV. :	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/16/96 / 4/16/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	SILTY SAND (SM): soft, brown, moist, mostly sand, some silt			
	X	2	N/A	90	0	CLAYEY SAND (SC): hard, brown/ orange/ gray, dry., mostly sand, some clay			
10	X	3	N/A	100	0	SAND (SP): loose, rusty orange brown, dry, mostly sand, trace silt			
	X	4	N/A	100	0	SAND (SP): same as above, slightly coarser sand, trace gravel			
20	X	5	N/A	100	0	SAND (SP): same as above, light brown, no gravel			
	X	6	N/A	100	0	SAND (SP): same as above, white to light gray			
30	X	7	N/A	100	0	SAND (SP): loose, white to light gray, dry, mostly fine sand, trace silt and clay			
	X	8	N/A	100	0	SAND (SP): loose, white to gray/ brown, dry, mostly sand, trace clay and silt			
40	X	9	N/A	100	0	SAND (SP): same as above, white to light gray, slightly coarser			
	X	10	N/A	100	0	SAND (SP): same as above, trace clay			
50	X	11	N/A	70	0	SAND (SP): same as above, brown and white, moist			
	X	12	N/A	100	0	SAND (SP): same as above, saturated DPT completed at 56 feet			water sample collected from 55' to 56' on 4/16/96
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1010254.75	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941.310	DPT	EASTING . 661674.61	ISL-57
		GROUND ELEV. : 353.5	SHEET 1 OF 1
		M.P. ELEV.	DRILLING
LOGGED BY : M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) .	3/29/96 / 3/29/96
DRILL RIG TYPE : DPT		STATIC (TOC) .	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	⊠	1	N/A	100	0	CLAYEY SILT (ML): soft, reddish brown/ tan mottled, moist, mostly silt, some clay, little sand			
	⊠	2	N/A	100	0	CLAYEY SILT (ML): same as above, dry			
10	⊠	3	N/A	50	0	CLAYEY SILT (MH): firm, reddish brown, moist, mostly silt, some clay			
	⊠	4	N/A	90	0	GRAVELLY SAND (SW): dense, orangish brown, dry, mostly sand, little gravel, few silt			
20	⊠	5	N/A	90	0	GRAVELLY SAND (SW): same as above, yellowish brown			
	⊠	6	N/A	N/A	0	SANDY CLAY (CL): soft, tan to pink, moist, mostly sticky clay, little fine sand, few silt, micaceous			
30	⊠	7	N/A	N/A	0	top 8" SAND (SP) - dose, beige, dry, mostly fine sand, little clay bottom 3" CLAY (CL) - stiff, beige, dry, mostly powdery clay			
	⊠	8	N/A	100	0	SANDY CLAY (CL): stiff, beige, dry, mostly clay, some fine sand, micaceous			
40	⊠	9	N/A	80	0	SILTY SAND (SM): loose, beige and orangish brown, dry, mostly fine to medium sand, some silt, few clay			
	⊠	10	N/A	80	0	SILTY CLAY (CL): stiff, beige and orangish brown, dry, mostly clay, some silt, little fine sand			
50	⊠	11	N/A	90	0	SANDY CLAY (CL): firm, light gray and pink, moist, mostly clay, some fine sand, few silt			
	⊠	12	N/A	90	0	SAND (SP): loose, orangish brown, moist, mostly fine to medium sand, few clay, few gravel			
60	⊠	13	N/A	90	0	SAND (SW): loose, gray and pink, wet, mostly fine to coarse sand, few clay			
						CPT completed at 64 feet		▬	water sample collected from 63' to 64' on 3/29/96
70									

ISL-57.log

salvcr95.pct - 05/03/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010140.17	BORING NO. ISL-58
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 661642.27	
		GROUND ELEV 353.5	SHEET 1 OF 1
		M.P. ELEV	DRILLING
LOGGED BY : M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/3/96 / 4/3/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	⊠	1	N/A	90	0	SILT (ML): soft, dark brown, moist, mostly silt, little fine sand			
	⊠	2	N/A	100	0	SANDY SILT (ML): stiff, reddish brown, slight tan and gray mottling, mostly silt, little fine sand, few clay, dry			
10	⊠	3	N/A	80	0	SANDY SILT (ML): stiff, reddish brown, dry, mostly silt, some fine to coarse sand, few clay			
	⊠	4	N/A	90	0	SAND (SP): loose, orangish brown, dry, mostly fine sand			
20	⊠	5	N/A	100	0	SAND (SW): loose, yellowish brown, dry, mostly fine to coarse sand, little fine gravel, few silt			
	⊠	6	N/A	90	0	SANDY CLAY (CH): stiff, reddish tan, moist, mostly clay, some fine sand, micaceous			
30	⊠	7	N/A	100	0	SANDY CLAY (CH): same as above			
	⊠	8	N/A	90	0	SAND (SP): loose, beige, dry, mostly fine sand, micaceous			
40	⊠	9	N/A	90	0	SAND (SP): same as above			
	⊠	10	N/A	100	0	CLAY (CL): stiff, light gray, dry, mostly powdery clay			
50	⊠	11	N/A	100	0	SANDY CLAY (CH): stiff, light gray and pink, dry to moist, mostly clay, some fine sand			
	⊠	12	N/A	80	0	SILTY SAND (SM): moderately dense, yellowish tan, moist to wet, mostly fine to medium sand, some silt			
60	⊠	13	N/A	100	0	SAND (SP): moderately dense, light gray, wet, mostly fine to medium sand, few clay			
						CPT completed at 64 feet		▮	water sample collected from 63' to 64' on 4/3/96
70									

ISL-58.bg

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RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)			BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941.310	DPT	NORTHING: 1010249.96 EASTING: 661524.58 GROUND ELEV.: 353.7 M.P. ELEV.:		ISL-59 SHEET 1 OF 1
LOGGED BY: M. Taylor	SAMPLING METHOD (S)	WATER LEVEL DATA		DRILLING
DRILLING CONTRACTOR: Fugro	Tube Push	TIME OF DRILLING (bls):		DATE STARTED / DATE COMPLETED
DRILL RIG TYPE: DPT		STATIC (TOC):		3/28/96 / 3/29/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	90	0	CLAYEY SILT (ML): reddish brown, dark brown, soft, moist, mostly silt, some clay			
	X	2	N/A	90	0	SILTY CLAY (CL): reddish brown/ tan mottled, very stiff, dry, mostly clay, some silt			
10	X	3	N/A	90	0	GRAVELLY SAND (SW): dense, reddish brown, dry, mostly sand, some gravel, few clay and silt			
	X	4	N/A	100	0	SILTY CLAY (CL): reddish brown/ tan mottled, stiff, mostly clay, little silt			
20	X	5	N/A	70	0	SAND (SW): loose, yellowish brown, dry, mostly fine to coarse sand, little silt			
	X	6	N/A	100	0	SILTY SAND (SM): loose, orangish brown, moist, mostly fine to medium sand, few clay, few gravel			
30	X	7	N/A	90	0	SILTY SAND (SM): loose, beige, moist, mostly fine sand, some silt, few clay, micaceous			
	X	8	N/A	90	0	SILTY SAND (SM): loose, light gray, dry, mostly fine sand, some silt			
40	X	9	N/A	80	0	SAND (SW): loose, orangish brown and beige, moist, mostly fine to medium sand, little silt, few clay			
	X	10	N/A	80	0	CLAY (CL): stiff, pink and gray, dry, mostly powdery clay			
50	X	11	N/A	70	0	CLAYEY SAND (SC): dense, beige and light purple, moist, mostly fine sand, little medium sand, some clay, few silt			
	X	12	N/A	90	0	CLAY (CH): firm, orangish tan and gray, moist, mostly clay, little fine sand			
60	X	13	N/A	90	0	SAND (SP): loose, light gray, wet, mostly fine sand			
						DPT completed at 64 feet		■	water sample collected from 63' to 64' on 3/29/96
70									

ISL-59.xls   scvcr95.pct - 05/13/1996

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1010835.96	BORING NO. ISL-60
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941.310	DPT	EASTING 659951.15	
		GROUND ELE. 345.9	SHEET 1 OF 1
		M.P. ELEV.	DRILLING
LOGGED BY : Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	4/19/96 / 4/19/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	100	0	CLAY (CL): soft, brown and reddish brown, slightly plastic, moist			
	☒	2	N/A	100	0	CLAYEY SAND (SC): soft, reddish orange with tan splotches, moist, 15 - 30% clay			
10	☒	3	N/A	100	0	SAND (SP): tan, medium to coarse sand with some gravel, moist to wet			
	☒	4	N/A	100	0	SAND with GRAVEL (SP-GP): loose, coarse to very coarse sand with pea gravel, moist			
20	☒	5	N/A	100	0	SILTY SAND (SM) with SAND (SP): loose, orange and tan bedded fine silty sand and sand, moist			
	☒	6	N/A	100	0	CLAYEY SAND (SC): firm, whitish gray, very fine clayey sand to sandy clayey silt, moist			
30	☒	7	N/A	100	0	SAND (SP): loose, white, fine to medium clean sand, moist			
	☒	8	N/A	100	0	SAND with GRAVEL (SP/GP): loose, tan to reddish tan, fine to medium sand with layers of sand and pea gravel, clean, moist			
40	☒	9	N/A	20	0	SAND with SILTY SAND (SP/SM): tannish brown and white, bedded sand and silty sand, wet			
								▬	water sample collected from 46' to 47' on 4/19/96
						CPT completed at 47 feet			
50									
60									
70									

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RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING 1011064.23	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING 659007.96	ISL-61
		GROUND ELEV. 325.3	SHEET 1 OF 1
		M.P. ELEV	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/13/96 / 4/13/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	X	1	N/A	100	0	SANDY SILT (ML): soft, dark brown to brown, moist, mostly silt, some sand			
	X	2	N/A	100	0	SANDY SILT (ML): same as above, saturated			
10	X	3	N/A	0	0	SAND with SILT (SP-SM): loose, tan to gray, wet/ saturated, mostly sand (coarse), few silt			
	X	4	N/A	80	0				
									water sample collected from 5' to 16' on 4/13/96
						CPT completed at 16 feet			
20									
30									
40									
50									
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING . 1011396.26	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING . 661869.71	ISL-62
		GROUND ELEV. : 336.6	SHEET 1 OF 1
		M.P. ELEV. .	DRILLING
LOGGED BY : Rich O'Keefe	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (bls) :	
DRILL RIG TYPE : DPT		STATIC (TOC) :	4/13/96 / 4/13/96

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	80	0	SANDY SILT (ML): soft, brown to dark brown, moist, mostly silt, some sand			
	☒	2	N/A	100	0	SANDY SILT (ML): same as above			
10	☒	3	N/A	100	0	SANDY SILT (ML): soft, rust brown to orange, moist, mostly silt, some clay and sand			
	☒	4	N/A	100	0	SANDY SILT (ML): soft, orange to gray, moist, mostly silt, some sand and clay			
20	☒	5	N/A	100	0	SAND (SP): soft, tan with some orange and white, saturated, mostly coarse sand			
30									
40						CPT completed at 40 feet		▬	water sample collected from 39' to 40' on 4/13/96
50									
60									
70									

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

SITE NAME AND LOCATION	DRILLING METHOD (S)	NORTHING : 1010488.35	BORING NO.
Allied Industrial Park Macon, GA RUST PROJECT NUMBER 33941310	DPT	EASTING : 660131.49	ISL-63
		GROUND ELEV : 345.3	SHEET 1 OF 1
		M.P. ELEV. :	DRILLING
LOGGED BY : Lester Williams	SAMPLING METHOD (S)	WATER LEVEL DATA	DATE STARTED / DATE COMPLETED
DRILLING CONTRACTOR : Fugro	Tube Push	TIME OF DRILLING (DIS) :	4/19/96 / 4/19/96
DRILL RIG TYPE : DPT		STATIC (TOC) :	

DEPTH (feet)	SAMPLE INTERVAL	INTERVAL NO.	BLOW COUNTS (per 6 inches)	% RECOVERY	HEADSPACE OVA (ppm)	SOIL/MATERIAL DESCRIPTION	LITHOLOGIC SYMBOL	WATER LEVEL/ SCREEN INTERVAL	REMARKS
	☒	1	N/A	100	0	SILTY CLAY (CL): stiff, reddish orange, trace pea gravel			
	☒	2	N/A	100	0	SILT (ML): soft, brown to tan			
10	☒	3	N/A	100	0	CLAYEY SAND (SC): red and tannish white with 20 - 30% clay, few thin layers (<1-inch) clay			
	☒	4	N/A	100	0	CLAYEY SAND (SC) with SAND (SW): reddish orange, fine to coarse clayey sand and sand with approximately 10% pea gravel			
20	☒	5	N/A	100	0	SAND (SP): loose, reddish tan, fine sand, clean, trace silt			
	☒	6	N/A	100	0	SAND (SP): loose, white, fine to medium clean sand			
30	☒	7	N/A	100	0	SAND (SP): white and pink, fine sand, moist, trace silt and clay			
	☒	8	N/A	100	0	SAND (SP): loose, white fine sand, clean			
40	☒	9	N/A	100	0	SAND (SP): loose, white to tan fine sand, moist to wet			
						CPT completed at 45 feet		▮	water sample collected from 44' to 45' on 4/19/96
50									
60									
70									

ISL-63.log

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ADDITIONAL INVESTIGATIVE DATA

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER SUNNY, MILD
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 370.90
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

PAGE 1 OF 2
BORING NO. B-7
DATE 9/30/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	TOPSOIL dark reddish brown, organic silt (OL).						
	CLAYEY SILT (ML) red.	1	2 2,2 2	70			Performed continuous monitoring of breathing zone with OVA, readings were zero unless otherwise noted.
	CLAYEY SILT (MH) red, soft; medium plasticity.						
	stiff; few fine to medium quartz sand grains, low plasticity.	2	4 7,13 18	100			Boring grouted to surface.
5	red with yellow lenses, very stiff; few fine grains of quartz sand and feldspar, iron staining, dry.	3	4 10,16 22		0		Atterburg results, 4-6' (MH) natural moisture 24.9% liquid limit 56 plastic limit 30 plasticity index 26
		4	10 21,31 42	90			
		5	7 15,20 21	90			
10	SANDY CLAY (CL) red, yellow, tan, hard, feldspar sand grains, relatively low conductivity.	6	8 11,16 22	100	0		Atterburg results, 10-12' (CL) natural moisture 16.8% liquid limit 41 plastic limit 17 plasticity index 24
	more quartz sand, low plasticity, moist.						
	red, yellow, tan, very hard, laminated, fine grained, laminations at low angle, low strength, low plasticity, moist.	7	10 20,28 36	100			
15		8	3 9,11 13	60			
	CLAY (CH) reddish tan.						
	SANDY CLAY (CL) yellowish tan, very stiff, medium grained; abundant feldspar, quartz, very low conductivity.	9	10 12,18 28	50			
	CLAYEY SAND (SC) reddish orange.						
	CLAY (CH) reddish tan.	10	4 5,6 10	95			
20							

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT PROJECT NUMBER 69353.000
FIELD ENG/GEO D. HELLER WEATHER SUNNY, MILD
AUGER I.D. (in) 4 1/4 GROUND ELV. (ft) 370.90
RIG TYPE CME 75 DRILLING METHOD HOLLOW STEM AUGER

PAGE 2 OF 2
BORING NO: B-7
DATE: 9/30/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	CLAYEY SAND (SC) orange, medium dense, fine grained; quartz, feldspar.	11	8 9,9 11	100	0		
	SILTY SAND (SM) orange, medium dense, medium to coarse grained, some fine sand, quartz, feldspar, relatively low to medium conductivity.						
	yellow, stratified at low angle, friable, medium to relatively high conductivity, moist.	12	10 10,13 20	100			
	SANDY CLAY (CL) red, stiff, dry.						
25	SAND (SW) yellowish orange, loose to medium dense, laminated, fine to medium grained; well sorted, quartz and feldspar, angular, very friable.	13	3 3,4 5	100	0		
	moist, medium to relatively high conductivity.	14	4 8,14 16	100			
	CLAY (CH) reddish tan, stiff, trace sand, very low conductivity, dry to moist.	15	3 4,7 12	100	0		
30	SILTY SAND (SM) red, tan, medium dense, laminated, fine grained; muscovite, quartz, feldspar, friable, moist.	16	6 6,8 11	95			
	SILTY CLAY (CL) with SAND: red, tan, hard, silty clay with fine grained, sand, top 4" contorted, becoming massive, sand is feldspar, quartz, muscovite; moist.	17	12 14,24 47				
	GRAVELLY SAND (SW) red, dense, coarse grained, sand, with broken quartz gravel, poorly sorted, friable, feldspar, quartz, dry.						
35	GRAVEL with SAND and SILTY SAND LAMINAE: dense, coarse gravel (GP) mixed with red, medium grained, sand, with interbeds of silty sand (SM); gravel is quartz, feldspar, and quartzite, rounded to subrounded.	18	10 21,28 30	80	0		
	SILTY SAND (SM) with GRAVEL (GP): yellow, orange, red, very dense, poorly sorted, rounded to subrounded feldspar and quartz gravel, angular sand, very friable, relatively high conductivity, dry to moist.	19	10 20,31 36	70			
	SILTY SAND (SM) with CLAYEY SAND (SC): white, orange, and dark orange, thinly bedded, very dense, silty sand, with a single 4" bed of white clayey sand; sand in upper 8" is fine grained, remainder is medium grained, all beds consist of quartz and feldspar, friable, moist.	20	30 31,40 43	100	0		2" section of white quartzite at 38'
40	BORING COMPLETED AT 40.0 FEET						

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER CLEAR, COOL
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 315.65
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: B-8
DATE: 9/27/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	TOPSOIL: dark brown, organic silt (OL).	1	2 2,2 2	100			Performed continuous monitoring of breathing zone with OVA, readings were zero unless otherwise noted. Boring grouted to surface.
	CLAYEY SILT (ML): dark red, soft; friable.						
	SILTY SAND (SM): orange, brown, very loose; moist.	2	2 2,2 2	100	0		
	CLAYEY SILT (ML): gray, black, very soft; plastic, wet.					▽	
5	SILTY SAND (SM): grayish brown, very loose; with subrounded quartz gravel.	3	1 1,2 2				
	light gray.						
	becomes grayish white, fine grained, well sorted.	4	1 2,2 2	50			
	medium dense, fine to medium grained.	5	2 7,7 7				
10	moderately sorted, some quartz gravel, moist.	6	5 10,10 12				
		7	4 11,13 15				
	fine to coarse grained; poorly sorted, wet.	8	2 3,4 7				
15	moist.	9	3 6,10 17				
	SILTY SAND (SP-SM): white, very dense, coarse grained; with quartz gravel, angular to subrounded, and a few lenses of silty clay.	10	20 31,33 34				Atterburg results, 18-20' (SP-SM) natural moisture 14.1% Non-plastic
20							

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER CLEAR, COOL
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 315.65
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: B-8
DATE: 9/27/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	CLAYEY SAND (SC): white, stiff; plastic, quartz, feldspar, muscovite.	11	3 5,5 16				
	SAND (SP): brown, dense, medium grained; well sorted, moist.	12	9 11,31 33				
	GRAVELLY SAND (SW): becomes poorly sorted, with gravel, dry.						
25	CLAYEY SAND (SC): multicolored, fine to medium grained, very stiff.	13	3 5,11 19		1		Atterburg results, 24.5-26' (SC) natural moisture 14.5% liquid limit 39 plastic limit 19 plasticity index 20
	yellowish gray, some iron staining, trace muscovite.	14	4 13,31 42				
	less moist.	15	6 6,6 14	100			
30	white, slightly moist.	16	5 7,13 14	75			
	pale yellow and red mottled, wet.	17	4 6,11 11				
	white, massive; relatively low conductivity.	18	5 6,8 13	80			
35	tan, red, and yellow mottled, very low conductivity.	19	3 5,7 8	100			
		20	9 10,11 13	50	1		
40							

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER CLEAR, COOL
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 315.65
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: B-8
DATE: 9/27/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	CLAYEY SAND (SC): yellow and tan mottled, stiff to very stiff, fine grained.						
45		21	5 13,14 16				
50		22	9 11,13 21				
	BORING COMPLETED AT 51.0 FEET						
55							
60							

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER SUNNY, MILD
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 353.01
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

PAGE 1 OF 2
BORING NO: B-9
DATE: 9/29/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	TOPSOIL: dark brown, organic silt (OL).						Performed continuous monitoring of breathing zone with OVA, readings were zero unless otherwise noted.
	SILTY CLAY (CH): red, yellow, soft; a little fine sand, feldspar.	1	2 2,2 4	25			
	tan and red, hard, alternating medium and thick horizontal laminations, little sand, very low conductivity, slightly contorted.	2	12 21,22 30	80	0		Boring grouted to surface. Atterburg results, 2-4' (CH) natural moisture 17.6% liquid limit 63 plastic limit 26 plasticity index 37
5		3	4 12,15 22	80			
		4	9 9,19 26	60			
	SANDY CLAY (CH): orange, tan, very stiff, massive, fine grained; quartz, feldspar, muscovite, biotite, relatively low conductivity, slightly moist.	5	5 11,11 15	100	0		Atterburg results, 8-10' (CH) natural moisture 19.2% liquid limit 50 plastic limit 25 plasticity index 25
10	red, very stiff, fine to medium grained; with gravel, quartz, feldspar.	6	6 11,11 15	100			
	CLAYEY SAND (SC) with GRAVEL: red, dense, coarse grained; with gravel, poorly sorted.	7	10 11,25 31	100	0		
15	CLAYEY SAND (SC): red, medium dense, fine to coarse grained; poorly sorted, some fresnly broken quartz and feldspar gravel, a few yellow clay lenses, dry.	8	6 8,10 11	60			
	SILTY SAND (SM): red, medium dense, fine grained; dry.	9	8 10,20 24	100			
	CLAYEY SAND (SC): yellowish red, medium dense; with quartz and chert gravel, crumbles easily.	10	4 8,20 24	100	0		
20							

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER SUNNY, MILD
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 353.01
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: B-9
DATE: 9/29/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	GRAVEL (GP) with SILTY SAND (SM): red, white, fine to cosrse gravel in silty sand matrix; quartz, feldspar, freshly broken.	11	4 7,21 28	40			
	GRAVEL (GW): medium to coarse gravel with coarse sand; poorly sorted, quartz, chert, feldspar.	12	20 21,22 24	95			
	SILTY SAND (SM) with CLAY: white, medium dense, medium grained; feldspar, quartz, muscovite, dry.						
25	white, medium dense, medium to coarse grained; abundant muscovite, little gravel, friable, moist.	13	6 7,9 12	80	0		
	stratified by color.	14	12 15,21 25	100			
		15	8 12,10 13	100			
30		16	10 13,15 23	100			
	CLAYEY SILT (ML): pink; with fine-sand sized flakes.						Bioturbated from 31.5'-32'.
	CLAY (CH): white; fine muscovite flakes, very little sand, moderately plastic, relatively low conductivity.	17	4 7,12 20	60	0		Possible perched water at 32', dry when rechecked the next day.
35	SILTY SAND (SM) with CLAY: tan, medium dense, fine grained; abundant muscovite, moist.	18	11 12,15 22	100			
	white, very dense; no clay.	19	10 22,35 37	100			
	dense; relatively low to medium conductivity.	20	4 14,27 43	50			
40	BORING COMPLETED AT 40.0 FEET						

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO O. HELLER
WEATHER SUNNY, MILD
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 337.09
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: B-10
DATE: 9/28/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	TOPSOIL: dark brown, organic silt (OL).						
	SANDY SILT (ML): yellow, soft, fine to medium grained; quartz.	1	1 2,4 7	100	0		Performed continuous monitoring of breathing zone with OVA, readings were zero unless otherwise noted.
	CLAY (CH): orange, soft to hard, very low conductivity, some medium grained, angular quartz sand, dry.	2	8 16,25 31	80			Boring grouted to surface.
	SILTY SAND (SM): yellow, orange, medium dense, fine grained; with clay, moist.						
5	yellow, orange, red, dense, fine to medium grained; no clay, moist.	3	16 16,31 49	70			
	dark red.	4	8 16,16 20	90			
	orange, red, dense, fine to coarse grained; with clay, slightly plastic.	5					Blow counts not recorded.
10	orange, medium dense, massive; no clay, poorly sorted, quartz, very friable, low to medium conductivity, moist.	6	10 10,13 15	80			
	moderately sorted, high conductivity.	7	11 12,21 21	70	0		
15	becomes yellow, medium dense, fine to coarse grained; poorly sorted, some clay.	8	5 5,5 8	100			
	orange, medium dense, fine to medium grained; quartz, feldspar, fine gravel, well sorted, angular.	9	10 10,16 20	90	0		Atterburg results, 16-18' (SM) natural moisture 10.9% Non-plastic
	6" vein of white feldspar gravel.	10	10 12,18 21	100			
20							

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER SUNNY, MILD
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 337.09
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

PAGE 2 OF 2
BORING NO: B-10
DATE: 9/28/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	GRAVELLY SAND (SP): orange, yellow, medium dense; very poorly sorted, gravel is freshly broken quartz and feldspar, slightly moist.	11	11 11,12 16	30			
	SILTY SAND (SM): yellow, dense, medium to coarse grained; moderately sorted, quartz, medium conductivity, extremely friable.	12	11 17,31 33	100	0		Atterburg results, 22-24' (SM) natural moisture 11.4% Non-plastic
25	becomes thinly bedded, dark orange, red, and yellow beds, some fine gravel, moist.	13	5 6,8 13	60			
	orange, yellow.	14	10 12,21 23	90			
	yellow, medium dense, fine and coarse grained; medium to high conductivity, coarse grains are distributed through a fine grained matrix.						
	becomes fine grained, massive.	15	10 10,10 18	50			
30		16	10 13,17 22	90			
	white, 6" bed at 30'.						
	tannish yellow and white, medium dense, thinly laminated; laminations at low angle (5°).	17	10 10,11 18	100			
	becomes yellow, less well sorted, some muscovite, moist.						
35		18	18 21,31 34	100			
	SAND (SW): brown, light yellow, and yellowish orange, dense, medium bedded, fine to medium grained; quartz, feldspar, moist.	19	10 12,21 27	100			
	wet.						
	becomes white, mostly coarse grained; high conductivity.	20	21 51,57 59	100			
40	BORING COMPLETED AT 40.0 FEET						

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER CLEAR, COOL
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 318.69
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

PAGE 1 OF 2
BORING NO: B-11
DATE: 9/27/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	TOPSOIL: dark brown, organic silt (OL).						
	CLAYEY SILT (ML): reddish brown, soft to stiff.	1	2 2,2 2	100			Performed continuous monitoring of breathing zone with OVA, readings were zero unless otherwise noted.
	orange, with little medium sized sand.	2	7 7,7 7	100			Boring grouted to surface.
5	as above, with some fine grained sand, quartz with trace muscovite.	3	2 2,4 6	50			
	yellow, sand increasing.	4	7 10,12 15	80			
	CLAYEY SILT (ML) with SAND: yellow to white, very stiff; with subrounded, fine to coarse, quartz gravel.	5	10 11,13 22	50			
10	CLAYEY SAND (SC): white, red, dense, fine to coarse grained; poorly sorted, little fine to coarse gravel.	6	13 21,25 35	100	0		Atterburg results, 10-12' (SC) natural moisture 11 liquid limit 24 plastic limit 15 plasticity index 9
	increasing sand content.	7	11 12,21 23	100			
15	white, red, some yellowish brown, stratified; poorly sorted.	8	10 18,21 26				
		9	10 12,15 25				
	CLAY (CH): grayish white, red, firm.	10	2 6,7 8				
20	SILTY SAND (SM): yellow, white, medium dense; some clay, friable, moist.						

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER CLEAR, COOL
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 318.69
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

PAGE 2 OF 2
BORING NO: B-11
DATE: 9/27/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	SILTY CLAY (CH) red and grayish white mottled.						Atterburg results, 20-22' (CH) natural moisture 26.5% liquid limit 60 plastic limit 23 plasticity index 37
	brown, some sand.	11	2 5,9 16	100	0		
	white, feldspar with some quartz sand.						
	becomes red, with fine grained sand.	12	5 8,20 21	40			
25	becomes grayish white and orange mottled, thinly laminated, very stiff; with medium sand-sized feldspar.	13	5 8,9 16				
	SILTY SAND (SM) yellow, red, medium dense, fine to coarse grained; poorly sorted, friable, clay lenses.	14	5 13,13 16			▽	
	SAND (SP) white, medium dense; well sorted, wet.	15	6 9,9 11		0		
30							
	orange.	16	6 7,9 16				
	white.						
		17	7 10,20 21				
35		18	4 7,10 12				
	SILTY SAND (SM) yellowish brown, medium dense, medium to coarse grained; poorly sorted, some mafics, wet.	19	7 9,18 21				
	yellow.	20	2 5,5 12				
	white.						
40	BORING COMPLETED AT 40.0 FEET						

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER SUNNY, MILD
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 318.55
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

PAGE 1 OF 2
BORING NO: B-12
DATE: 9/29/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	SANDY SILT (ML): reddish brown, very stiff, medium grained; quartz, feldspar, dry.	1	8 9,11 13	100			Performed continuous monitoring of breathing zone with OVA, readings were zero unless otherwise noted. Boring grouted to surface.
	SILTY SAND (SM): white, red, and orange, dense, medium bedded, medium grained; quartz, feldspar, muscovite, slightly argillaceous near bottom.	2	15 15,25 30	100			
5	SAND (SW): yellow, tan, red, medium dense, thinly bedded; poorly sorted, moist. increasing feldspar content.	3	6 10,16 17	100			
	CLAYEY SAND (SC): pink, white, hard, fine to medium grained; feldspar, quartz.	4	13 22,23 26	50			
	white, very stiff, fine to medium grained; feldspar, kaolin, some quartz.	5	5 7,9 10	50			
10	white, medium dense; with fine, rounded gravel, gravel, feldspar, muscovite, slightly plastic, dry.	6	5 6,13 30	60	0		Atterburg results, 10-12' (SC) natural moisture 12.6% liquid limit 36 plastic limit 22 plasticity index 14
	becoming very dense, slightly more plastic, some pink areas which are slightly less compacted.	7	15 25,26 31	90			
15	white, stiff, fine grained; muscovite and feldspar, little quartz.	8	3 7,9 13	95			
	hard, low conductivity.	9	13 23,24 31	95			
	CLAYEY SAND (SC) with SILT: white, pink, medium dense, medium grained; clay is in lenses.	10	6 7,9 12	95			
20							

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER SUNNY, MILD
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 318.55
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: B-12
DATE: 9/29/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	CLAYEY SAND (SC) with SILT: white, pink, medium dense, fine grained, low conductivity, some quartz, iron iron staining, slightly plastic.	11	4 8,10 14	100	0		
	becomes white, clay increases, moist, medium bed of red and white at 23'.	12	11 18,30 31	100			
25	becomes fine to medium grained.	13	8 8,9 14	100			
	medium to coarse grained, very dense, less compacted.	14	11 18,37 42	100	0		Atterburg results, 26-28' (SC) natural moisture 8.0% liquid limit 28 plastic limit 20 plasticity index 8
	becomes fine grained, sand is quartz and muscovite, clay is lenses of kaolin, some silty feldspar.	15	13 13,16 19	100			
30		16	11 12,14 16	50			
	SANDY CLAY (CL) with SILT: white, very hard, fine to medium grained; low conductivity, wet at bottom.	17	12 17,70 72	50		▽	
35	CLAYEY SILT (ML) with SAND: tan, white, very stiff, fine to coarse grained; very low conductivity.	18	7 9,15 31	100	0		
	very hard, medium grained.	19	10 26,35 42	100			
	becomes white to pink, very poorly sorted, with fine, subrounded gravel and coarse, subangular sand.	20	20 38,42 70	100			
40	BORING COMPLETED AT 40.0 FEET						

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER OVERCAST, COOL
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 322.62
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: PZ-1
DATE: 10/11/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	TOPSOIL: dark brown, organic silt (OL).						
	CLAYEY SILT (ML): reddish brown; some fine, angular gravel.	1	2 2,2 2	100			Performed continuous monitoring of breathing zone with OVA. readings were zero unless otherwise noted.
	SILTY SAND (SM): brown, very loose, medium grained; well sorted, with small gravel, quartz, wet.	2	2 2,2 2	100			
5		3	2 2,2 6	75	0	▼ ▽	
	SILTY SAND (SM) with CLAY (CL): yellow, loose, medium to coarse grained, poorly sorted, quartz, feldspar, slightly argillaceous, wet.	4	2 3,3 3	75			
	SILTY SAND (SM): yellow.						
	SILTY CLAY (CL): yellow and tan, firm; very moist, relatively low conductivity.						
	decreased moisture.	5	2 3,3 5	100			
10	SANDY CLAY (CL): yellow and white, loose, fine to medium grained; well sorted, relatively low conductivity.	6	4 4,5 13	95	0		Atterburg results. 10-12' (CL) natural moisture 21.2% liquid limit 35 plastic limit 16 plasticity index 19
	tan, white, medium dense, fine to medium grained; quartz, some feldspar, slightly plastic.	7	4 5,8 9	95			
15	SILTY GRAVEL (GM) and SANDY CLAY (CL): yellow, silty gravel with sand; angular, wet, quartz and feldspar; interlayered with yellowish orange, sandy clay; sand is medium to coarse grained.	8	7 7,10 11	80	0		
	SILTY GRAVEL (GM): brown, wet.	9	2 3,3 9	40			
		10	8 17,14 15	30	0		2-3" of large, broken, feldspar gravel above clayey sand at 19.5'
20	CLAYEY SAND (SC): light yellow, fine to medium grained; well sorted sand in a clay matrix.						

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

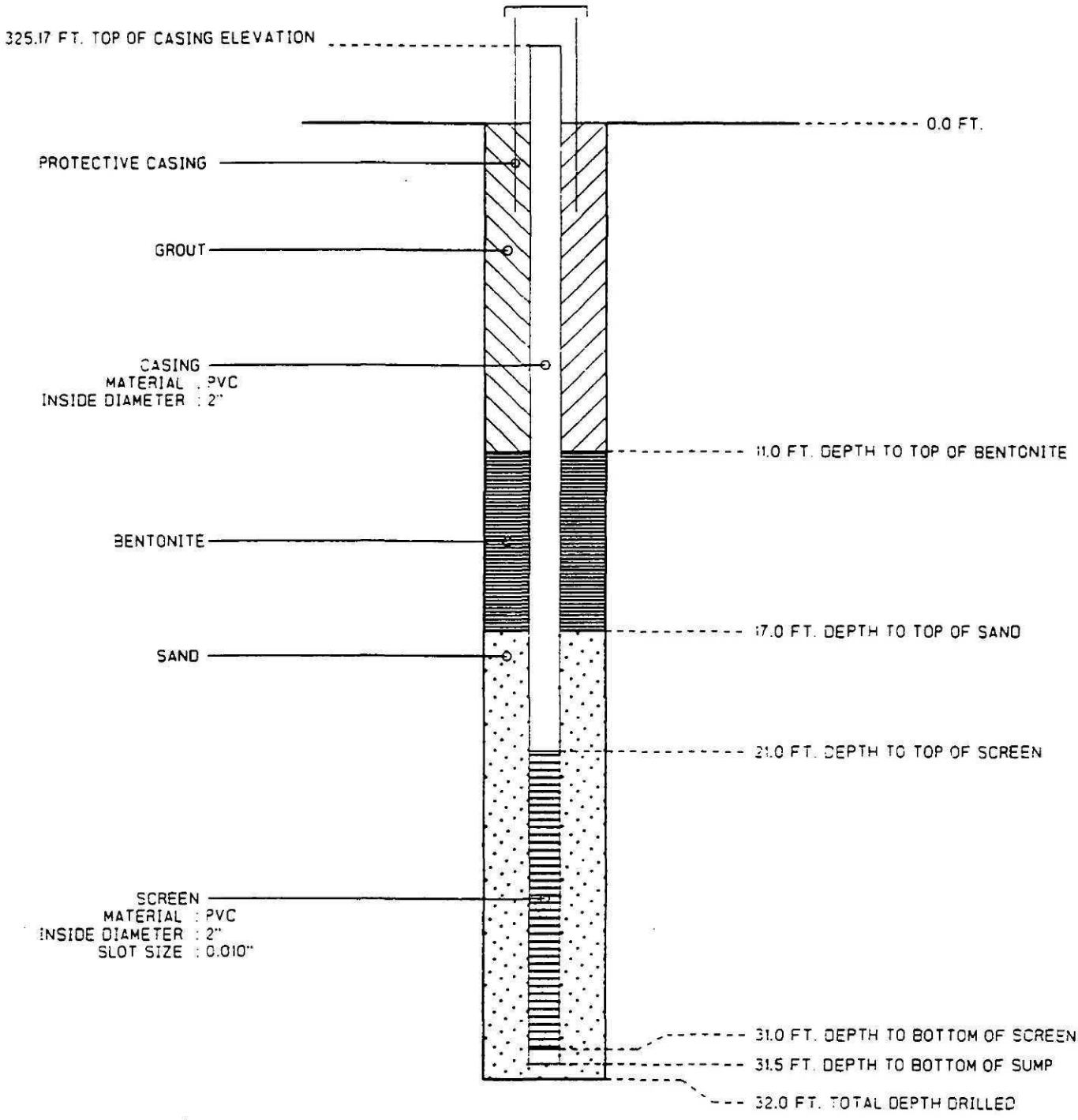
PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER OVERCAST, COOL
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 322.62
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: PZ-1
DATE: 10/11/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	CLAYEY SAND (SC): light yellow, loose, fine to medium grained; well sorted sand in a clay matrix, with small, subrounded, pebbles.	11	2 3,5 8	30			
	SILTY SAND (SM): yellow, white, medium dense, thinly laminated, fine to coarse grained; moderately sorted, with occasional clay layers, wet.	12	3 6,8 20	50			
25	orange, dark red, white, medium dense, medium bedded, fine to medium grained; well sorted, bed colors vary every 4-6", slightly argillaceous, relatively low conductivity, wet.	13	5 10,10 13	50	1		
	CLAYEY SAND (SC): red, tan, medium dense, fine to medium grained; wet, last 4" argillaceous.	14	5 5,7 13	70			
	white, red, stiff; plastic, wet, sand is fine to medium grained quartz and feldspar, well sorted, in clay matrix.	15	2 5,10 29	70	0		Atterburg results, 28-30' (SC) natural moisture 19.4% liquid limit 24 plastic limit 12 plasticity index 12
30	red, purple, white, firm to very stiff, contorted layers; slightly plastic, wet, relatively low conductivity, sand is fine to medium grained.	16	5 6,9 15	100	0.5		
	BORING COMPLETED AT 32.0 FEET						
35							
40							

WELL SCHEMATIC

WELL NUMBER: PZ-1
COMPLETION DATE: 10/11/94



NOT TO SCALE
ALL DEPTHS REFERENCED FROM GROUND SURFACE

RUST ENVIRONMENT & INFRASTRUCTURE

WELL SCHEMATIC

MACON NAVAL ORDNANCE PLANT

RUST JOB NUMBER 89353.000

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER SUNNY, WARM
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 350.95
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

PAGE 1 OF 3
BORING NO: PZ-2
DATE: 10/5/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	TOPSOIL: dark brown, red, organic silt (OL).	1	2 2,2 2	50			Performed continuous monitoring of breathing zone with OVA, readings were zero unless otherwise noted.
	CLAYEY SILT (ML): red, firm.						
	SANDY SILT (ML): red, stiff; sand is fine to coarse grained, quartz, feldspar, increased gravel content, poorly sorted.	2	3 4,7 9	60			
5	reddish orange, very stiff; with gravel, quartz, feldspar, some chert, sand is fine grained, poorly sorted, dry.	3	4 4,13 18	90	0		
		4	11 18,20 22	90			
	SILTY SAND (SM): orange, medium dense, fine to coarse grained; some gravel, quartz, chert, feldspar, poorly sorted, moist to wet.	5	3 4,8 10	80			
10	increased gravel content.	6	12 18,22 30	70			
	SANDY GRAVEL (GW): reddish orange to yellow; gravel is quartz, some chert, freshly broken, in a silty matrix, poorly sorted, moist to dry.	7	20 32,38 46	80			
15	CLAY (CH): white, stiff; some fine grained sand, muscovite, quartz, dry.	8	3 4,5 6	75	0		
	CLAYEY SILT (ML): multicolored, hard, laminated; with fine muscovite sand, damp.	9	9 15,22 24				
	SILTY SAND (SM): tan, medium dense, laminated, fine grained; some clay, muscovite, quartz, moist.	10	2 6,7 9	80			
20							

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER SUNNY, WARM
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 350.95
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: PZ-2
DATE: 10/5/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	SILTY SAND (SM): tan, medium dense, laminated, fine to medium grained; some clay, muscovite, quartz, wet.	11	2 3,4 6	90	0		Perched water at 20'.
	orange, increased clay content, abundant muscovite.	12	3 6,11 18	100			
	white.						
25	orange.	13	6 6,8 14	100			
	CLAY (CL): white, stiff; very low conductivity, damp.	14	2 5,8 15	50			
	CLAYEY SAND (SC-SM): white, dense, medium to fine grained, with clay, some coarse sand to fine gravel, quartz, feldspar, relatively low conductivity, moist.	15	15 16,16 18	75	0		Atterburg results, 28-30' (SC-SM) natural moisture 11.1% liquid limit 18 plastic limit 13 plasticity index 5
30		16	9 7,19 22	50			
	SILTY CLAY (CL): white, hard; with some fine grained muscovite sand, moist to dry.	17	8 17,25 37	50			
35	SILTY SAND (SM): multicolored, very dense, medium grained; quartz, feldspar, poorly sorted, moist to dry.	18	19 21,37 42	70	0		Atterburg results, 34-36' (SM) natural moisture 6.5% Non-plastic
	as above, thinly laminated, no clay.	19	9 17,22 31	40			
	as above, thinly bedded.	20	10 17,20 25	40			
40							

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

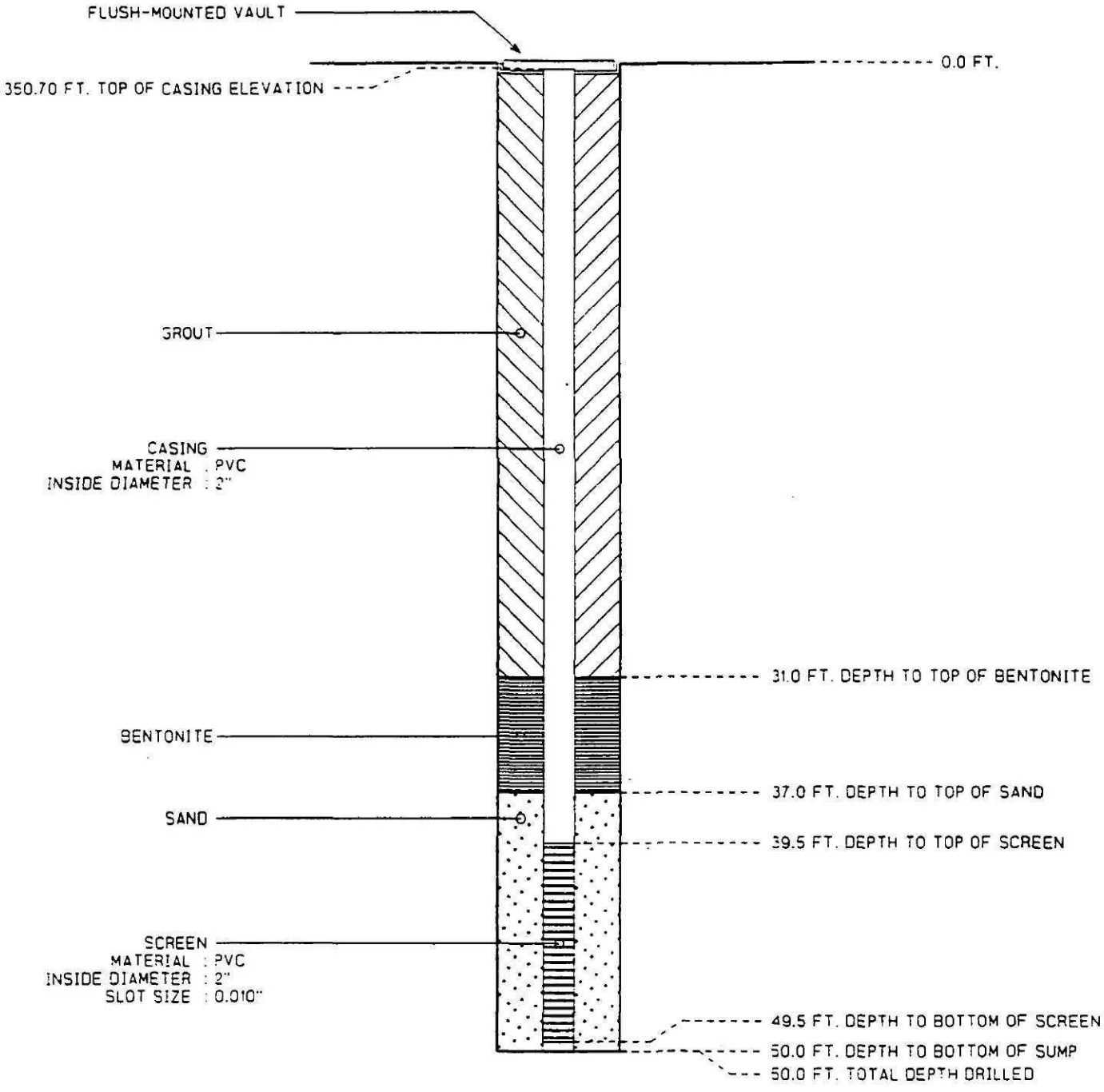
PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER SUNNY, WARM
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 350.95
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: PZ-2
DATE: 10/5/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	SILTY SAND (SM): multicolored, very dense, thinly bedded, medium grained; quartz, feldspar, poorly sorted, moist to dry.	21	16 23,33 31	55	0		
	SAND (SW): white, medium to coarse grained; moderately sorted, moist to wet at bottom.	22	8 15,30	30			
45	SILTY SAND (SM): white, very dense, fine grained; slightly argillaceous, vey well sorted, moist.	23	17 29,30 35	70			
	SAND (SP): multicolored, dense, laminated, medium to coarse grained; color laminations at low angle, quartz, feldspar, well sorted, wet.	24	20 21,21 44				
	SILTY SAND (SM): tan, orange, medium dense, fine grained; feldspar, quartz, well sorted, wet.	25	7 16,20 25	100			
50	CLAYEY SILT (ML): white, very stiff; some subrounded quartz gravel, wet.						
	BORING COMPLETED AT 50.0 FEET						
55							
60							

WELL SCHEMATIC

WELL NUMBER: PZ-2
COMPLETION DATE: 10/6/94



NOT TO SCALE
ALL DEPTHS REFERENCED FROM GROUND SURFACE

RUST ENVIRONMENT & INFRASTRUCTURE

WELL SCHEMATIC

MACON NAVAL ORDNANCE PLANT

RUST JOB NUMBER 89353.000

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER CLEAR, COOL
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 343.82
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

PAGE 1 OF 3
BORING NO: PZ-3
DATE: 10/4/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	TOPSOIL dark brown, organic silt (OL).						
	SANDY CLAY (CL): red, orange, soft; some organics, slightly plastic, moist.	1	1	100			Performed continuous monitoring of breathing zone with OVA, readings were zero unless otherwise noted.
	CLAYEY SILT (ML) with SAND: yellow, firm, massive; slightly plastic, moist, sand is fine grained quartz.	2	2 3,3 4	100			
5	increased sand.	3	2 3,3 9	60			
	CLAYEY SILT (ML): reddish yellow, hard, massive; some fine grained sand, dry.	4	9 16,16 22	100			
	red, yellow, tan, very stiff; increased sand, feldspar, dry.	5	5 9,12 16	100			
10	SILTY SAND (SM): yellow, red, tan, medium dense, medium grained; some fine gravel, quartz, feldspar, poorly sorted, slightly argillaceous, dry.	6	6 14,16 22				
	CLAYEY SAND (SC): tan, dense, fine to coarse grained; some gravel-sized chert, quartz, and feldspar, clay lenses.	7	5 16,23 56	100	0		Atterburg results, 12-14' (SC) natural moisture 12.1% liquid limit 41 plastic limit 14 plasticity index 27
15	SILTY GRAVEL (GM): red, tan, dense; with fine grained sand, abundant feldspar, poorly sorted.	8	6 19,21 12	70	0		
	SILTY SAND (SM): white to orange, medium dense, fine to medium grained; mostly feldspar and quartz, kaolin lenses, poorly sorted, moist.	9	4 8,12 15	80	0		
	pink, medium dense, medium grained; quartz, feldspar, some gravel-sized fragments, slightly argillaceous, slightly plastic, poorly sorted.	10	11 5,7 5	80			
20	SANDY SILT (ML): red, soft; mostly muscovite, sand is fine grained, well sorted.						

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER CLEAR, COOL
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 343.82
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: PZ-3
DATE: 10/4/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	SANDY SILT (ML): yellow to pink; some quartz gravel, moist.	11	3 4,6 11				
	SILTY SAND (SP-SM): white, medium dense, fine grained; abundant muscovite.	12	5 10,19 21	90	0		
	yellow, increased sand.						
	red, pink, medium dense, fine grained; mostly muscovite, slightly argillaceous.	13	6 6,10 12				
25	white, orange, and red, laminated, muscovite, feldspar, quartz, moist.						Possible angular unconformity at 25'.
	white, orange, and tan, dense, medium bedded, medium grained; feldspar, quartz, muscovite, well sorted, moist.	14	10 20,21 26	100	0		
	some lenses of clay and silt.	15	3 8,9 18		0		Atterburg results, 28-29' (SP-SM) natural moisture 5.8% Non-plastic
30	SILTY SAND (SM) with CLAY: white to pink, medium dense, medium to coarse grained; poorly to moderately sorted, quartz, feldspar, wet.	16	3 10,11 13	100	0		
	CLAY (CH): white, very stiff, massive; dry.	17	4 13,15 23	100			
35	CLAYEY SAND (SC) with SILT: orange, tan, medium dense, fine to medium grained; quartz, feldspar, and subrounded quartz gravel, poorly sorted, moist to wet.	18	5 13,16 22				
	SAND (SP): tan, white, and yellow, thinly laminated, fine-grained; well sorted, increasing amounts of feldspar and muscovite.						
	SILTY SAND (SM): yellow, tan, orange, dense, laminated, fine to medium grained; well sorted, quartz, muscovite, some feldspar, moist to wet.	19	10 20,22 28	90			
	very dense, wet.	20	10 20,38 28	80	0		
40							

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

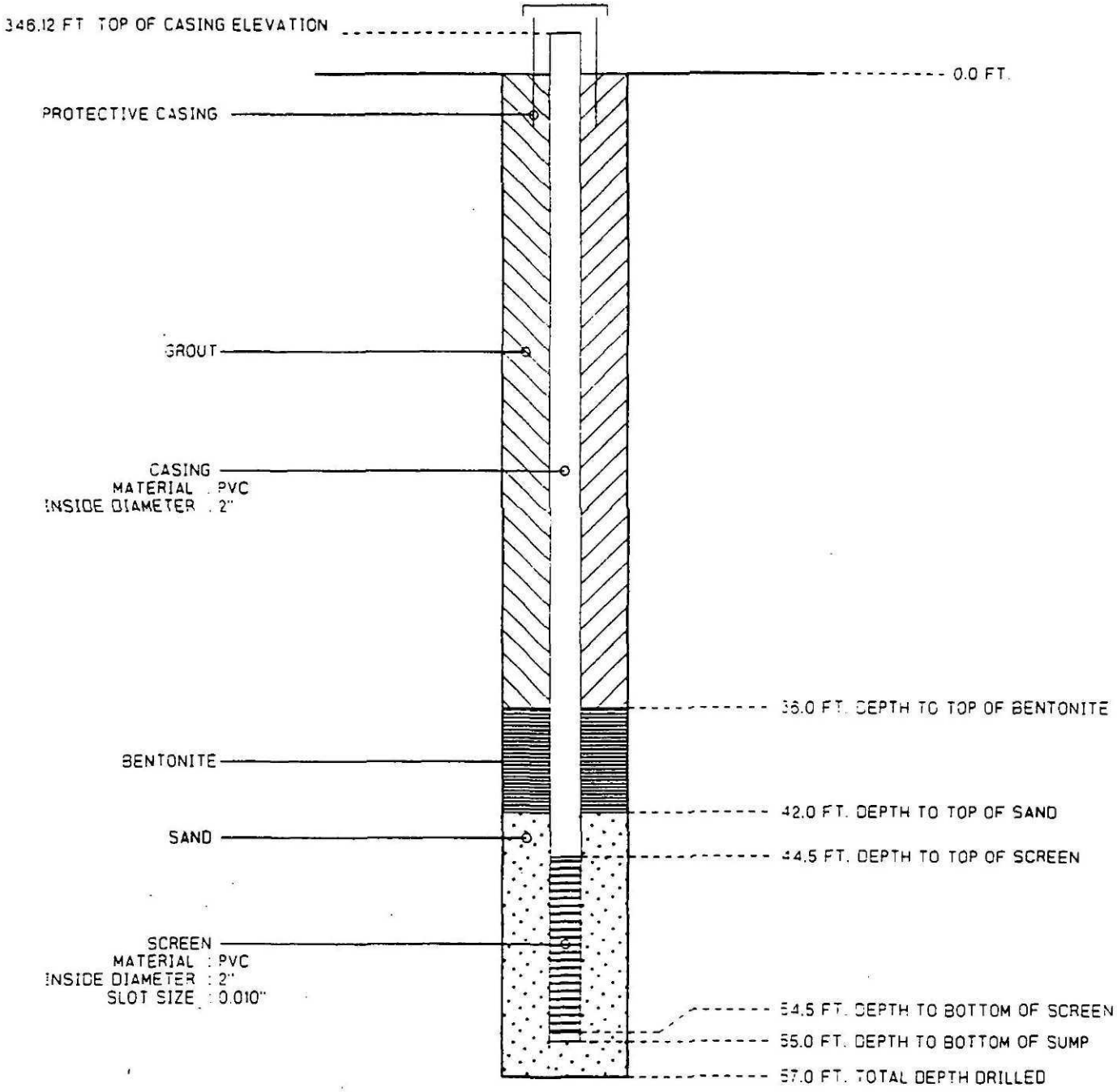
PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER CLEAR, COOL
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 343.82
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

PAGE 3 OF 3
BORING NO: PZ-3
DATE. 10/4/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	SILTY SAND (SM): yellow, tan, orange, very dense, laminated, fine to medium grained; well sorted, quartz, muscovite, some feldspar, wet.						
45	CLAYEY SAND (SC): white and orange, medium dense to dense, medium grained; well sorted, quartz, feldspar, moist to wet.	21	5 13,30 25	100	0		
	SILTY SAND (SM): tan and yellow, dense, laminated, fine to medium grained; few coarse sands, well sorted, moist to wet, loose at bottom.						
50	white, medium dense, medium to coarse grained; little silt, grain supported, very well sorted, primarily quartz, some feldspar, wet.	22	9 13,16 19	95	0		
55	white, dense, fine to coarse grained; quartz, some feldspar, poorly to moderately sorted, coarse sand in a matrix of fine sand and silt.	23	6 15,18 20	100	0		
	red.						
	orange.						
	BORING COMPLETED AT 57.0 FEET						
60							

WELL SCHEMATIC

WELL NUMBER: PZ-3
COMPLETION DATE: 10/13/94



NOT TO SCALE
ALL DEPTHS REFERENCED FROM GROUND SURFACE

RUST ENVIRONMENT & INFRASTRUCTURE

WELL SCHEMATIC

MACON NAVAL ORDNANCE PLANT

RUST JOB NUMBER 89353.000

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER CLEAR, WARM
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 332.96
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

PAGE 1 OF 3
BORING NO: PZ-4
DATE: 10/4/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	TOPSOIL dark brown, organic silt (OL).	1	12	100			Performed continuous monitoring of breathing zone with OVA. readings were zero unless otherwise noted.
	CLAYEY SILT (ML): yellow, soft; few fine sand.		12				
	CLAYEY SAND (SC): white, medium dense, fine to medium grained; well sorted, some quartz and feldspar gravel, relatively low conductivity.	2	2 4,7 16	70			
5	SANDY GRAVEL (GW) with SILT: white, fine; tightly packed, very poorly sorted; gravel is feldspar and quartz, subrounded, some broken; sand is yellowish orange, fine to coarse grained.	3	3 9,26 28	40	0		
	CLAY (CH): white, very stiff; dry.	4	10 11,15 21	80	0		
	CLAYEY SILT (ML): red, orange, tan, very stiff, laminated; feldspar, quartz, muscovite, very low conductivity, dry.	5	6 9,12 14	70			
10	SILTY SAND (SM): orange; muscovite. white, medium dense, coarse grained; moderately sorted, mostly muscovite with feldspar and quartz, uncemented, moist, becoming more fine and dense with depth.	6	3 8,8 8	100			
	white, loose, fine grained; well sorted, muscovite, quartz, feldspar.	7	2 2,8 12	80	0		
15	SANDY CLAY (CL): white and yellow mottled, very stiff, medium to coarse grained; well sorted, relatively low conductivity.	8	5 9,11 11	100			
	CLAY (CH): white with thin red laminations, hard, very low conductivity, moist.	9	10 12,20 21				
20	CLAYEY SAND with SILT (SC-SM): white, yellow, stiff, fine grained; mostly muscovite, medium plasticity, relatively low conductivity, moist.	10	2 5,6 10	100	0		Atterburg results, 18-20' (SC-SM) natural moisture 17.0% liquid limit 24 plastic limit 18 plasticity index 6

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER CLEAR, WARM
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 332.96
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: PZ-4
DATE: 10/4/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	SILTY SAND (SM): yellow, orange, loose, fine to medium grained; well sorted, muscovite, quartz, feldspar, moist.	11	2 3,5 7	100			
	SANDY CLAY (CL): white, very stiff, medium laminated, fine grained; well sorted, muscovite, quartz, feldspar, laminations at a low angle, moist.	12	3 6,10 15	100			
25	SANDY CLAY (CL) with SAND: tan, stiff, clay and thinly bedded, medium dense, medium grained, sand; sand is well sorted, with beds at steep angle; interval is moist to wet, relatively low conductivity.	13	3 4,8 12	100			
	SILTY SAND (SM): dark orange, light orange, dense, thinly to medium bedded, medium grained; well sorted, quartz, abundant muscovite, feldspar, moist, slightly argillaceous, clay increases in last 4", becomes white.	14	15 20,21 23	100			
	CLAY (CH): white, very stiff; relatively low conductivity.	15	13 14,14 17				
30	SANDY CLAY (CL): white, pink, firm to stiff, medium laminated; moderately to well sorted, quartz, laminations at a low angle, moist.						
	CLAYEY SAND (SC): orange, pink, tan, medium dense, medium laminated, fine grained; well sorted, laminations are low angle, moist to wet.	16	7 11,11 15	100			
	SILTY SAND (SM): white, dense, medium grained; well sorted, quartz, feldspar, moist.	17	11 15,21 29	90			
35	CLAY (CL) SANDY SILT (ML): white, dense, medium grained; well sorted, quartz, feldspar, moist.	18	9 9,9 13	100	0		Atterburg results, 36-38' (ML) natural moisture 20.4% liquid limit 33 plastic limit 23 plasticity index 10
	CLAY (CH): white, hard; low to medium plasticity.	19	8 12,20 22	100	0	▽	
	SILTY SAND (SM) with CLAY: white, dense, medium grained; well sorted, sand is in a silty clay matrix, wet.	20	7 16,19 21	100			
40							

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

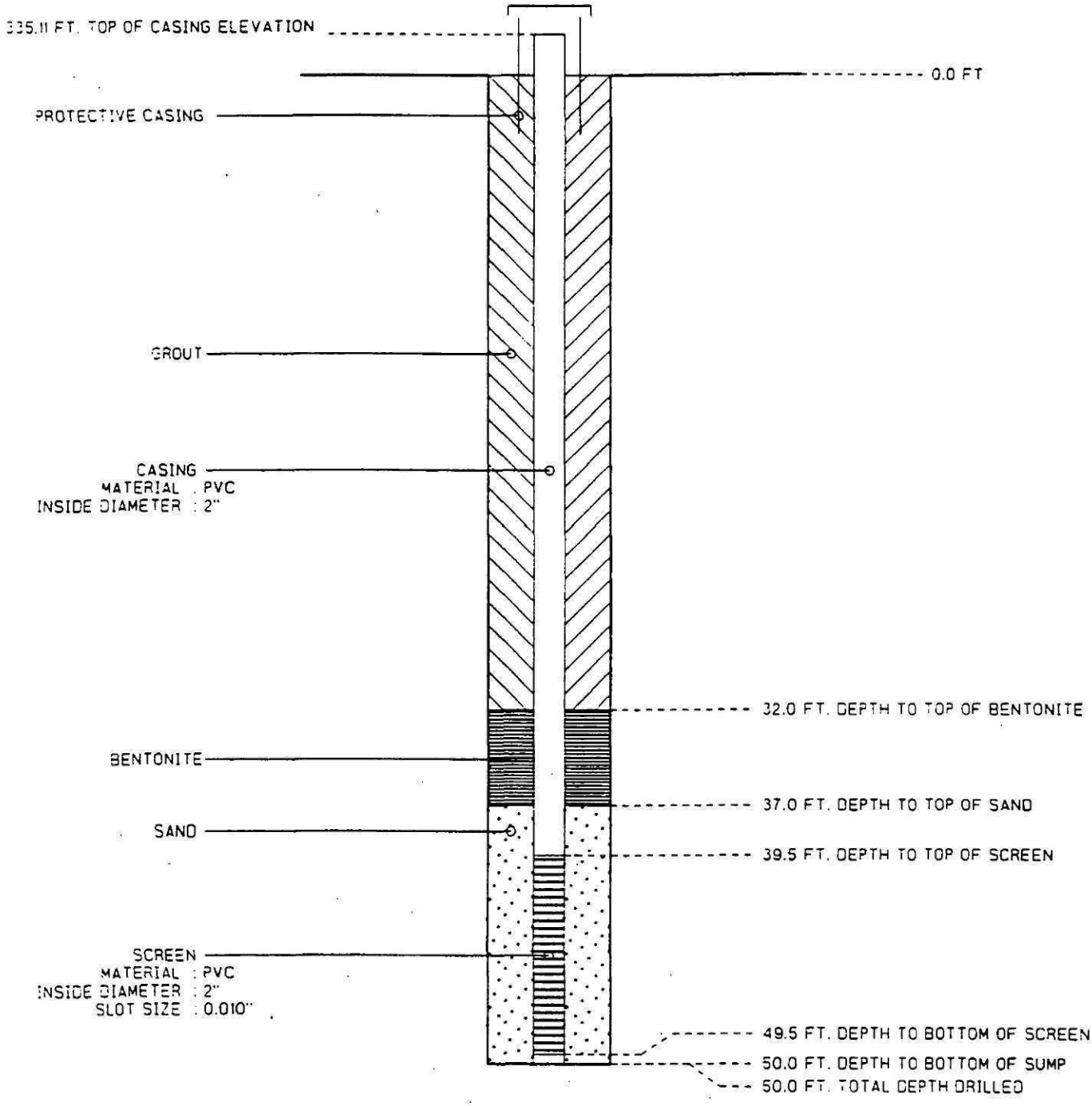
PROJECT NAME MACON NAVAL ORDNANCE PLANT PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER WEATHER CLEAR, WARM
AUGER I.D. (in) 4 1/4 GROUND ELV. (ft) 332.96
RIG TYPE CME 75 DRILLING METHOD HOLLOW STEM AUGER

PAGE 3 OF 3
BORING NO: PZ-4
DATE. 10/4/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	SILTY SAND (SM): white, dense, medium grained; well sorted, sand is in a silty matrix, wet.	21	7 9,10 13	100	0		
	includes some coarse sand, moderately sorted, medium laminated to medium bedded, stratified by color, some dark red, iron stained bands.	22	3 7,16 20	100			
	becomes pink to white, slightly argillaceous.						
45	stratified from 45'-46' at low angle.	23	15 15,17 21				
50	BORING COMPLETED AT 50.0 FEET						
55							
60							

WELL SCHEMATIC

WELL NUMBER: PZ-4
COMPLETION DATE: 10/5/94



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RUST ENVIRONMENT & INFRASTRUCTURE

WELL SCHEMATIC

MACON NAVAL ORDNANCE PLANT

RUST JOB NUMBER 89353.000

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER SUNNY, WARM
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 308.18
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: PZ-5
DATE: 10/6/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	CLAYEY SILT (ML): dark brown, very soft; organics.	1	2 2,2 2	100			Performed continuous monitoring of breathing zone with OVA, readings were zero unless otherwise noted.
	SANDY SILT (ML): brown, very loose, fine grained, dry.						
	SILTY SAND (SM): light brown, loose, fine grained; well sorted, unconsolidated, some broken quartz gravel, dry.	2	2 2,4 6	100			
5	CLAYEY SAND (SC): light brown to tan, medium dense, fine to medium grained; quartz, moist.	3	2 4,7 9	30			
	becomes yellow, tan, orange, stiffer, dry, sand is coarser.	4	4 8,11 19		0		Atterburg results, 6-8' (SC) natural moisture 13.5% liquid limit 25 plastic limit 15 plasticity index 10
	tan to pink, very stiff; moderately sorted, sand is medium to coarse grained, quartz, feldspar, dry.	5	4 9,9 13	20			
10	SANDY CLAY (CL): tan to pink, stiff; well sorted, low plasticity, sand is medium grained becoming finer with depth, quartz, feldspar, muscovite.	6	3 5,8 10	95			
	CLAYEY SAND (SC): orange, tan, hard, bioturbated; bioturbation at top, 2" tan clay at bottom.	7	12 18,24 28	100	0	▼	Atterburg results, 12-14' (SC) natural moisture 12.8% liquid limit 24 plastic limit 12 plasticity index 12
	orange, tan, medium dense, medium grained; well sorted, quartz, muscovite, moist.						
15	becomes wet.	8	2 4,12 16	100			
	some subrounded quartz and feldspar gravel.	9	3 11,16 25	100			
	SILTY SAND (SM): tan, orange, medium dense, coarse grained; moderately sorted, angular, quartz, feldspar, slightly argillaceous, wet.	10	10 13,13 23	100			
20							

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

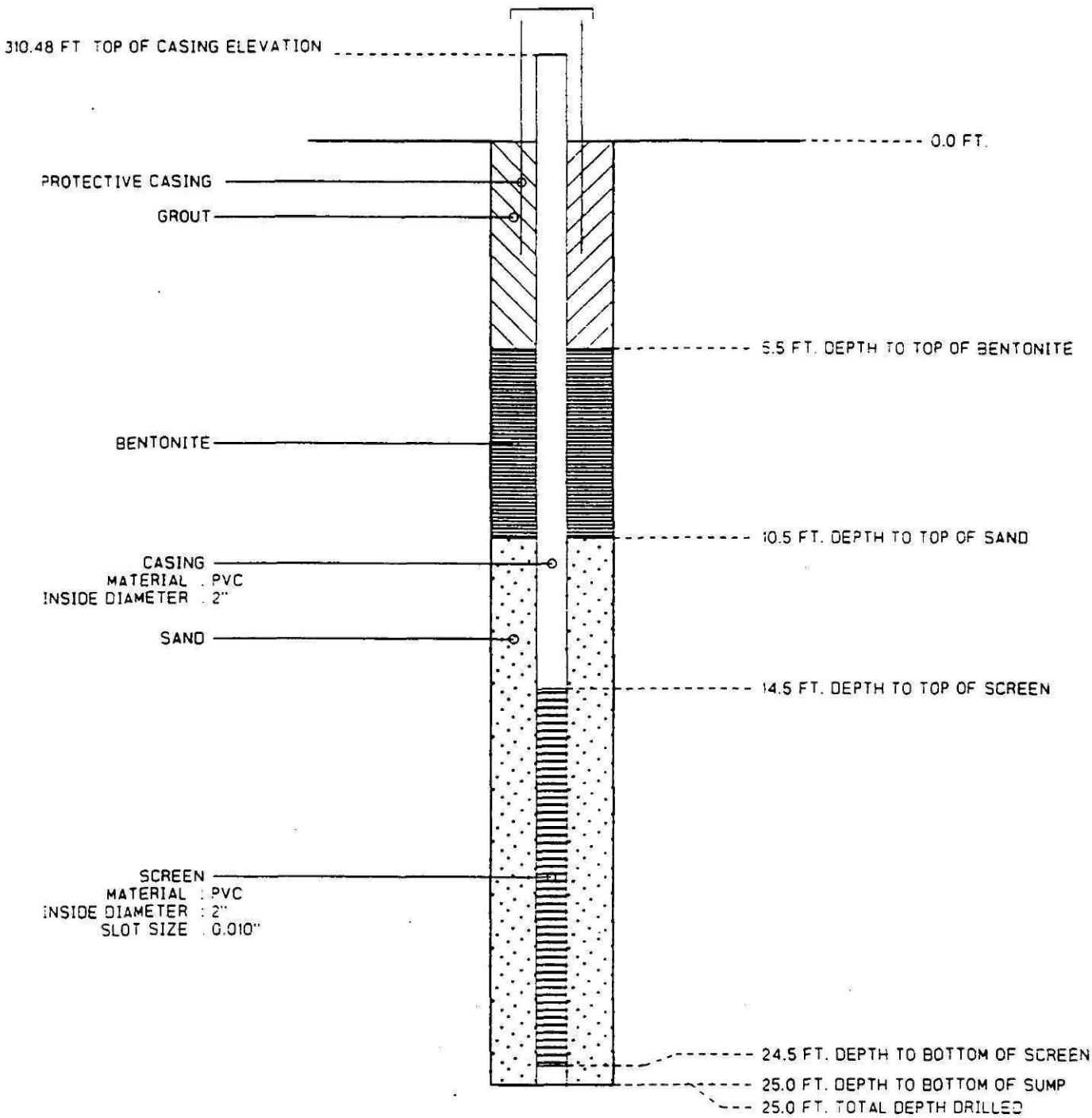
PROJECT NAME MACON NAVAL ORDNANCE PLANT PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER WEATHER SUNNY, WARM
AUGER I.D. (in) 4 1/4 GROUND ELV. (ft) 308.18
RIG TYPE CME 75 DRILLING METHOD HOLLOW STEM AUGER

PAGE 2 OF 2
BORING NO: PZ-5
DATE. 10/6/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	SAND (SP): white, loose to medium dense, fine grained, clean, well sorted, wet, thin bed at 21.5' includes coarse sand.	11	2 3,3 8	100	0		
		12	4 4,8 18	100			
25	BORING COMPLETED AT 25.0 FEET						
30							
35							
40							

WELL SCHEMATIC

WELL NUMBER: PZ-5
COMPLETION DATE: 10/6/94



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RUST ENVIRONMENT & INFRASTRUCTURE

WELL SCHEMATIC

MACON NAVAL ORDNANCE PLANT

RUST JOB NUMBER 89353.000

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER CLEAR, WARM
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 304.86
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: PZ-6
DATE: 10/7/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	TOPSOIL dark brown, organic silt (OL).						
	CLAY (CL) brown, stiff.	1	4 5,4 5	100			Performed continuous monitoring of breathing zone with OVA. readings were zero unless otherwise noted.
	CLAY SILT (ML) brown, stiff; some fine grained sand, wet.	2	4 5,7 8	5			
5	yellowish tan, firm; some medium to fine grained quartz sand, muscovite, relatively low conductivity, moist.	3	2 3,4 4	50	0.5		
		4	3 9,12 14	100	0		Atterburg results, 7-8' (CH) natural moisture 23.6% liquid limit 59 plastic limit 23 plasticity index 36
	SILTY CLAY (CH) very stiff; very little sand, very low conductivity, dry.						
	CLAY (CH) white, very stiff; very low conductivity.	5	5 9,11 12	80	0		
10	SANDY CLAY (CL) yellow, tan, stiff, fine to medium grained; quartz, feldspar, moist.						
	SILTY SAND (SM) orange, medium dense, medium to coarse grained; poorly sorted, quartz, feldspar, sorting increases with depth, very moist.	6	6 6,6 6	75			
	fine grained; slightly argillaceous.	7	7 9,11 12	80	0		
	SANDY SILT (ML) orange, fine to medium grained.						
15	GRAVELLY SAND (SW) orange, medium dense; poorly sorted, rounded to subrounded, quartz, feldspar.	8	3 9,9 11	75		▽	
	SANDY GRAVEL (GP) orange, fine gravel; mostly quartz, feldspar, subrounded, wet.	9	9 12,12 13	80			
	SILTY SAND (SM) pink, dense, medium grained; well sorted, quartz, feldspar, few clay lenses, wet.	10	3 13,19 20	80	0		
20							

RUST ENVIRONMENT & INFRASTRUCTURE

SUBSURFACE DRILL LOG

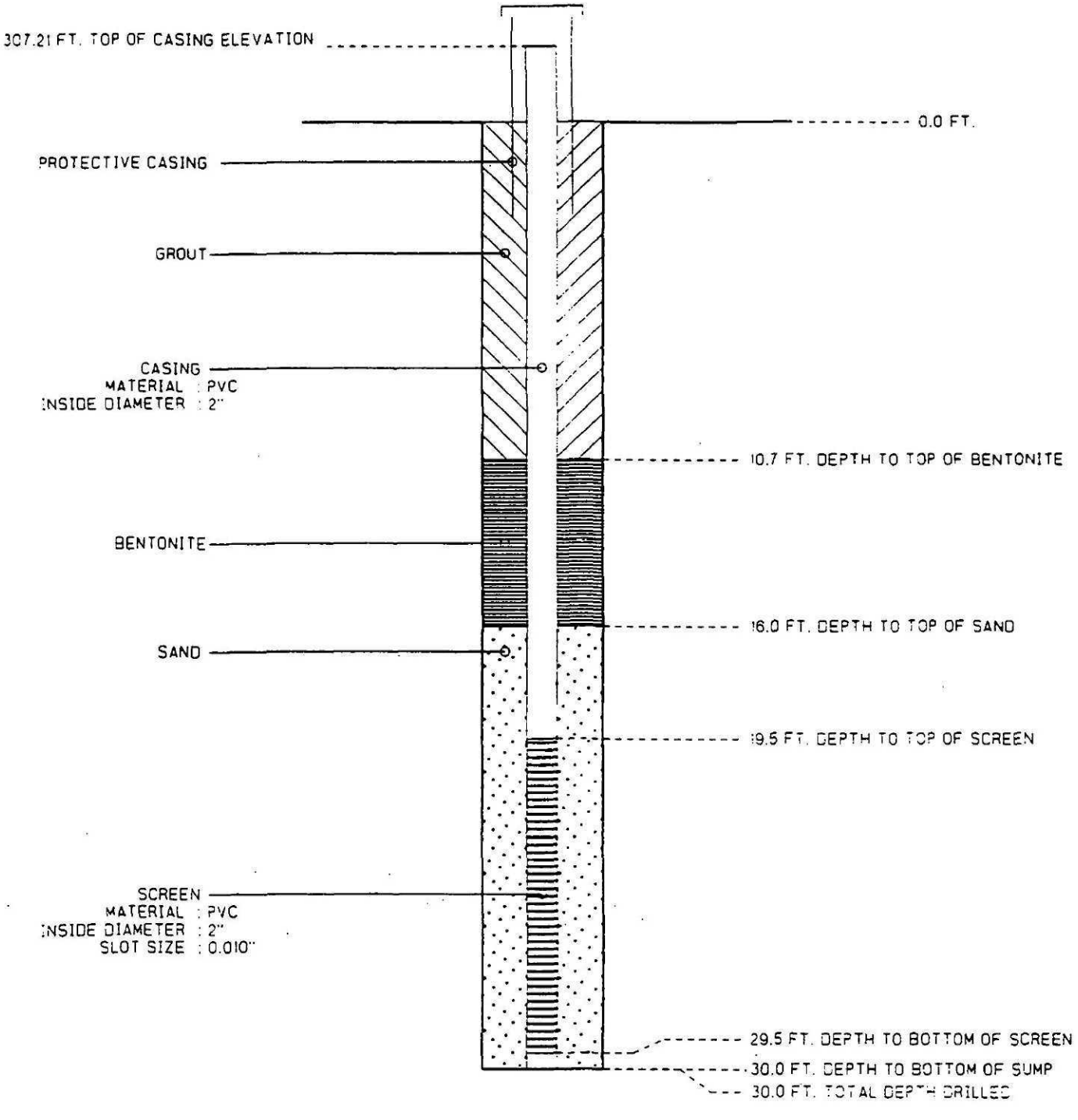
PROJECT NAME MACON NAVAL ORDNANCE PLANT
PROJECT NUMBER 89353.000
FIELD ENG/GEO D. HELLER
WEATHER CLEAR, WARM
AUGER I.D. (in) 4 1/4
GROUND ELV. (ft) 304.86
RIG TYPE CME 75
DRILLING METHOD HOLLOW STEM AUGER

BORING NO: PZ-6
DATE. 10/7/94

DEPTH FEET	SOIL/MATERIAL DESCRIPTION	SPLIT SPOON	SPT BLOWS	% RECOVERY	HEADSPACE OVA (ppm)	WATER LEVEL/ SCREEN	REMARKS
	SAND (SP): tan, medium dense, medium grained, well sorted, relatively high conductivity, wet.	11	5 9,12 13	80			
	CLAYEY SAND (SC): white, medium dense, medium grained, quartz, feldspar, wet.						
	SILTY SAND (SP-SM): white, medium dense, medium grained, quartz, feldspar, with feldspar silt, clay lenses, wet.	12	5 8,12 27	100	0		Atterburg results, 22-24' (SP-SM) natural moisture 17.4% liquid limit 20 plastic limit 17 plasticity index 3
	SAND (SP): tan, medium dense, fine grained, well sorted, quartz and feldspar, muscovite, clean, wet.						
25	SILTY SAND (SM): white, very dense, medium grained, well sorted, quartz, little feldspar, occasional clay lens.	13	6 6,12 16	90			
		14	18 27,37 45	100			
		15	5 6,6 13	100	0		
30	BORING COMPLETED AT 30.0 FEET						
35							
40							

WELL SCHEMATIC

WELL NUMBER: PZ-6
COMPLETION DATE: 10/7/94



NOT TO SCALE
ALL DEPTHS REFERENCED FROM GROUND SURFACE

RUST ENVIRONMENT & INFRASTRUCTURE

WELL SCHEMATIC

MACON NAVAL ORDNANCE PLANT

RUST JOB NUMBER 89353.000

APPENDIX B

QUALITY CONTROL SUMMARY REPORT

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1.0 INTRODUCTION

Groundwater, soil, and sediment samples were collected during several field investigation tasks at the Allied Industrial Park (AIP) between December 4, 1995 and April 26, 1996. Rust has provided a summary of the activities involved in this investigation to the United States Army Corps of Engineers, Savannah District (USACE) on a monthly basis throughout this project. Copies of these monthly status reports are attached. The site investigation for which these samples were collected was designed to provide analytical data concerning potential site contamination. The collected samples were analyzed by Hydrologic Laboratories, Inc. of Brighton, Colorado for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), pesticides/PCBs, metals, and explosive residues.

1.1 DATA EVALUATION PURPOSE AND SCOPE

The data evaluation performed by Rust is a technical evaluation independent of laboratory internal quality reviews. The purpose of this evaluation is to assess the utility of data to support professional interpretation and to qualify the data so that it will not be used inappropriately. The evaluation involves an examination of laboratory and field activities to determine how completely those activities conform to established quality control procedures.

1.2 DATA EVALUATION PROCEDURE SUMMARY

The data evaluation process is used, in concert with professional judgment, to assess the effect of the entire analytical process on the usability of the data. After release by the laboratory, the data packages were reviewed and evaluated by the Rust Atlanta database manager according to the instructions provided in the U.S. Environmental Protection Agency (EPA) guidance documents USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994 revision) and USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (Feb. 1994 revision) and Test Methods for Evaluating Solid Waste (SW-846) third edition.

The two major categories of data evaluation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a straightforward inspection for compliance with method requirements. Review areas include holding time compliance, instrument performance checks, initial and continuing calibration, and laboratory control samples. Evaluation of matrix interferences entails the analysis of surrogate spike recoveries, matrix spike recoveries, laboratory and field blanks, and comparative duplicate sample results.

Rust uses Paradox™ database software to automate those aspects of the evaluation process which are strictly mathematical and non-interpretive. The automated program provides a more complete, accurate and precise review than manual inspection of hardcopy quality control data. The speed of the computerized review also allows extra time for the data evaluators to exercise professional judgment in the overall assessment of data and the subsequent application of EPA qualifying flags.

Those evaluation areas which are favorable for computerized checking are:

- holding times
- blank contamination
- system monitoring compounds (surrogate spike recoveries)
- matrix spikes and matrix spike duplicates
- laboratory control samples
- comparative duplicate samples

Areas which require manual scrutiny of the laboratory data packages are:

- sample preservation
- sample volume sufficiency
- instrument performance checks
- initial and continuing calibration
- internal standards (instrument stability during analysis)
- compound quantitation

2.0 LABORATORY DATA EVALUATION

This section provides an assessment of laboratory data quality on the basis of standard quality assurance and quality control procedures.

2.1 SUMMARY OF LABORATORY QUALITY CONTROL PROGRAM

Hydrologic Laboratories, Inc. (Hydrologic) developed the Quality Assurance Program Plan (QAPP) to meet the requirements of the *Scope of Work / Site Investigation of the Former Macon Naval Ordnance Plant DERP-Funds Project No. IO4GA081300* dated May 9, 1995 for the site investigation of the former Macon Naval Ordnance Plant to be conducted at Macon, Georgia. Specifications and data deliverables were also developed to be compliant with the following documents:

- Requirements for the Preparation of Sampling and Analysis Plans, EM 200-1-3, September 1994
- Engineering and Design Chemical Data Quality Management for Hazardous Waste Remedial Activities, Regulation No. 1110-1-263, October 1990
- Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS - 005/80, EPA-600/4-83-004, February 1983

Hydrologic Laboratories assigned Project Managers/Project Administrators (PM/PA) the responsibility to review QAPP information with respect to the referenced documents and determine if additional information is required to meet the project Data Quality Objectives (DQO's).

For the Site Investigation at the former Macon Naval Ordnance Plant, the data can be used for risk assessment, site characterization, engineering, design and monitoring. Hydrologic submitted a full QAPP prior to project initiation. The QAPP was submitted to USACE Savannah District as part of the Final Work Plan for the Site Investigation of the former MNOP.

The QAPP contains specific procedures regarding sample custody; security; sample receipt; sample tracking; analytical reagents; data validation and reporting; method blank, control sample, and matrix spike/matrix spike duplicate analyses; as well as audits and performance analyses. These procedures are described fully in the Final Work Plan.

2.2 EXCEPTIONS TO LABORATORY QUALITY CONTROL PROGRAM

Formal QA/QC procedures were employed by the contract laboratory and Rust to monitor the quality of data derived from the Site Investigation of the former Macon Naval Ordnance Plant. Subsequent QC reviews of documentation of analytical procedures and the laboratory reports have not identified any exceptions to the prescribed protocols delineated in the Work Plan adopted for this project that would jeopardize the validity of the derived data as reported.

2.3 LABORATORY DATA EVALUATION SUMMARY

Sample results which were outside the range of acceptable quality control limits were indicated with EPA national qualifiers. These qualifying flags are included in project data summary tables. The following definitions provide brief explanations of the national qualifiers:

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is an approximate concentration.

UJ The analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.

R The sample results are rejected as unusable due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Sample results were rejected as unusable for three reasons: (1) unacceptably low recoveries (<10% for organics, <30% for inorganics) in organic laboratory control samples, (2) surrogate recoveries for organic analytes less than ten percent, and (3) matrix spike recoveries for inorganic analytes less than thirty percent. Table B2-1 contains every record rejected with the explanation provided in each case. Several quality control non-conformances occurred which did not merit rejection of the results, but required qualification nonetheless. Table B2-2 contains every record so qualified with the explanation provided in each case. These two tables constitute a summary of the review conclusions per analyte qualified during the evaluation process.

The Rust laboratory data evaluation concludes after an overall assessment of available quality control data that the analytical data as reported for volatile organics, semivolatile organics (including the semivolatile compounds described as explosive residues and analyzed under method 8330),

pesticide/PCBs, and inorganic data are acceptable as qualified. Refer to Table B2-3 for a summary of the quality problems encountered per analysis and matrix.

2.4 PRECISION, ACCURACY, REPRESENTATIVENESS, COMPARABILITY AND COMPLETENESS

Precision

Precision is the evaluation of the reproducibility of a measurement. Precision is estimated by analyzing duplicate samples and the calculation of relative percent difference (RPD) or relative standard deviation (RSD).

This project included the collection of field duplicates and the production of laboratory duplicates. Field duplicates serve as an indicator of overall precision from sample collection through laboratory analysis. All field duplicates were withing acceptable RPD ranges.

Laboratory duplicates focus on the precision of the analytical method. An insignificant number of volatile records (42 out of 17,818) were flagged for unacceptable RPDs between matrix spike samples and their duplicates. Per the EPA National Functional Guidelines For Organic Data Review (Feb. 1994), no qualification of data is required for MS/MSD non-conformances alone.

The data are acceptably precise.

Accuracy

Accuracy is the measure of bias in a system. It is the degree of agreement between a measurement and an accepted reference or true value. Accuracy was estimated for this project by analyzing QC samples with known true values (surrogate spikes and matrix spikes) and was expressed as percent recovery. Data that do not meet accuracy criteria are flagged J (estimated) or R (rejected), as appropriate (Table B2-2).

The data are acceptably accurate.

Representativeness and Comparability

Representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population at a sampling pint, process condition, or environmental condition. Comparability expresses the confidence with which a data set can be compared to another. Representativeness and comparability are qualitative objectives that were met for this project by following SOPs for sample collection and analysis.

Completeness

Completeness is the measure of the amount of valid (usable) data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. The completeness of data is calculated by dividing the number of valid data points by the number of total data points.

The percentages of data completeness calculated for this project are as follows:

	VOCs	SVOCs	Pest/PCBs	Inorganics	Radiologicals
Groundwater	100%	97%	100%	100%	100%
Surface Water	100%	99%	NA	100%	NA
Soil	100%	97%	100%	98%	NA
Sediment	100%	99%	NA	100%	NA

The overall data completeness goal of 95% was achieved.

Overall Assessment of Data

The data are acceptable.

3.0 FIELD DATA EVALUATION

This section provides an assessment of field data quality on the basis of accepted quality control standards and field sampling procedures.

3.1 SUMMARY OF FIELD QUALITY CONTROL PROGRAM

The QC procedures which guided the field work during the HSRA investigation of the former Macon Naval Ordnance Plant were discussed in detail in the *Final Workplan Hazardous Site Response Act Investigation* submitted to USACE Savannah District in November 1995. The procedures entail collecting required QC/QA samples; maintaining field equipment in proper working order and calibration; using prescribed sampling procedures and chain of custody protocols; using the proper containers, preservation techniques, packaging, and transportation procedures; and providing sufficient documentation. The project organization, project oversight by the site manager, and Quality Assurance field auditing during sampling activities were the primary means employed to assure that proper procedures were followed in the field sampling tasks.

3.1.1 Project Organization

The Rust Project Manager (PM) was responsible for coordination and of the budget and schedule and for developing the multidiscipline project team with the required skills and experience to accomplish the HSRA investigation tasks. This individual maintained communications between the USACE, Rust personnel, and subcontractors and vendors on the project team. The Project Manager periodically reviewed field activity to assure that technical requirements were maintained throughout the field tasks.

The Site Manager was directly responsible for implementing the work plan and assuring that field activities followed the specified protocols. Prior to commencing field activities, the Site Manager assigned specific duties to personnel on the project team. The Site Manager reports to the Project Manager.

The Field Staff was responsible for field activities including following proper protocols regarding decontamination, equipment operation, sample collection and shipment, and documentation of field activities. Each member of the field crew was responsible for knowledge of and proficiency in the procedural requirements of the Chemical Data Acquisition Plan (CDAP). This responsibility included quality control awareness and initiating corrective action, if necessary.

The QC Manager was responsible for monitoring and auditing management and technical systems, data quality objectives, and performance evaluations. This activity is an ongoing process conducted at the local level by a full-time staff professional within the Atlanta Division of Rust.

The quality assurance structure functions independently of project operations to maintain the quality of field operations. The Project Manager, and Site Manager were directly responsible for the project's operations, including its quality control procedures. The QC Manager monitors the project's operations for compliance with established quality control procedures and targets. The personnel assigned QC responsibilities were familiar with the CDAP and qualified to observe and evaluate procedures. While implementing their responsibilities, QC personnel had access to all work areas and the freedom to identify potential quality problems; initiate, recommend, or provide solutions to quality problems through designated channels; verify implementation of solutions; and ensure that further processing or action was controlled until proper disposition of unsatisfactory conditions occurred. QC personnel had access to project management and corporate management as required to resolve problems or coordinate quality concerns.

3.1.2 Site Manager Oversight of Field Activities

The Site Manager directed the Field Staff in the field activities designed to accomplish the collection of reliable field data. The field activities included collecting the required data samples as well as the prescribed QC samples, maintaining field equipment in proper working order and calibration; using prescribed sampling procedures and chain of custody protocols; using the proper containers and preservation techniques, packaging and transportation procedures; and providing documentation of these activities.

3.1.3 Quality Assurance Audit

The QC Manager conducted a field QC audit on January 18, 1996 during the course of the field sampling. The audit found only minor procedural and documentation omissions which were addressed by field personnel. No findings were identified that jeopardized the integrity of the sample data. The QC Manager advised the Project Manager on QC procedures and overall project compliance on a continual basis.

3.2 EXCEPTIONS TO FIELD QUALITY CONTROL PROGRAM

The formal QC audit performed by Rust, and subsequent QC reviews of documentation of the field activities and procedures, have not identified any exceptions to the prescribed protocols delineated in the Work Plan adopted for this project that would jeopardize the validity of the investigative derived data.

The exceptions to the field QC program, as noted, were limited to procedural adjustments and/or documentation omissions with no direct impact on the validity of the acquired data. These exceptions are delineated below with an accompanying evaluation of the exceptions' impact on the data collection.

3.3 FIELD DATA EVALUATION SUMMARY

3.3.1 Daily Quality Control Reports

Daily Quality Control Reports were filled out by field personnel for each day of field work conducted for this investigation. These reports provide brief summaries of work performed each day including the number of samples and types of media sampled, sampling methods, equipment used, personnel on site, site conditions, and health and safety information. These reports provide indications of any equipment failures or sampling problems and also document field calibrations of equipment. Copies of all Daily Quality Control Reports were provided to USACE on a weekly basis, but a complete set of copies of these reports are also provided at the end of this QCSR.

No QC deficiencies, which may have jeopardized the quality of the derived data, were apparent in the Daily Quality Control Reports completed for this HSRA investigation.

3.3.2 Field Sampling Procedures

The field drilling and soil sampling techniques utilized to conduct the HSRA site investigation were detailed in the Geologic Data Acquisition Plan (GDAP) that was submitted as Section 5.0 of the *Final Workplan Hazardous Site Response Act Investigation* submitted to USACE Savannah District in November 1995. Specific sampling requirements for chemical analyses were presented in the CDAP (Section 6.0) of the same document. Field investigation techniques were divided into two general sites of investigation; the former MNOP Landfill and the former MNOP plant operations area, known presently as the Allied Industrial Park area. Field investigation techniques were provided for the following sampling activities:

- Direct Push Technology (DPT) Sampling
- Surface Water and Sediment Sampling
- Bio Sampling
- Groundwater Screening
- Soil Test Boring Sampling
- Monitoring Well Installation Plan

All field investigation techniques employed during the HSRA Investigation were performed in accordance with Characterization of Hazardous Waste Sites and Methods Manual: Volume II. Available Sampling Methods, EPA-600/4-83-040. Sampling methodologies are discussed in more detail under the soil and groundwater sampling procedures in the Site Investigation Report.

No QC deficiencies, which may have jeopardized the quality of the derived data, were apparent in the field sampling techniques employed in this HSRA investigation.

Daily field calibration of the pH meter and conductivity meter was not documented throughout the field investigation, but was documented as being conducted periodically and on an as needed basis. No inconsistencies or anomalies were indicated in the physical parameter measurements conducted in the field that would indicate the meters were not operating within the manufacturers' specified range of accuracy or calibration. The measurement of physical parameters in the field did not influence the selection of samples or the accuracy of laboratory analyses. This exception should have no impact on the chemical data validity.

Daily field calibration of the Foxboro OVA was not documented throughout the field investigation, but was documented as being conducted periodically and on an as needed basis. No inconsistencies or anomalies were indicated in the organic vapor measurements used to field screen soil samples that would indicate the OVA was not operating within the manufacturer's specified range of accuracy or calibration. The measurement of organic vapors in soil samples collected in the field did influence the selection of samples in that the sample registering the highest meter deflection during OVA screening was selected for laboratory analyses. Since the OVA screening was conducted to determine the relative concentration of organic vapors from one sample to another and not to quantify the degree of concentration of vapors, as long as the OVA was operational, it should have accurately identified the sample with the greatest volatile organic vapor concentration. Therefore, this exception should have no impact on the chemical data validity.

Due to field staff oversight, one soil QC sample was omitted from the field sampling schedule. The remaining QC samples are believed to provide a sufficient control of quality of field sampling procedures to render the resultant chemical data valid as reported. This oversight in procedure does not impact the conclusions or recommendations in this report.

3.3.3 Sample Preparation and Shipment

Sampling containers, prepared with EPA prescribed preservatives, were furnished by HydroLogic. Container and preservation specifications met all appropriate requirements as prescribed in the Final Work Plan.

Sample containers provided by HydroLogic were constructed from EPA designated materials, containing EPA prescribed preservatives and affixed with a HydroLogic Laboratories' identification label. To monitor container temperature, a 100-ml plastic container labeled "Sample Container for Lab Temperature Use Only" was prefilled with tap water and supplied with each sample. All such temperature blanks were measured and recorded by the laboratory upon receipt.

Containers were provided with a unique batch assignment number to permit traceability.

3.3.3.1 Sample Custody Objectives

The primary objective of sample custody is to provide accurate, verifiable, and traceable records of sample possession and handling from the preparation and shipment of bottleware through laboratory receipt, sample analyses, and data validation. A sample is considered in custody if it is:

3.3.3.2 Sample Record Decontamination

- in actual possession of the sampler or transferee
- in view of the sampler or transferee after establishment of physical possession
- sealed for sample integrity by the sampler
- in a secured area, restricted to authorized personnel

Field and laboratory records were maintained in a secure area. All field and laboratory data were recorded in bound notebooks, and in waterproof ink. Field and laboratory data entry errors were deleted with a one-line strike through the error, and the correction initialed and dated by the individual making the change. Field and laboratory information were also documented on various prepared forms. All forms for recording field and laboratory data include spaces for date and initials which must be completed by the data recorder. Any field and laboratory documentation, recorded on media other than prepared forms, was also dated and initialed.

3.3.3.3 Sample Chain of Custody

Formal COC documentation and custody procedures were followed in preparing samples for shipment to the laboratory. During sample collection, all sample containers were labeled with an identification number that uniquely identified the sample. The sample identification number was logged in the field logbook, and on the COC along with the following information:

- sampling personnel
- date and time of collection
- field sample location and depth (if appropriate)

- observations of ambient (weather) conditions
- type of sampling (composite or grab)
- method of sampling
- sampling matrix or source
- intended analyses and type of container
- preservation method
- observations of physical characteristics of the sample

For samples transported from the field to the laboratory by common carrier, COC was maintained. Completed custody forms accompanied each sealed cooler, which was then sealed in the field by the sampling team to ensure that tampering would be immediately evident upon receipt by the laboratory.

3.3.3.4 Sample Packaging

Samples were packed for shipping in waterproof ice chests or coolers, and sample containers were individually sealed in plastic bags prior to packing them in the cooler with bubble wrap or styrofoam packing to prevent breakage during shipment. Wet ice sealed in plastic bags (to inhibit cross contamination of samples by meltwater) was placed with the samples in the cooler to maintain the samples at a temperature of 4° Celsius during temporary on-site storage and shipping. Prior to shipment, coolers were observed for excessive melting ice, and re-packed with ice as necessary to preserve the samples. The COC form was signed as "relinquished" by the principal sampler or responsible party, sealed in a waterproof plastic bag, and placed inside the cooler. Following packing, the cooler lid was sealed with strapping or duct tape. Two signed and dated custody seals were affixed to two opposite sides of the cooler, across the seal of the lid, and covered with clear tape. The tape was placed on either end of the custody seal, thereby requiring the seal be broken during any attempt to open the cooler. The cooler was also labeled with "This End Up" and "Fragile" warning markers.

3.3.3.5 Sample Shipping

The sample coolers were shipped on the day samples were collected, by overnight express carrier to the laboratory. A copy of the bill of lading was retained by Rust and is part of the sample custody documentation in the project file. Prior to sample shipment, the laboratory was notified by phone to assure personnel would be available to receive the coolers. Samples were shipped for delivery during the affected laboratory's normal working hours. All holding time limitations were taken into consideration in the sampling schedule.

4.0 PROFICIENCY ENHANCEMENT EVALUATION

A review of the tasks performed to accomplish the scope of work for this HSRA Investigation revealed several action items which would enhance the proficiency of future efforts. The items involve both field and analytical procedures as shown below:

- Equipment blanks should be included in the analytical QC samples to screen for possible interference from field decontamination procedures.

- Sampling protocol should include filtered metals analyses in order to eliminate the influence of turbidity on metals analyses.

- Closer communication should be required of the subcontract analytical laboratory, specifically requiring immediate notification to the A/E Project Manager should any sample's integrity be potentially impacted by exceeded holding times, questionable identification, or results.

Table B2-1

Data Rejected During Validation

Allied Industrial Area

Macon, Georgia

Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-1	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2702
IGW-1	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2702
IGW-12	8330	1,3-dinitrobenzene	<	0.00021	mg/L	R	LCS recovery too low	L2687
IGW-12	8330	2,4-dinitrotoluene	<	0.00024	mg/L	R	LCS recovery too low	L2687
IGW-12	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2687
IGW-12	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2687
IGW-12	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2687
IGW-14	8270	1,2,4-trichlorobenzene~	<	0.0027	mg/L	R	LCS recovery too low	L2629
IGW-14	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2629
IGW-15	8330	1,3-dinitrobenzene	<	0.00021	mg/L	R	LCS recovery too low	L2683
IGW-15	8330	2,4-dinitrotoluene	<	0.00024	mg/L	R	LCS recovery too low	L2683
IGW-15	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2683
IGW-15	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2683
IGW-15	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2683
IGW-16	8330	1,3-dinitrobenzene	<	0.00021	mg/L	R	LCS recovery too low	L2683
IGW-16	8330	2,4-dinitrotoluene	<	0.00024	mg/L	R	LCS recovery too low	L2683
IGW-16	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2683
IGW-16	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2683
IGW-16	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2683
IGW-17	8330	1,3-dinitrobenzene	<	0.00021	mg/L	R	LCS recovery too low	L2696
IGW-17	8330	2,4-dinitrotoluene	<	0.00024	mg/L	R	LCS recovery too low	L2696
IGW-17	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2696
IGW-17	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2696
IGW-17	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2696
IGW-18	8330	1,3,5-trinitrobenzene	<	0.00031	mg/L	R	LCS recovery too low	L2653
IGW-18	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2653
IGW-18	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2653
IGW-18	8330	3-nitrotoluene	<	0.00059	mg/L	R	LCS recovery too low	L2653
IGW-18	8330	4-amino-2,6-dinitrotoluene	<	0.0005	mg/L	R	LCS recovery too low	L2653
IGW-18	8330	4-nitrotoluene	<	0.00066	mg/L	R	LCS recovery too low	L2653
IGW-18	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2653
IGW-18	8330	tetryl	<	0.00033	mg/L	R	LCS recovery too low	L2653
IGW-19	8330	1,3,5-trinitrobenzene	<	0.00031	mg/L	R	LCS recovery too low	L2653
IGW-19	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2653
IGW-19	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2653
IGW-19	8330	3-nitrotoluene	<	0.00059	mg/L	R	LCS recovery too low	L2653
IGW-19	8330	4-amino-2,6-dinitrotoluene	<	0.0005	mg/L	R	LCS recovery too low	L2653
IGW-19	8330	4-nitrotoluene	<	0.00066	mg/L	R	LCS recovery too low	L2653
IGW-19	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2653
IGW-19	8330	tetryl	<	0.00033	mg/L	R	LCS recovery too low	L2653
IGW-2	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2713

Table B2-1

Data Rejected During Validation

Allied Industrial Area

Macon, Georgia

Rust Project No. *33941.000*

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-2	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2713
IGW-2-A	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2713
IGW-2-A	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2713
IGW-24	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2700
IGW-24	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2700
IGW-25	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2700
IGW-25	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2700
IGW-26	8330	1,3-dinitrobenzene	<	0.00021	mg/L	R	LCS recovery too low	L2696
IGW-26	8330	2,4-dinitrotoluene	<	0.00024	mg/L	R	LCS recovery too low	L2696
IGW-26	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2696
IGW-26	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2696
IGW-26	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2696
IGW-26-A	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2696
IGW-26-A	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2696
IGW-27	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2700
IGW-27	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2700
IGW-28	8330	1,3-dinitrobenzene	<	0.00021	mg/L	R	LCS recovery too low	L2687
IGW-28	8330	2,4-dinitrotoluene	<	0.00024	mg/L	R	LCS recovery too low	L2687
IGW-28	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2687
IGW-28	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2687
IGW-28	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2687
IGW-29	8330	1,3-dinitrobenzene	<	0.00021	mg/L	R	LCS recovery too low	L2687
IGW-29	8330	2,4-dinitrotoluene	<	0.00024	mg/L	R	LCS recovery too low	L2687
IGW-29	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2687
IGW-29	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2687
IGW-29	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2687
IGW-3	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2716
IGW-30	8330	1,3-dinitrobenzene	<	0.00021	mg/L	R	LCS recovery too low	L2687
IGW-30	8330	2,4-dinitrotoluene	<	0.00024	mg/L	R	LCS recovery too low	L2687
IGW-30	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2687
IGW-30	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2687
IGW-30	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2687
IGW-33	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2700
IGW-33	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2700
IGW-37 DUP	8330	1,3,5-trinitrobenzene	<	0.00031	mg/L	R	LCS recovery too low	L2655
IGW-37 DUP	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2655
IGW-37 DUP	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2655
IGW-37 DUP	8330	3-nitrotoluene	<	0.00059	mg/L	R	LCS recovery too low	L2655
IGW-37 DUP	8330	4-amino-2,6-dinitrotoluene	<	0.0005	mg/L	R	LCS recovery too low	L2655
IGW-37 DUP	8330	4-nitrotoluene	<	0.00066	mg/L	R	LCS recovery too low	L2655
IGW-37 DUP	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2655

Table B2-1

Data Rejected During Validation

Allied Industrial Area

Macon, Georgia

Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-37 DUP	8330	tetryl	<	0.00033	mg/L	R	LCS recovery too low	L2655
IGW-38	8330	1,3,5-trinitrobenzene	<	0.00031	mg/L	R	LCS recovery too low	L2659
IGW-38	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2659
IGW-38	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2659
IGW-38	8330	3-nitrotoluene	<	0.00059	mg/L	R	LCS recovery too low	L2659
IGW-38	8330	4-amino-2,6-dinitrotoluene	<	0.0005	mg/L	R	LCS recovery too low	L2659
IGW-38	8330	4-nitrotoluene	<	0.00066	mg/L	R	LCS recovery too low	L2659
IGW-38	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2659
IGW-38	8330	tetryl	<	0.00033	mg/L	R	LCS recovery too low	L2659
IGW-39	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2722
IGW-39-A	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2722
IGW-40	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2734
IGW-41	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2734
IGW-42	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2722
IGW-43	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2722
IGW-44	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2734
IGW-45	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2734
IGW-46	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2713
IGW-46	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2713
IGW-47	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2722
IGW-48	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2700
IGW-48	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2700
IGW-49	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2722
IGW-49	8270	2,3,4,6-tetrachlorophenol	<	0.0053	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	2,4,5-trichlorophenol	<	0.0062	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	2,4,6-trichlorophenol	<	0.0045	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	2,4-dichlorophenol	<	0.0043	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	2,4-dimethylphenol	<	0.0035	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	2,4-dinitrophenol	<	0.0072	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	2,6-dichlorophenol	<	0.0041	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	2-chlorophenol	<	0.0033	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	2-methylphenol	<	0.0021	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	2-nitrophenol	<	0.0043	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	4,6-dinitro-2-methylphenol	<	0.0042	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	4-methylphenol	<	0.0022	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	4-nitrophenol	<	0.008	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	pentachlorophenol	<	0.0051	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-49	8270	phenol	<	0.0038	mg/L	R	Surrogate recovery below 10 percent	L2722
IGW-51	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2713
IGW-51	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2713

Table B2-1

Data Rejected During Validation

Allied Industrial Area

Macon, Georgia

Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-52	8270	1,2,4-trichlorobenzene~	<	0.0027	mg/L	R	LCS recovery too low	L2640
IGW-52	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2640
IGW-52	8330	1,3,5-trinitrobenzene	<	0.00031	mg/L	R	LCS recovery too low	L2640
IGW-52	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2640
IGW-52	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2640
IGW-52	8330	3-nitrotoluene	<	0.00059	mg/L	R	LCS recovery too low	L2640
IGW-52	8330	4-amino-2,6-dinitrotoluene	<	0.0005	mg/L	R	LCS recovery too low	L2640
IGW-52	8330	4-nitrotoluene	<	0.00066	mg/L	R	LCS recovery too low	L2640
IGW-52	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2640
IGW-52	8330	tetryl	<	0.00033	mg/L	R	LCS recovery too low	L2640
IGW-53	8270	1,2,4-trichlorobenzene~	<	0.0027	mg/L	R	LCS recovery too low	L2630
IGW-53	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2630
IGW-53	8330	1,3,5-trinitrobenzene	<	0.00031	mg/L	R	LCS recovery too low	L2630
IGW-53	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2630
IGW-53	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2630
IGW-53	8330	3-nitrotoluene	<	0.00059	mg/L	R	LCS recovery too low	L2630
IGW-53	8330	4-amino-2,6-dinitrotoluene	<	0.0005	mg/L	R	LCS recovery too low	L2630
IGW-53	8330	4-nitrotoluene	<	0.00066	mg/L	R	LCS recovery too low	L2630
IGW-53	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2630
IGW-53	8330	tetryl	<	0.00033	mg/L	R	LCS recovery too low	L2630
IGW-54	8270	1,2,4-trichlorobenzene~	<	0.0027	mg/L	R	LCS recovery too low	L2630
IGW-54	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2630
IGW-54	8330	1,3,5-trinitrobenzene	<	0.00031	mg/L	R	LCS recovery too low	L2630
IGW-54	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2630
IGW-54	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2630
IGW-54	8330	3-nitrotoluene	<	0.00059	mg/L	R	LCS recovery too low	L2630
IGW-54	8330	4-amino-2,6-dinitrotoluene	<	0.0005	mg/L	R	LCS recovery too low	L2630
IGW-54	8330	4-nitrotoluene	<	0.00066	mg/L	R	LCS recovery too low	L2630
IGW-54	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2630
IGW-54	8330	tetryl	<	0.00033	mg/L	R	LCS recovery too low	L2630
IGW-55	8270	1,2,4-trichlorobenzene~	<	0.0027	mg/L	R	LCS recovery too low	L2640
IGW-55	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2640
IGW-55	8330	1,3,5-trinitrobenzene	<	0.00031	mg/L	R	LCS recovery too low	L2640
IGW-55	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2640
IGW-55	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2640
IGW-55	8330	3-nitrotoluene	<	0.00059	mg/L	R	LCS recovery too low	L2640
IGW-55	8330	4-amino-2,6-dinitrotoluene	<	0.0005	mg/L	R	LCS recovery too low	L2640
IGW-55	8330	4-nitrotoluene	<	0.00066	mg/L	R	LCS recovery too low	L2640
IGW-55	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2640
IGW-55	8330	tetryl	<	0.00033	mg/L	R	LCS recovery too low	L2640
IGW-56	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2716

Table B2-1

Data Rejected During Validation

Allied Industrial Area

Macon, Georgia

Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-57	8270	1,2,4-trichlorobenzene~	<	0.0027	mg/L	R	LCS recovery too low	L2645
IGW-57	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2645
IGW-57	8330	1,3,5-trinitrobenzene	<	0.00031	mg/L	R	LCS recovery too low	L2645
IGW-57	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2645
IGW-57	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2645
IGW-57	8330	3-nitrotoluene	<	0.00059	mg/L	R	LCS recovery too low	L2645
IGW-57	8330	4-amino-2,6-dinitrotoluene	<	0.0005	mg/L	R	LCS recovery too low	L2645
IGW-57	8330	4-nitrotoluene	<	0.00066	mg/L	R	LCS recovery too low	L2645
IGW-57	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2645
IGW-57	8330	tetryl	<	0.00033	mg/L	R	LCS recovery too low	L2645
IGW-59	8270	1,2,4-trichlorobenzene~	<	0.0027	mg/L	R	LCS recovery too low	L2645
IGW-59	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2645
IGW-59	8330	1,3,5-trinitrobenzene	<	0.00031	mg/L	R	LCS recovery too low	L2645
IGW-59	8330	2,6-dinitrotoluene	<	0.00037	mg/L	R	LCS recovery too low	L2645
IGW-59	8330	2-nitrotoluene	<	0.00072	mg/L	R	LCS recovery too low	L2645
IGW-59	8330	3-nitrotoluene	<	0.00059	mg/L	R	LCS recovery too low	L2645
IGW-59	8330	4-amino-2,6-dinitrotoluene	<	0.0005	mg/L	R	LCS recovery too low	L2645
IGW-59	8330	4-nitrotoluene	<	0.00066	mg/L	R	LCS recovery too low	L2645
IGW-59	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2645
IGW-59	8330	tetryl	<	0.00033	mg/L	R	LCS recovery too low	L2645
IGW-61	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2702
IGW-61	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2702
IGW-62	8330	2-amino-4,6-dinitrotoluene	<	0.00022	mg/L	R	LCS recovery too low	L2713
IGW-62	8330	nitrobenzene	<	0.00057	mg/L	R	LCS recovery too low	L2713
IGW-7	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	R	LCS recovery too low	L2734
IGW-7	8270	2,3,4,6-tetrachlorophenol	<	0.0053	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	2,4,5-trichlorophenol	<	0.0062	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	2,4,6-trichlorophenol	<	0.0045	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	2,4-dichlorophenol	<	0.0043	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	2,4-dimethylphenol	<	0.0035	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	2,4-dinitrophenol	<	0.0072	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	2,6-dichlorophenol	<	0.0041	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	2-chlorophenol	<	0.0033	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	2-methylphenol	<	0.0021	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	2-nitrophenol	<	0.0043	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	4,6-dinitro-2-methylphenol	<	0.0042	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	4-methylphenol	<	0.0022	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	4-nitrophenol	<	0.008	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	pentachlorophenol	<	0.0051	mg/L	R	Surrogate recovery below 10 percent	L2734
IGW-7	8270	phenol	<	0.0038	mg/L	R	Surrogate recovery below 10 percent	L2734

Table B2-1

Data Rejected During Validation

Allied Industrial Area

Macon, Georgia

Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-10 (0'-2')	6010	antimony	<	2.4	mg/Kg	R	Matrix spike recovery below 30 percent	WG5061
ISL-10 (0'-2')	7471	mercury	<	0.027	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-10 (14'-16')	6010	antimony	<	2.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5061
ISL-10 (14'-16')	7471	mercury	<	0.028	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-11 (0'-2')	6010	antimony	<	2.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5061
ISL-11 (0'-2')	7471	mercury	<	0.028	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-11 (14'-16')	6010	antimony	<	2.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5061
ISL-11 (14'-16')	7471	mercury	<	0.028	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-13 (0'-2')	6010	antimony	<	2.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5061
ISL-13 (0'-2')	7471	mercury	<	0.028	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-13 (24'-26')	6010	antimony	<	2.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5061
ISL-13 (24'-26')	7471	mercury	<	0.027	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-14 (.5'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2629
ISL-14 (.5'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2629
ISL-14 (.5'-2')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2629
ISL-14 (.5'-2')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2629
ISL-14 (.5'-2')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2629
ISL-14 (.5'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2629
ISL-14 (35'-36.5')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2629
ISL-14 (35'-36.5')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2629
ISL-14 (35'-36.5')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2629
ISL-14 (35'-36.5')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2629
ISL-14 (35'-36.5')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2629
ISL-14 (35'-36.5')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2629
ISL-18 (1'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (1'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (1'-2')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (1'-2')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (1'-2')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (1'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (55'-56')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (55'-56')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (55'-56')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (55'-56')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (55'-56')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (55'-56')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (55'-56')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (55'-56')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2653
ISL-18 (55'-56')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2653
ISL-19 (1'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2653
ISL-19 (1'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2653

Table B2-1

Data Rejected During Validation

Allied Industrial Area

Macon, Georgia

Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-19 (1'-2')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2653
ISL-19 (1'-2')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2653
ISL-19 (1'-2')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2653
ISL-19 (1'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2653
ISL-19 (70'-71')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2653
ISL-19 (70'-71')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2653
ISL-19 (70'-71')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2653
ISL-19 (70'-71')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2653
ISL-19 (70'-71')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2653
ISL-19 (70'-71')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2653
ISL-31 (0'-2')	6010	antimony	<	2.4	mg/Kg	R	Matrix spike recovery below 30 percent	WG5061
ISL-31 (14'-16')	6010	antimony	<	2.4	mg/Kg	R	Matrix spike recovery below 30 percent	WG5061
ISL-31 (14'-16')	7471	mercury	<	0.027	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-32 (0'-2')	6010	antimony	<	2.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5125
ISL-32 (0'-2')	7471	mercury	<	0.028	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-32 (14'-16')	6010	antimony	<	2.4	mg/Kg	R	Matrix spike recovery below 30 percent	WG5125
ISL-32 (14'-16')	7471	mercury	<	0.027	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-34 (0'-2')	6010	antimony	<	2.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5125
ISL-34 (0'-2')	7471	mercury	<	0.028	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-34 (14'-16')	6010	antimony	<	2.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5125
ISL-34 (14'-16')	7471	mercury	<	0.028	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-35 (0'-2')	6010	antimony	<	2.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5125
ISL-35 (0'-2')	7471	mercury	<	0.028	mg/Kg	R	Matrix spike recovery below 30 percent	WG5167
ISL-35 (19'-21')	6010	antimony	<	2.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5125
ISL-35D (0'-2')	6010	antimony	<	2.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5125
ISL-35D (0'-2')	7471	mercury	<	0.028	mg/Kg	R	Matrix spike recovery below 30 percent	WG5167
ISL-36 (1'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (1'-2')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (1'-2')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (1'-2')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (1'-2')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (1'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (1'-2')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (1'-2')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (1'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (45'-46')	8270	1,2,4,5-tetrachlorobenzene	<	0.16	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	1,2,4-trichlorobenzene~	<	0.094	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	1,2-dichlorobenzene~	<	0.099	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	1,2-diphenylhydrazine	<	0.16	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	1,3-dichlorobenzene~	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	1,4-dichlorobenzene~	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2659

Table B2-1

Data Rejected During Validation

Allied Industrial Area

Macon, Georgia

Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-36 (45'-46')	8270	1-chloronaphthalene	<	0.39	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	1-naphthylamine	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	2,4-dinitrotoluene	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	2,6-dinitrotoluene	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	2-chloronaphthalene	<	0.2	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	2-methyl naphthalene	<	0.082	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	2-naphthylamine	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	2-nitroaniline	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	2-picoline	<	0.11	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	3,3'-dichlorobenzidine	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	3-methylcholanthrene	<	0.1	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	3-nitroaniline	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	4-aminobiphenyl	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	4-bromophenyl phenyl ether	<	0.1	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	4-chloroaniline	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	4-chlorophenyl phenyl ether	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	4-nitroaniline	<	0.25	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	7,12-dimethylbenz(a)anthracene	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	a,a-dimethylphenethylamine	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	acenaphthene	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	acenaphthylene	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	acetophenone	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	aniline	<	0.095	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	anthracene	<	0.1	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	benzidine	<	0.24	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	benzo(a)anthracene	<	0.11	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	benzo(a)pyrene	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	benzo(b)fluoranthene	<	0.086	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	benzo(g,h,i)perylene	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	benzo(k)fluoranthene	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	benzoic acid	<	2.2	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	benzyl alcohol	<	0.097	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	bis(2-chloroethoxy)methane	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	bis(2-chloroethyl)ether	<	0.085	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	bis(2-chloroisopropyl)ether	<	0.072	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	bis(2-ethylhexyl)phthalate	<	0.91	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	butyl benzyl phthalate	<	0.092	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	chrysene	<	0.17	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	di-n-butyl phthalate	<	0.16	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	di-n-octyl phthalate	<	0.1	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	dibenz(a,h)anthracene	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2659

Table B2-1

Data Rejected During Validation

Allied Industrial Area

Macon, Georgia

Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-36 (45'-46')	8270	dibenz(a,j)acridine	<	0.2	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	dibenzofuran	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	diethyl phthalate	<	0.2	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	dimethyl phthalate	<	0.19	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	diphenylamine	<	0.17	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	ethyl methanesulfonate	<	0.1	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	fluoranthene	<	0.16	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	fluorene	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	hexachlorobenzene	<	0.093	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	hexachlorobutadiene~	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	hexachlorocyclopentadiene	<	0.076	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	hexachloroethane	<	0.18	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	indeno(1,2,3-cd)pyrene	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	isophorone	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	methyl methanesulfonate	<	0.11	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	n-nitrosodibutylamine	<	0.11	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	n-nitrosodimethylamine	<	0.078	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	n-nitrosodiphenylamine	<	0.32	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	n-nitrosodipropylamine	<	0.11	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	n-nitrosopiperidine	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	naphthalene~	<	0.087	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	nitrobenzene	<	0.19	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	p-(dimethylamino)azobenzene	<	0.1	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	pentachlorobenzene	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	pentachloronitrobenzene	<	0.18	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	phenacetin	<	0.23	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	phenanthrene	<	0.095	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	pronamide	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8270	pyrene	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2659
ISL-36 (45'-46')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (45'-46')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (45'-46')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (45'-46')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (45'-46')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (45'-46')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (45'-46')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (45'-46')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2659
ISL-36 (45'-46')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2659
ISL-37 (1'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2655

Table B2-1

Data Rejected During Validation

Allied Industrial Area

Macon, Georgia

Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-37 (1'-2')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2') DUP	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2') DUP	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2') DUP	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2') DUP	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2') DUP	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2') DUP	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2') DUP	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2') DUP	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (1'-2') DUP	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (40'-41')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (40'-41')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (40'-41')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (40'-41')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (40'-41')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (40'-41')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (40'-41') DUP	8270	1,2,4,5-tetrachlorobenzene	<	0.17	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	1,2,4-trichlorobenzene~	<	0.099	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	1,2-dichlorobenzene~	<	0.1	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	1,2-diphenylhydrazine	<	0.17	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	1,3-dichlorobenzene~	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	1,4-dichlorobenzene~	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	1-chloronaphthalene	<	0.41	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	1-naphthylamine	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	2,4-dinitrotoluene	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	2,6-dinitrotoluene	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	2-chloronaphthalene	<	0.21	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	2-methyl naphthalene	<	0.086	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	2-naphthylamine	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	2-nitroaniline	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	2-picoline	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	3,3'-dichlorobenzidine	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	3-methylcholanthrene	<	0.11	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	3-nitroaniline	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	4-aminobiphenyl	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	4-bromophenyl phenyl ether	<	0.11	mg/Kg	R	Surrogate recovery below 10 percent	L2655

Table B2-1

Data Rejected During Validation

Allied Industrial Area

Macon, Georgia

Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-37 (40'-41') DUP	8270	4-chloroaniline	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	4-chlorophenyl phenyl ether	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	4-nitroaniline	<	0.26	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	7,12-dimethylbenz(a)anthracene	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	a,a-dimethylphenethylamine	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	acenaphthene	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	acenaphthylene	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	acetophenone	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	aniline	<	0.1	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	anthracene	<	0.11	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	benzidine	<	0.25	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	benzo(a)anthracene	<	0.11	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	benzo(a)pyrene	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	benzo(b)fluoranthene	<	0.09	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	benzo(g,h,i)perylene	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	benzo(k)fluoranthene	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	benzoic acid	<	2.3	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	benzyl alcohol	<	0.1	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	bis(2-chloroethoxy)methane	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	bis(2-chloroethyl)ether	<	0.089	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	bis(2-chloroisopropyl)ether	<	0.076	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	bis(2-ethylhexyl)phthalate	<	0.96	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	butyl benzyl phthalate	<	0.097	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	chrysene	<	0.18	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	di-n-butyl phthalate	<	0.17	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	di-n-octyl phthalate	<	0.11	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	dibenz(a,h)anthracene	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	dibenz(a,j)acridine	<	0.21	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	dibenzofuran	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	diethyl phthalate	<	0.21	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	dimethyl phthalate	<	0.2	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	diphenylamine	<	0.18	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	ethyl methanesulfonate	<	0.11	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	fluoranthene	<	0.17	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	fluorene	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	hexachlorobenzene	<	0.098	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	hexachlorobutadiene~	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	hexachlorocyclopentadiene	<	0.079	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	hexachloroethane	<	0.19	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	indeno(1,2,3-cd)pyrene	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	isophorone	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2655

Table B2-1

Data Rejected During Validation

Allied Industrial Area

Macon, Georgia

Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-37 (40'-41') DUP	8270	methyl methanesulfonate	<	0.11	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	n-nitrosodibutylamine	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	n-nitrosodimethylamine	<	0.081	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	n-nitrosodiphenylamine	<	0.34	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	n-nitrosodipropylamine	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	n-nitrosopiperidine	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	naphthalene~	<	0.091	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	nitrobenzene	<	0.2	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	p-(dimethylamino)azobenzene	<	0.11	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	pentachlorobenzene	<	0.13	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	pentachloronitrobenzene	<	0.19	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	phenacetin	<	0.24	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	phenanthrene	<	0.1	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	pronamide	<	0.15	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8270	pyrene	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2655
ISL-37 (40'-41') DUP	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (40'-41') DUP	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (40'-41') DUP	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (40'-41') DUP	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (40'-41') DUP	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2655
ISL-37 (40'-41') DUP	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2655
ISL-38 (1'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (1'-2')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (1'-2')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (1'-2')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (1'-2')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (1'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (1'-2')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (1'-2')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (1'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (40'-41')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (40'-41')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (40'-41')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (40'-41')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (40'-41')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (40'-41')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (40'-41')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (40'-41')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2659
ISL-38 (40'-41')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2659
ISL-47 (1'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2662
ISL-47 (1'-2')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2662

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Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-47 (1'-2')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2662
ISL-47 (1'-2')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2662
ISL-47 (1'-2')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2662
ISL-47 (1'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2662
ISL-47 (1'-2')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2662
ISL-47 (1'-2')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2662
ISL-47 (1'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2662
ISL-48 (0'-2')	6010	antimony	<	2.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5125
ISL-48 (0'-2')	7471	mercury	<	0.028	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-48 (29'-31')	6010	antimony	<	2.4	mg/Kg	R	Matrix spike recovery below 30 percent	WG5125
ISL-48 (29'-31')	7471	mercury	<	0.027	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-49 (1'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2662
ISL-49 (1'-2')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2662
ISL-49 (1'-2')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2662
ISL-49 (1'-2')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2662
ISL-49 (1'-2')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2662
ISL-49 (1'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2662
ISL-49 (1'-2')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2662
ISL-49 (1'-2')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2662
ISL-49 (1'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2662
ISL-52 (.5'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2629
ISL-52 (.5'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2629
ISL-52 (.5'-2')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2629
ISL-52 (.5'-2')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2629
ISL-52 (.5'-2')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2629
ISL-52 (.5'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2629
ISL-52 (45'-46')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2640
ISL-52 (45'-46')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2640
ISL-52 (45'-46')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2640
ISL-52 (45'-46')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2640
ISL-52 (45'-46')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2640
ISL-52 (45'-46')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2640
ISL-52 (45'-46')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2640
ISL-52 (45'-46')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2640
ISL-52 (45'-46')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2640
ISL-53 (.5'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2629
ISL-53 (.5'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2629
ISL-53 (.5'-2')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2629
ISL-53 (.5'-2')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2629
ISL-53 (.5'-2')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2629
ISL-53 (.5'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2629

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Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-53 (30'-31')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2629
ISL-53 (30'-31')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2629
ISL-53 (30'-31')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2629
ISL-53 (30'-31')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2629
ISL-53 (30'-31')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2629
ISL-53 (30'-31')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2629
ISL-53 (30'-31')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2629
ISL-53 (30'-31')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2629
ISL-53 (30'-31')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2629
ISL-54 (.5'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (.5'-2')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (.5'-2')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (.5'-2')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (.5'-2')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (.5'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (.5'-2')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (.5'-2')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (.5'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (45'-46')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (45'-46')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (45'-46')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (45'-46')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (45'-46')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (45'-46')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (45'-46')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (45'-46')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2630
ISL-54 (45'-46')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2630
ISL-55 (1'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2640
ISL-55 (1'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2640
ISL-55 (1'-2')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2640
ISL-55 (1'-2')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2640
ISL-55 (1'-2')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2640
ISL-55 (1'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2640
ISL-55 (40'-41')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2640
ISL-55 (40'-41')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2640
ISL-55 (40'-41')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2640
ISL-55 (40'-41')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2640
ISL-55 (40'-41')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2640
ISL-55 (40'-41')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2640
ISL-57 (1'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2645
ISL-57 (1'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2645

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Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-57 (1'-2')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2645
ISL-57 (1'-2')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2645
ISL-57 (1'-2')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2645
ISL-57 (1'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2645
ISL-57 (55'-56')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2645
ISL-57 (55'-56')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2645
ISL-57 (55'-56')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2645
ISL-57 (55'-56')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2645
ISL-57 (55'-56')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2645
ISL-57 (55'-56')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2645
ISL-58 (1'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (1'-2')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (1'-2')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (1'-2')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (1'-2')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (1'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (1'-2')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (1'-2')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (1'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (55'-56')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (55'-56')	8330	1,3-dinitrobenzene	<	0.021	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (55'-56')	8330	2,4,6-trinitrotoluene	<	0.031	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (55'-56')	8330	2,4-dinitrotoluene	<	0.024	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (55'-56')	8330	2-amino-4,6-dinitrotoluene	<	0.022	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (55'-56')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (55'-56')	8330	nitrobenzene	<	0.057	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (55'-56')	8330	rdx	<	0.05	mg/Kg	R	LCS recovery too low	L2662
ISL-58 (55'-56')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2662
ISL-59 (1'-2')	8270	2,3,4,6-tetrachlorophenol	<	0.2	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	2,4,5-trichlorophenol	<	0.24	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	2,4,6-trichlorophenol	<	0.17	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	2,4-dichlorophenol	<	0.16	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	2,4-dimethylphenol	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	2,4-dinitrophenol	<	0.27	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	2,6-dichlorophenol	<	0.16	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	2-chlorophenol	<	0.12	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	2-methylphenol	<	0.082	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	2-nitrophenol	<	0.16	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	4,6-dinitro-2-methylphenol	<	0.16	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	4-chloro-3-methylphenol	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	4-methylphenol	<	0.082	mg/Kg	R	Surrogate recovery below 10 percent	L2640

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Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-59 (1'-2')	8270	4-nitrophenol	<	0.31	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	pentachlorophenol	<	0.19	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8270	phenol	<	0.14	mg/Kg	R	Surrogate recovery below 10 percent	L2640
ISL-59 (1'-2')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2640
ISL-59 (1'-2')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2640
ISL-59 (1'-2')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2640
ISL-59 (1'-2')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2640
ISL-59 (1'-2')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2640
ISL-59 (1'-2')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2640
ISL-59 (55'-56')	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2645
ISL-59 (55'-56')	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2645
ISL-59 (55'-56')	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2645
ISL-59 (55'-56')	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2645
ISL-59 (55'-56')	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2645
ISL-59 (55'-56')	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2645
ISL-7 (0'-2')	6010	antimony	<	2.6	mg/Kg	R	Matrix spike recovery below 30 percent	WG5061
ISL-7 (0'-2')	7471	mercury	<	0.029	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-8 (0'-2')	6010	antimony	<	2.8	mg/Kg	R	Matrix spike recovery below 30 percent	WG5061
ISL-8 (0'-2')	7471	mercury	<	0.031	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-8 (9'-11')	7471	mercury	<	0.03	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-9 (0'-2')	6010	antimony	<	2.4	mg/Kg	R	Matrix spike recovery below 30 percent	WG5061
ISL-9 (0'-2')	7471	mercury	<	0.027	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166
ISL-9 (9'-11')	6010	antimony	<	2.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5061
ISL-9 (9'-11')	7471	mercury	<	0.028	mg/Kg	R	Matrix spike recovery below 30 percent	WG5166

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-1	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2702
IGW-1	8270	bis(2-ethylhexyl)phthalate	<	0.067	mg/L	U	Method blank contamination	L2702
IGW-10	6010	zinc	<	0.0749	mg/L	U	Method blank contamination	WG5069
IGW-11	6010	zinc	<	0.0252	mg/L	U	Method blank contamination	WG5084
IGW-11	7740	selenium		0.0029	mg/L	J	Matrix spike recovery too low	WG5086
IGW-11	7841	thallium	<	0.00079	mg/L	UJ	Matrix spike recovery too low	WG5087
IGW-12	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2687
IGW-14	6010	zinc	<	0.0449	mg/L	U	Method blank contamination	L2629
IGW-15	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2683
IGW-16	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2683
IGW-17	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2696
IGW-18	6010	zinc	<	0.0393	mg/L	U	Method blank contamination	L2653
IGW-18	8270	2-chlorophenol	<	0.0033	mg/L	J	LCS recovery too high	L2653
IGW-18	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	J	LCS recovery too high	L2653
IGW-18	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2653
IGW-18	8270	pentachlorophenol	<	0.0051	mg/L	J	LCS recovery too high	L2653
IGW-18	8270	phenol	<	0.0038	mg/L	J	LCS recovery too high	L2653
IGW-18	8330	hmx	<	0.00029	mg/L	J	LCS recovery too high	L2653
IGW-19	6010	zinc	<	0.0343	mg/L	U	Method blank contamination	L2653
IGW-19	8270	2-chlorophenol	<	0.0033	mg/L	J	LCS recovery too high	L2653
IGW-19	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	J	LCS recovery too high	L2653
IGW-19	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2653
IGW-19	8270	pentachlorophenol	<	0.0051	mg/L	J	LCS recovery too high	L2653
IGW-19	8270	phenol	<	0.0038	mg/L	J	LCS recovery too high	L2653
IGW-19	8330	hmx	<	0.00029	mg/L	J	LCS recovery too high	L2653
IGW-2	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2713
IGW-2-A	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2713
IGW-21	8080	4,4'-DDD	<	0.000078	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	4,4'-DDE	<	0.000017	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	4,4'-DDT	<	0.000031	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	aldrin	<	0.00005	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	alpha-BHC	<	0.000018	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	aroclor 1016	<	0.00018	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	aroclor 1221	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	aroclor 1232	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	aroclor 1242	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	aroclor 1248	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	aroclor 1254	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	aroclor 1260	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	beta-BHC	<	0.000015	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	chlordane	<	0.0001	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	delta-BHC	<	0.000011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	dieldrin	<	0.000012	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	endosulfan I	<	0.000015	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	endosulfan II	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	endosulfan sulfate	<	0.000018	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	endrin	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	endrin aldehyde	<	0.000081	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	endrin ketone	<	0.000014	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	gamma-BHC	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	heptachlor	<	0.000036	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	heptachlor epoxide	<	0.000014	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	methoxychlor	<	0.000049	mg/L	UJ	Surrogate recovery too low	L2736
IGW-21	8080	toxaphene	<	0.00024	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	4,4'-DDD	<	0.000078	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	4,4'-DDE	<	0.000017	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	4,4'-DDT	<	0.000031	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	aldrin	<	0.00005	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	alpha-BHC	<	0.000018	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	aroclor 1016	<	0.00018	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	aroclor 1221	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	aroclor 1232	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	aroclor 1242	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	aroclor 1248	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	aroclor 1254	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	aroclor 1260	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	beta-BHC	<	0.000015	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	chlordane	<	0.0001	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	delta-BHC	<	0.000011	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	dieldrin	<	0.000012	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	endosulfan I	<	0.000015	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	endosulfan II	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	endosulfan sulfate	<	0.000018	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	endrin	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	endrin aldehyde	<	0.000081	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	endrin ketone	<	0.000014	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	gamma-BHC	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	heptachlor	<	0.000036	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	heptachlor epoxide	<	0.000014	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	methoxychlor	<	0.000049	mg/L	UJ	Surrogate recovery too low	L2736
IGW-22	8080	toxaphene	<	0.00024	mg/L	UJ	Surrogate recovery too low	L2736
IGW-23	8080	4,4'-DDD	<	0.000078	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	4,4'-DDE	<	0.000017	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	4,4'-DDT	<	0.000031	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	aldrin	<	0.00005	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	alpha-BHC	<	0.000018	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	aroclor 1016	<	0.00018	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	aroclor 1221	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	aroclor 1232	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	aroclor 1242	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	aroclor 1248	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	aroclor 1254	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	aroclor 1260	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	beta-BHC	<	0.000015	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	chlordane	<	0.0001	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	delta-BHC	<	0.000011	mg/L	UJ	Surrogate recovery too low	L2734

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-23	8080	dieldrin	<	0.000012	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	endosulfan I	<	0.000015	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	endosulfan II	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	endosulfan sulfate	<	0.000018	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	endrin	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	endrin aldehyde	<	0.000081	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	endrin ketone	<	0.000014	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	gamma-BHC	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	heptachlor	<	0.000036	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	heptachlor epoxide	<	0.000014	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	methoxychlor	<	0.000049	mg/L	UJ	Surrogate recovery too low	L2734
IGW-23	8080	toxaphene	<	0.00024	mg/L	UJ	Surrogate recovery too low	L2734
IGW-24	6010	zinc	<	0.0505	mg/L	U	Method blank contamination	L2700
IGW-24	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2700
IGW-25	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2700
IGW-26	6010	zinc	<	0.0634	mg/L	U	Method blank contamination	L2696
IGW-26	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2696
IGW-26-A	6010	zinc	<	0.0348	mg/L	U	Method blank contamination	L2696
IGW-26-A	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2696
IGW-27	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2700
IGW-28	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2687
IGW-29	6010	zinc	<	0.0625	mg/L	U	Method blank contamination	L2687
IGW-29	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2687
IGW-3	8270	1,2,4,5-tetrachlorobenzene	<	0.0046	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	1,2,4-trichlorobenzene-	<	0.0027	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	1,2-dichlorobenzene-	<	0.0028	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	1,2-diphenylhydrazine	<	0.0045	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	1,3-dichlorobenzene-	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	1-chloronaphthalene	<	0.011	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	1-naphthylamine	<	0.004	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2,3,4,6-tetrachlorophenol	<	0.0053	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2,4,5-trichlorophenol	<	0.0062	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2,4,6-trichlorophenol	<	0.0045	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2,4-dichlorophenol	<	0.0043	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2,4-dimethylphenol	<	0.0035	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2,4-dinitrophenol	<	0.0072	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2,4-dinitrotoluene	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2,6-dichlorophenol	<	0.0041	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2,6-dinitrotoluene	<	0.0041	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2-chloronaphthalene	<	0.0056	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2-chlorophenol	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2-methyl naphthalene	<	0.0023	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2-methylphenol	<	0.0021	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2-naphthylamine	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2-nitroaniline	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2-nitrophenol	<	0.0043	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	2-picoline	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	3,3'-dichlorobenzidine	<	0.004	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	3-methylcholanthrene	<	0.003	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	3-nitroaniline	<	0.0038	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	4,6-dinitro-2-methylphenol	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	4-aminobiphenyl	<	0.0036	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	4-bromophenyl phenyl ether	<	0.003	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	4-chloroaniline	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	4-chlorophenyl phenyl ether	<	0.0038	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	4-methylphenol	<	0.0022	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	4-nitroaniline	<	0.0071	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	4-nitrophenol	<	0.008	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	7,12-dimethylbenz(a)anthracene	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	a,a-dimethylphenethylamine	<	0.0044	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	acenaphthene	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	acenaphthylene	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	acetophenone	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	aniline	<	0.0027	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	anthracene	<	0.003	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	benzidine	<	0.0069	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	benzo(a)anthracene	<	0.0031	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	benzo(a)pyrene	<	0.0039	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	benzo(b)fluoranthene	<	0.0028	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	benzo(g,h,i)perylene	<	0.0035	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	benzo(k)fluoranthene	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	benzoic acid	<	0.062	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	benzyl alcohol	<	0.0028	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	bis(2-chloroethoxy)methane	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	bis(2-chloroethyl)ether	<	0.0024	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	bis(2-chloroisopropyl)ether	<	0.0021	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	bis(2-ethylhexyl)phthalate	<	0.026	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	butyl benzyl phthalate	<	0.0026	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	chrysene	<	0.0047	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	di-n-butyl phthalate	<	0.0044	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	di-n-octyl phthalate	<	0.003	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	dibenz(a,h)anthracene	<	0.0039	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	dibenz(a,j)acridine	<	0.0057	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	dibenzofuran	<	0.0037	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	diethyl phthalate	<	0.0057	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	dimethyl phthalate	<	0.0053	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	diphenylamine	<	0.0047	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	ethyl methanesulfonate	<	0.0029	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	fluoranthene	<	0.0044	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	fluorene	<	0.0035	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	hexachlorobenzene	<	0.0027	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	hexachlorobutadiene-	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	hexachlorocyclopentadiene	<	0.0022	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	hexachloroethane	<	0.005	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	indeno(1,2,3-cd)pyrene	<	0.0036	mg/L	UJ	Holding time violation (extraction)	L2716

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-3	8270	isophorone	<	0.0034	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	methyl methanesulfonate	<	0.003	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	n-nitrosodibutylamine	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	n-nitrosodimethylamine	<	0.0022	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	n-nitrosodiphenylamine	<	0.0091	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	n-nitrosodipropylamine	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	n-nitrosopiperidine	<	0.0038	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	naphthalene~	<	0.0025	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	nitrobenzene	<	0.0053	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	p-(dimethylamino)azobenzene	<	0.0029	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	pentachlorobenzene	<	0.0036	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	pentachloronitrobenzene	<	0.005	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	pentachlorophenol	<	0.0051	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	phenacetin	<	0.0066	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	phenanthrene	<	0.0027	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	phenol	<	0.0038	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	pronamide	<	0.004	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-3	8270	pyrene	<	0.0039	mg/L	UJ	Holding time violation (extraction)	L2716
IGW-30	6010	zinc	<	0.0371	mg/L	U	Method blank contamination	L2687
IGW-30	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2687
IGW-32	7740	selenium	<	0.00074	mg/L	UJ	Matrix spike recovery too low	WG5086
IGW-32	7841	thallium	<	0.00079	mg/L	UJ	Matrix spike recovery too low	WG5087
IGW-33	6010	zinc	<	0.0539	mg/L	U	Method blank contamination	L2700
IGW-33	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2700
IGW-33	8270	bis(2-ethylhexyl)phthalate	<	0.064	mg/L	U	Method blank contamination	L2700
IGW-34	6010	zinc	<	0.0232	mg/L	U	Method blank contamination	WG5084
IGW-34	7740	selenium	<	0.00074	mg/L	UJ	Matrix spike recovery too low	WG5086
IGW-34	7841	thallium	<	0.00079	mg/L	UJ	Matrix spike recovery too low	WG5087
IGW-35	7740	selenium	<	0.00074	mg/L	UJ	Matrix spike recovery too low	WG5086
IGW-35	7841	thallium	<	0.00079	mg/L	UJ	Matrix spike recovery too low	WG5087
IGW-35D	6010	zinc	<	0.015	mg/L	UJ	Method blank contamination	WG5084
IGW-35D	7740	selenium	<	0.00074	mg/L	UJ	Matrix spike recovery too low	WG5086
IGW-35D	7841	thallium	<	0.00079	mg/L	UJ	Matrix spike recovery too low	WG5087
IGW-36	6010	zinc	<	0.0695	mg/L	U	Method blank contamination	L2662
IGW-36	8270	1,2,4,5-tetrachlorobenzene	<	0.0046	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	1,2,4-trichlorobenzene~	<	0.0027	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	1,2-dichlorobenzene~	<	0.0028	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	1,2-diphenylhydrazine	<	0.0045	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	1,3-dichlorobenzene~	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	1-chloronaphthalene	<	0.011	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	1-naphthylamine	<	0.004	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2,3,4,6-tetrachlorophenol	<	0.0053	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2,4,5-trichlorophenol	<	0.0062	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2,4,6-trichlorophenol	<	0.0045	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2,4-dichlorophenol	<	0.0043	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2,4-dimethylphenol	<	0.0035	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2,4-dinitrophenol	<	0.0072	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2,4-dinitrotoluene	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2,6-dichlorophenol	<	0.0041	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2,6-dinitrotoluene	<	0.0041	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2-chloronaphthalene	<	0.0056	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2-chlorophenol	<	0.0033	mg/L	UJ	Holding time violation (extraction)/LCS recovery too high	L2662
IGW-36	8270	2-methyl naphthalene	<	0.0023	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2-methylphenol	<	0.0021	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2-naphthylamine	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2-nitroaniline	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2-nitrophenol	<	0.0043	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	2-picoline	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	3,3'-dichlorobenzidine	<	0.004	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	3-methylcholanthrene	<	0.003	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	3-nitroaniline	<	0.0038	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	4,6-dinitro-2-methylphenol	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	4-aminobiphenyl	<	0.0036	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	4-bromophenyl phenyl ether	<	0.003	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	UJ	Holding time violation (extraction)/LCS recovery too high	L2662
IGW-36	8270	4-chloroaniline	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	4-chlorophenyl phenyl ether	<	0.0038	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	4-methylphenol	<	0.0022	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	4-nitroaniline	<	0.0071	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	4-nitrophenol	<	0.008	mg/L	UJ	Holding time violation (extraction)/LCS recovery too high	L2662
IGW-36	8270	7,12-dimethylbenz(a)anthracene	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	a,a-dimethylphenethylamine	<	0.0044	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	acenaphthene	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	acenaphthylene	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	acetophenone	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	aniline	<	0.0027	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	anthracene	<	0.003	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	benzidine	<	0.0069	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	benzo(a)anthracene	<	0.0031	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	benzo(a)pyrene	<	0.0039	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	benzo(b)fluoranthene	<	0.0028	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	benzo(g,h,i)perylene	<	0.0035	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	benzo(k)fluoranthene	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	benzoic acid	<	0.062	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	benzyl alcohol	<	0.0028	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	bis(2-chloroethoxy)methane	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	bis(2-chloroethyl)ether	<	0.0024	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	bis(2-chloroisopropyl)ether	<	0.0021	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	bis(2-ethylhexyl)phthalate	<	0.026	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	butyl benzyl phthalate	<	0.0026	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	chrysene	<	0.0047	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	di-n-butyl phthalate	<	0.0044	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	di-n-octyl phthalate	<	0.003	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	dibenz(a,h)anthracene	<	0.0039	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	dibenz(a,j)acridine	<	0.0057	mg/L	UJ	Holding time violation (extraction)	L2662

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-36	8270	dibenzofuran	<	0.0037	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	diethyl phthalate	<	0.0057	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	dimethyl phthalate	<	0.0053	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	diphenylamine	<	0.0047	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	ethyl methanesulfonate	<	0.0029	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	fluoranthene	<	0.0044	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	fluorene	<	0.0035	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	hexachlorobenzene	<	0.0027	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	hexachlorobutadiene~	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	hexachlorocyclopentadiene	<	0.0022	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	hexachloroethane	<	0.005	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	indeno(1,2,3-cd)pyrene	<	0.0036	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	isophorone	<	0.0034	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	methyl methanesulfonate	<	0.003	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	n-nitrosodibutylamine	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	n-nitrosodimethylamine	<	0.0022	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	n-nitrosodiphenylamine	<	0.0091	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	n-nitrosodipropylamine	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	n-nitrosopiperidine	<	0.0038	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	naphthalene~	<	0.0025	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	nitrobenzene	<	0.0053	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	p-(dimethylamino)azobenzene	<	0.0029	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	pentachlorobenzene	<	0.0036	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	pentachloronitrobenzene	<	0.005	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	pentachlorophenol	<	0.0051	mg/L	UJ	Holding time violation (extraction)/LCS recovery too high	L2662
IGW-36	8270	phenacetin	<	0.0066	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	phenanthrene	<	0.0027	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	phenol	<	0.0038	mg/L	UJ	Holding time violation (extraction)/LCS recovery too high	L2662
IGW-36	8270	pronamide	<	0.004	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-36	8270	pyrene	<	0.0039	mg/L	UJ	Holding time violation (extraction)	L2662
IGW-37	6010	zinc	<	0.027	mg/L	UJ	Method blank contamination	L2655
IGW-37	8270	2-chlorophenol	<	0.0033	mg/L	J	LCS recovery too high	L2655
IGW-37	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	J	LCS recovery too high	L2655
IGW-37	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2655
IGW-37	8270	pentachlorophenol	<	0.0051	mg/L	J	LCS recovery too high	L2655
IGW-37	8270	phenol	<	0.0038	mg/L	J	LCS recovery too high	L2655
IGW-37 DUP	6010	zinc	<	0.019	mg/L	UJ	Method blank contamination	L2655
IGW-37 DUP	8270	2-chlorophenol	<	0.0033	mg/L	J	LCS recovery too high	L2655
IGW-37 DUP	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	J	LCS recovery too high	L2655
IGW-37 DUP	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2655
IGW-37 DUP	8270	pentachlorophenol	<	0.0051	mg/L	J	LCS recovery too high	L2655
IGW-37 DUP	8270	phenol	<	0.0038	mg/L	J	LCS recovery too high	L2655
IGW-37 DUP	8330	hmx	<	0.00029	mg/L	J	LCS recovery too high	L2655
IGW-38	6010	zinc	<	0.0872	mg/L	U	Method blank contamination	L2659
IGW-38	8260	trichloroethene		0.053	mg/L	J	Surrogate recovery too high	L2659
IGW-38	8270	2-chlorophenol	<	0.0033	mg/L	J	LCS recovery too high	L2659
IGW-38	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	J	LCS recovery too high	L2659
IGW-38	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2659
IGW-38	8270	pentachlorophenol	<	0.0051	mg/L	J	LCS recovery too high	L2659
IGW-38	8270	phenol	<	0.0038	mg/L	J	LCS recovery too high	L2659
IGW-38	8330	hmx	<	0.00029	mg/L	J	LCS recovery too high	L2659
IGW-39	6010	zinc	<	0.0343	mg/L	U	Method blank contamination	L2722
IGW-39	8270	bis(2-ethylhexyl)phthalate	<	0.029	mg/L	UJ	Method blank contamination	L2722
IGW-39-A	6010	zinc	<	0.0497	mg/L	U	Method blank contamination	L2722
IGW-42	8270	bis(2-ethylhexyl)phthalate	<	0.056	mg/L	U	Method blank contamination	L2722
IGW-44	6010	zinc	<	0.0406	mg/L	U	Method blank contamination	L2734
IGW-45	8270	bis(2-ethylhexyl)phthalate	<	0.047	mg/L	UJ	Method blank contamination	L2734
IGW-46	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2713
IGW-47	8260	1,1,1,2-tetrachloroethane	<	0.00045	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,1,1-trichloroethane	<	0.0017	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,1,2,2-tetrachloroethane	<	0.00063	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,1,2-trichloroethane	<	0.0012	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,1-dichloroethane	<	0.0017	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,1-dichloroethene	<	0.00048	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,1-dichloropropene	<	0.0017	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,2,3-trichlorobenzene	<	0.00094	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,2,3-trichloropropane	<	0.0011	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,2,4-trichlorobenzene	<	0.00084	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,2,4-trimethylbenzene	<	0.00056	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,2-chlorotoluene	<	0.00051	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,2-dibromo-3-chloropropane	<	0.00061	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,2-dibromoethane	<	0.0005	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,2-dichlorobenzene	<	0.00073	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,2-dichloroethane	<	0.0021	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,2-dichloropropane	<	0.00051	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,3,5-trimethylbenzene	<	0.00055	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,3-dichlorobenzene	<	0.0007	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,3-dichloropropane	<	0.0015	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	1,4-dichlorobenzene	<	0.00056	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	2,2-dichloropropane	<	0.0033	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	4-chlorotoluene	<	0.00051	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	benzene	<	0.00039	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	bromobenzene	<	0.00057	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	bromochloromethane	<	0.00069	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	bromodichloromethane	<	0.00064	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	bromoform	<	0.00047	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	bromomethane	<	0.00049	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	carbon tetrachloride	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	chlorobenzene	<	0.00044	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	chloroethane	<	0.00054	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	chloroform	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	chloromethane	<	0.002	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	cis-1,2-dichloroethene	<	0.0018	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	cis-1,3-dichloropropene	<	0.00078	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	dibromochloromethane	<	0.0005	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	dibromomethane	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2722

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-47	8260	dichlorodifluoromethane	<	0.00043	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	ethylbenzene	<	0.00075	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	hexachlorobutadiene	<	0.0011	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	isopropylbenzene	<	0.00054	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	m+p-xylene	<	0.0023	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	methylene chloride	<	0.00075	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	n-butylbenzene	<	0.00059	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	n-propylbenzene	<	0.00062	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	naphthalene	<	0.001	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	o-xylene	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	paracymene	<	0.00064	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	sec-butylbenzene	<	0.00063	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	styrene	<	0.00072	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	tert-butylbenzene	<	0.00059	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	tetrachloroethene	<	0.00049	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	toluene	<	0.00085	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	trans-1,2-dichloroethene	<	0.00055	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	trans-1,3-dichloropropene	<	0.00055	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	trichloroethene	<	0.00042	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	trichloromonofluoromethane	<	0.00062	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-47	8260	vinyl chloride	<	0.00047	mg/L	UJ	Holding time violation (analysis)	L2722
IGW-48	6010	zinc	<	0.0491	mg/L	U	Method blank contamination	L2700
IGW-48	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2700
IGW-48	8270	bis(2-ethylhexyl)phthalate	<	0.029	mg/L	UJ	Method blank contamination	L2700
IGW-5	8260	1,1,1,2-tetrachloroethane	<	0.00045	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,1,1-trichloroethane	<	0.0017	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,1,2,2-tetrachloroethane	<	0.00063	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,1,2-trichloroethane	<	0.0012	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,1-dichloroethane	<	0.0017	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,1-dichloroethene	<	0.00048	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,1-dichloropropene	<	0.0017	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,2,3-trichlorobenzene	<	0.00094	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,2,3-trichloropropane	<	0.0011	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,2,4-trichlorobenzene	<	0.00084	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,2,4-trimethylbenzene	<	0.00056	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,2-chlorotoluene	<	0.00051	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,2-dibromo-3-chloropropane	<	0.00061	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,2-dibromoethane	<	0.0005	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,2-dichlorobenzene	<	0.00073	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,2-dichloroethane	<	0.0021	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,2-dichloropropane	<	0.00051	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,3,5-trimethylbenzene	<	0.00055	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,3-dichlorobenzene	<	0.0007	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,3-dichloropropane	<	0.0015	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	1,4-dichlorobenzene	<	0.00056	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	2,2-dichloropropane	<	0.0033	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	4-chlorotoluene	<	0.00051	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	benzene	<	0.00039	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	bromobenzene	<	0.00057	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	bromochloromethane	<	0.00069	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	bromodichloromethane	<	0.00064	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	bromoform	<	0.00047	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	bromomethane	<	0.00049	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	carbon tetrachloride	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	chlorobenzene	<	0.00044	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	chloroethane	<	0.00054	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	chloroform	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	chloromethane	<	0.002	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	cis-1,2-dichloroethene	<	0.0018	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	cis-1,3-dichloropropene	<	0.00078	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	dibromochloromethane	<	0.0005	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	dibromomethane	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	dichlorodifluoromethane	<	0.00043	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	ethylbenzene	<	0.00075	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	hexachlorobutadiene	<	0.0011	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	isopropylbenzene	<	0.00054	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	m+p-xylene	<	0.0023	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	methylene chloride	<	0.00075	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	n-butylbenzene	<	0.00059	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	n-propylbenzene	<	0.00062	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	naphthalene	<	0.001	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	o-xylene	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	paracymene	<	0.00064	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	sec-butylbenzene	<	0.00063	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	styrene	<	0.00072	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	tert-butylbenzene	<	0.00059	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	tetrachloroethene	<	0.00049	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	toluene	<	0.00085	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	trans-1,2-dichloroethene	<	0.00055	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	trans-1,3-dichloropropene	<	0.00055	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	trichloroethene	<	0.00042	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	trichloromonofluoromethane	<	0.00062	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-5	8260	vinyl chloride	<	0.00047	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-51	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2713
IGW-52	6010	zinc	<	0.0494	mg/L	U	Method blank contamination	L2640
IGW-52	8330	hmx	<	0.00029	mg/L	J	LCS recovery too high	L2640
IGW-53	8330	hmx	<	0.00029	mg/L	J	LCS recovery too high	L2630
IGW-54	6010	zinc	<	0.0518	mg/L	U	Method blank contamination	L2630
IGW-54	8330	hmx	<	0.00029	mg/L	J	LCS recovery too high	L2630
IGW-55	6010	zinc	<	0.106	mg/L	U	Method blank contamination	L2640
IGW-55	8260	trichloroethene		0.11	mg/L	J	Surrogate recovery too high	L2640
IGW-55	8330	hmx	<	0.00029	mg/L	J	LCS recovery too high	L2640
IGW-57	6010	zinc	<	0.0661	mg/L	U	Method blank contamination	L2645
IGW-57	8330	hmx	<	0.00029	mg/L	J	LCS recovery too high	L2645
IGW-58	6010	zinc	<	0.0475	mg/L	U	Method blank contamination	L2662
IGW-58	8270	2-chlorophenol	<	0.0033	mg/L	J	LCS recovery too high	L2662

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-58	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	J	LCS recovery too high	L2662
IGW-58	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2662
IGW-58	8270	pentachlorophenol	<	0.0051	mg/L	J	LCS recovery too high	L2662
IGW-58	8270	phenol	<	0.0038	mg/L	J	LCS recovery too high	L2662
IGW-59	6010	zinc	<	0.062	mg/L	U	Method blank contamination	L2645
IGW-59	8330	hmx	<	0.00029	mg/L	J	LCS recovery too high	L2645
IGW-60	6010	zinc	<	0.0371	mg/L	U	Method blank contamination	L2739
IGW-60	8080	4,4'-DDD	<	0.000078	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	4,4'-DDE	<	0.000017	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	4,4'-DDT	<	0.000031	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	aldrin	<	0.00005	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	alpha-BHC	<	0.000018	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	aroclor 1016	<	0.00018	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	aroclor 1221	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	aroclor 1232	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	aroclor 1242	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	aroclor 1248	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	aroclor 1254	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	aroclor 1260	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	beta-BHC	<	0.000015	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	chlordane	<	0.0001	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	delta-BHC	<	0.000011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	dieldrin	<	0.000012	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	endosulfan I	<	0.000015	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	endosulfan II	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	endosulfan sulfate	<	0.000018	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	endrin	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	endrin aldehyde	<	0.000081	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	endrin ketone	<	0.000014	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	gamma-BHC	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	heptachlor	<	0.000036	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	heptachlor epoxide	<	0.000014	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	methoxychlor	<	0.000049	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60	8080	toxaphene	<	0.00024	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	6010	zinc	<	0.0348	mg/L	U	Method blank contamination	L2739
IGW-60-A	8080	4,4'-DDD	<	0.000078	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	4,4'-DDE	<	0.000017	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	4,4'-DDT	<	0.000031	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	aldrin	<	0.00005	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	alpha-BHC	<	0.000018	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	aroclor 1016	<	0.00018	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	aroclor 1221	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	aroclor 1232	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	aroclor 1242	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	aroclor 1248	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	aroclor 1254	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	aroclor 1260	<	0.00011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	beta-BHC	<	0.000015	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	chlordane	<	0.0001	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	delta-BHC	<	0.000011	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	dieldrin	<	0.000012	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	endosulfan I	<	0.000015	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	endosulfan II	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	endosulfan sulfate	<	0.000018	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	endrin	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	endrin aldehyde	<	0.000081	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	endrin ketone	<	0.000014	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	gamma-BHC	<	0.000013	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	heptachlor	<	0.000036	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	heptachlor epoxide	<	0.000014	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	methoxychlor	<	0.000049	mg/L	UJ	Surrogate recovery too low	L2739
IGW-60-A	8080	toxaphene	<	0.00024	mg/L	UJ	Surrogate recovery too low	L2739
IGW-61	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2702
IGW-62	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2713
IGW-63	6010	zinc	<	0.0629	mg/L	U	Method blank contamination	L2739
IGW-63	8260	1,1,1,2-tetrachloroethane	<	0.00045	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,1,1-trichloroethane	<	0.0017	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,1,2,2-tetrachloroethane	<	0.00063	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,1,2-trichloroethane	<	0.0012	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,1-dichloroethane	<	0.0017	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,1-dichloroethene	<	0.00048	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,1-dichloropropene	<	0.0017	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,2,3-trichlorobenzene	<	0.00094	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,2,3-trichloropropane	<	0.0011	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,2,4-trichlorobenzene	<	0.00084	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,2,4-trimethylbenzene	<	0.00056	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,2-chlorotoluene	<	0.00051	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,2-dibromo-3-chloropropane	<	0.00061	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,2-dibromoethane	<	0.0005	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,2-dichlorobenzene	<	0.00073	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,2-dichloroethane	<	0.0021	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,2-dichloropropane	<	0.00051	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,3,5-trimethylbenzene	<	0.00055	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,3-dichlorobenzene	<	0.0007	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,3-dichloropropane	<	0.0015	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	1,4-dichlorobenzene	<	0.00056	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	2,2-dichloropropane	<	0.0033	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	4-chlorotoluene	<	0.00051	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	benzene	<	0.00039	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	bromobenzene	<	0.00057	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	bromochloromethane	<	0.00069	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	bromodichloromethane	<	0.00064	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	bromoform	<	0.00047	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	bromomethane	<	0.00049	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	carbon tetrachloride	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	chlorobenzene	<	0.00044	mg/L	UJ	Holding time violation (analysis)	L2739

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-63	8260	chloroethane	<	0.00054	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	chloroform	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	chloromethane	<	0.002	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	cis-1,2-dichloroethene	<	0.0018	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	cis-1,3-dichloropropene	<	0.00078	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	dibromochloromethane	<	0.0005	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	dibromomethane	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	dichlorodifluoromethane	<	0.00043	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	ethylbenzene	<	0.00075	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	hexachlorobutadiene	<	0.0011	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	isopropylbenzene	<	0.00054	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	m+p-xylene	<	0.0023	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	methylene chloride		0.031	mg/L	J	Holding time violation (analysis)	L2739
IGW-63	8260	n-butylbenzene	<	0.00059	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	n-propylbenzene	<	0.00062	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	naphthalene	<	0.001	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	o-xylene	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	paracymene	<	0.00064	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	sec-butylbenzene	<	0.00063	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	styrene	<	0.00072	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	tert-butylbenzene	<	0.00059	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	tetrachloroethene	<	0.00049	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	toluene	<	0.00085	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	trans-1,2-dichloroethene	<	0.00055	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	trans-1,3-dichloropropene	<	0.00055	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	trichloroethene		0.57	mg/L	J	Holding time violation (analysis)	L2739
IGW-63	8260	trichloromonofluoromethane	<	0.00062	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-63	8260	vinyl chloride	<	0.00047	mg/L	UJ	Holding time violation (analysis)	L2739
IGW-7	8260	1,1,1,2-tetrachloroethane	<	0.00045	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,1,1-trichloroethane	<	0.0017	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,1,2,2-tetrachloroethane	<	0.00063	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,1,2-trichloroethane	<	0.0012	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,1-dichloroethane	<	0.0017	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,1-dichloroethene	<	0.00048	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,1-dichloropropene	<	0.0017	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,2,3-trichlorobenzene	<	0.00094	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,2,3-trichloropropane	<	0.0011	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,2,4-trichlorobenzene	<	0.00084	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,2,4-trimethylbenzene	<	0.00056	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,2-chlorotoluene	<	0.00051	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,2-dibromo-3-chloropropane	<	0.00061	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,2-dibromoethane	<	0.0005	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,2-dichlorobenzene	<	0.00073	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,2-dichloroethane	<	0.0021	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,2-dichloropropane	<	0.00051	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,3,5-trimethylbenzene	<	0.00055	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,3-dichlorobenzene	<	0.0007	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,3-dichloropropane	<	0.0015	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	1,4-dichlorobenzene	<	0.00056	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	2,2-dichloropropane	<	0.0033	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	4-chlorotoluene	<	0.00051	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	benzene	<	0.00039	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	bromobenzene	<	0.00057	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	bromochloromethane	<	0.00069	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	bromodichloromethane	<	0.00064	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	bromoform	<	0.00047	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	bromomethane	<	0.00049	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	carbon tetrachloride	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	chlorobenzene	<	0.00044	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	chloroethane	<	0.00054	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	chloroform	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	chloromethane	<	0.002	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	cis-1,2-dichloroethene	<	0.0018	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	cis-1,3-dichloropropene	<	0.00078	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	dibromochloromethane	<	0.0005	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	dibromomethane	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	dichlorodifluoromethane	<	0.00043	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	ethylbenzene	<	0.00075	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	hexachlorobutadiene	<	0.0011	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	isopropylbenzene	<	0.00054	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	m+p-xylene	<	0.0023	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	methylene chloride	<	0.00075	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	n-butylbenzene	<	0.00059	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	n-propylbenzene	<	0.00062	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	naphthalene	<	0.001	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	o-xylene	<	0.0014	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	paracymene	<	0.00064	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	sec-butylbenzene	<	0.00063	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	styrene	<	0.00072	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	tert-butylbenzene	<	0.00059	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	tetrachloroethene	<	0.00049	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	toluene	<	0.00085	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	trans-1,2-dichloroethene	<	0.00055	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	trans-1,3-dichloropropene	<	0.00055	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	trichloroethene	<	0.00042	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	trichloromonofluoromethane	<	0.00062	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-7	8260	vinyl chloride	<	0.00047	mg/L	UJ	Holding time violation (analysis)	L2734
IGW-8	6010	zinc	<	0.139	mg/L	U	Method blank contamination	WG5069
IGW-8	8260	1,1,1,2-tetrachloroethane	<	0.00045	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,1,1-trichloroethane	<	0.0017	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,1,2,2-tetrachloroethane	<	0.00063	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,1,2-trichloroethane	<	0.0012	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,1-dichloroethane	<	0.0017	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,1-dichloroethene	<	0.00048	mg/L	UJ	Surrogate recovery too low/matrix spike recovery too low/RPD too high between MS and MSD	WG5324
IGW-8	8260	1,1-dichloropropene	<	0.0017	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,2,3-trichlorobenzene	<	0.00094	mg/L	UJ	Surrogate recovery too low	WG5324

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-8	8260	1,2,3-trichloropropane	<	0.0011	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,2,4-trichlorobenzene	<	0.00084	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,2,4-trimethylbenzene	<	0.00056	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,2-chlorotoluene	<	0.00051	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,2-dibromo-3-chloropropane	<	0.00061	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,2-dibromoethane	<	0.0005	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,2-dichlorobenzene	<	0.00073	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,2-dichloroethane	<	0.0021	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,2-dichloropropane	<	0.00051	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,3,5-trimethylbenzene	<	0.00055	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,3-dichlorobenzene	<	0.0007	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,3-dichloropropane	<	0.0015	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	1,4-dichlorobenzene	<	0.00056	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	2,2-dichloropropane	<	0.0033	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	4-chlorotoluene	<	0.00051	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	benzene	<	0.00039	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	bromobenzene	<	0.00057	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	bromochloromethane	<	0.00069	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	bromodichloromethane	<	0.00064	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	bromoform	<	0.00047	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	bromomethane	<	0.00049	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	carbon tetrachloride	<	0.0014	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	chlorobenzene	<	0.00044	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	chloroethane	<	0.00054	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	chloroform	<	0.0014	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	chloromethane	<	0.002	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	cis-1,2-dichloroethene		0.0054	mg/L	J	Surrogate recovery too high and too low	WG5324
IGW-8	8260	cis-1,3-dichloropropene	<	0.00078	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	dibromochloromethane	<	0.0005	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	dibromomethane	<	0.0014	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	dichlorodifluoromethane	<	0.00043	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	ethylbenzene	<	0.00075	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	hexachlorobutadiene	<	0.0011	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	isopropylbenzene	<	0.00054	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	m-xylene/p-xylene	<	0.0023	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	methylene chloride		0.011	mg/L	J	Surrogate recovery too high and too low	WG5324
IGW-8	8260	n-butylbenzene	<	0.00059	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	n-propylbenzene	<	0.00062	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	naphthalene	<	0.001	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	o-xylene	<	0.0014	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	paracymene	<	0.00064	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	sec-butylbenzene	<	0.00063	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	styrene	<	0.00072	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	tert-butylbenzene	<	0.00059	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	tetrachloroethene		0.0034	mg/L	J	Surrogate recovery too high and too low	WG5324
IGW-8	8260	toluene	<	0.00085	mg/L	UJ	Surrogate recovery too low/matrix spike recovery too low/RPD too high between MS and MSD	WG5324
IGW-8	8260	trans-1,2-dichloroethene	<	0.00055	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	trans-1,3-dichloropropene	<	0.00055	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	trichloroethene		11	mg/L	J	Surrogate recovery too high and too low/RPD too high between MS and MSD	WG5324
IGW-8	8260	trichloromonofluoromethane	<	0.00062	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8260	vinyl chloride	<	0.00047	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-8	8270	di-n-butyl phthalate	<	0.55	mg/L	U	Method blank contamination	WG5080
IGW-9	6010	copper	<	0.0385	mg/L	U	Method blank contamination	WG5069
IGW-9	6010	zinc	<	0.0685	mg/L	U	Method blank contamination	WG5069
IGW-9	8260	1,1,1,2-tetrachloroethane	<	0.00045	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,1,1-trichloroethane	<	0.0017	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,1,2,2-tetrachloroethane	<	0.00063	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,1,2-trichloroethane	<	0.0012	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,1-dichloroethane	<	0.0017	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,1-dichloroethene		0.0078	mg/L	J	Surrogate recovery too high and too low/matrix spike recovery too low/RPD too high between MS and MSD	WG5324
IGW-9	8260	1,1-dichloropropene	<	0.0017	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,2,3-trichlorobenzene	<	0.00094	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,2,3-trichloropropane	<	0.0011	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,2,4-trichlorobenzene	<	0.00084	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,2,4-trimethylbenzene		0.0023	mg/L	J	Surrogate recovery too high and too low	WG5324
IGW-9	8260	1,2-chlorotoluene	<	0.00051	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,2-dibromo-3-chloropropane	<	0.00061	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,2-dibromoethane	<	0.0005	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,2-dichlorobenzene	<	0.00073	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,2-dichloroethane	<	0.0021	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,2-dichloropropane	<	0.00051	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,3,5-trimethylbenzene	<	0.00055	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,3-dichlorobenzene	<	0.0007	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,3-dichloropropane	<	0.0015	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	1,4-dichlorobenzene	<	0.00056	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	2,2-dichloropropane	<	0.0033	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	4-chlorotoluene	<	0.00051	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	benzene	<	0.00039	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	bromobenzene	<	0.00057	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	bromochloromethane	<	0.00069	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	bromodichloromethane	<	0.00064	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	bromoform	<	0.00047	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	bromomethane	<	0.00049	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	carbon tetrachloride	<	0.0014	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	chlorobenzene	<	0.00044	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	chloroethane	<	0.00054	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	chloroform	<	0.0014	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	chloromethane	<	0.002	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	cis-1,2-dichloroethene	<	6.3	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	cis-1,3-dichloropropene	<	0.00078	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	dibromochloromethane	<	0.0005	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	dibromomethane	<	0.0014	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	dichlorodifluoromethane	<	0.00043	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	ethylbenzene	<	0.00075	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	hexachlorobutadiene	<	0.0011	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	isopropylbenzene	<	0.00054	mg/L	UJ	Surrogate recovery too low	WG5324

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
IGW-9	8260	m-xylene/p-xylene	<	0.0023	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	methylene chloride		0.011	mg/L	J	Surrogate recovery too high and too low	WG5324
IGW-9	8260	n-butylbenzene	<	0.00059	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	n-propylbenzene	<	0.00062	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	naphthalene	<	0.001	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	o-xylene	<	0.0014	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	paracymene	<	0.00064	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	sec-butylbenzene	<	0.00063	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	styrene	<	0.00072	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	tert-butylbenzene	<	0.00059	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	tetrachloroethene		0.0044	mg/L	J	Surrogate recovery too high and too low	WG5324
IGW-9	8260	toluene	<	0.00085	mg/L	UJ	Surrogate recovery too low/matrix spike recovery too low/RPD too high between MS and MSD	WG5324
IGW-9	8260	trans-1,2-dichloroethene		0.0037	mg/L	J	Surrogate recovery too high and too low	WG5324
IGW-9	8260	trans-1,3-dichloropropene	<	0.00055	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	trichloroethene	<	62	mg/L	UJ	Surrogate recovery too low/RPD too high between MS and MSD	WG5324
IGW-9	8260	trichloromonofluoromethane	<	0.00062	mg/L	UJ	Surrogate recovery too low	WG5324
IGW-9	8260	vinyl chloride		0.08	mg/L	J	Surrogate recovery too high and too low	WG5324
ISD-2	8260	1,1,1,2-tetrachloroethane	<	0.00048	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,1,1-trichloroethane	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,1,2,2-tetrachloroethane	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,1,2-trichloroethane	<	0.0013	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,1-dichloroethane	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,1-dichloroethene	<	0.00051	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,1-dichloropropene	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,2,3-trichlorobenzene	<	0.001	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,2,4-trichlorobenzene	<	0.00091	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,2,4-trimethylbenzene	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,2-chlorotoluene	<	0.00055	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,2-dibromo-3-chloropropane	<	0.00065	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,2-dibromoethane	<	0.00054	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,2-dichlorobenzene	<	0.00078	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,2-dichloroethane	<	0.0022	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,2-dichloropropane	<	0.00055	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,3,5-trimethylbenzene	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,3-dichlorobenzene	<	0.00076	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	1,4-dichlorobenzene	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	2,2-dichloropropane	<	0.0035	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	4-chlorotoluene	<	0.00055	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	benzene	<	0.00042	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	bromobenzene	<	0.00061	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	bromochloromethane	<	0.00075	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	bromodichloromethane	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	bromoform	<	0.0005	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	bromomethane	<	0.00052	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	chlorobenzene	<	0.00047	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	chloroethane	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	chloroform	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	chloromethane	<	0.0022	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	cis-1,2-dichloroethene	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	cis-1,3-dichloropropene	<	0.00084	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	dibromochloromethane	<	0.00054	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	dibromomethane	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	dichlorodifluoromethane	<	0.00046	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	ethylbenzene	<	0.00081	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	isopropylbenzene	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	m+p-xylene	<	0.0025	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	methylene chloride	<	0.00081	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	n-butylbenzene	<	0.00064	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	n-propylbenzene	<	0.00067	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	naphthalene	<	0.0011	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	o-xylene	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	paracymene	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	sec-butylbenzene	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	styrene	<	0.00077	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	tert-butylbenzene	<	0.00063	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	tetrachloroethene	<	0.00053	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	toluene	<	0.00091	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	trans-1,2-dichloroethene	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	trans-1,3-dichloropropene	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	trichloroethene	<	0.00045	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	trichloromonofluoromethane	<	0.00067	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-2	8260	vinyl chloride	<	0.00051	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,1,1,2-tetrachloroethane	<	0.00061	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,1,1-trichloroethane	<	0.0023	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,1,2,2-tetrachloroethane	<	0.00086	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,1,2-trichloroethane	<	0.0017	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,1-dichloroethane	<	0.0023	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,1-dichloroethene	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,1-dichloropropene	<	0.0023	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,2,3-trichlorobenzene	<	0.0013	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,2,3-trichloropropane	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,2,4-trichlorobenzene	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,2,4-trimethylbenzene	<	0.00077	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,2-chlorotoluene	<	0.0007	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,2-dibromo-3-chloropropane	<	0.00084	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,2-dibromoethane	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,2-dichlorobenzene	<	0.001	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,2-dichloroethane	<	0.0029	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,2-dichloropropane	<	0.0007	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,3,5-trimethylbenzene	<	0.00076	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,3-dichlorobenzene	<	0.00097	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	1,3-dichloropropane	<	0.002	mg/Kg	UJ	Surrogate recovery too low	L2664

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISD-4	8260	1,4-dichlorobenzene	<	0.00077	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	2,2-dichloropropane	<	0.0045	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	4-chlorotoluene	<	0.0007	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	benzene	<	0.00054	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	bromobenzene	<	0.00078	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	bromochloromethane	<	0.00095	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	bromodichloromethane	<	0.00088	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	bromoform	<	0.00064	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	bromomethane	<	0.00067	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	carbon tetrachloride	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	chlorobenzene	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	chloroethane	<	0.00074	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	chloroform	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	chloromethane	<	0.0028	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	cis-1,2-dichloroethene	<	0.0024	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	cis-1,3-dichloropropene	<	0.0011	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	dibromochloromethane	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	dibromomethane	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	dichlorodifluoromethane	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	ethylbenzene	<	0.001	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	hexachlorobutadiene	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	isopropylbenzene	<	0.00075	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	m+p-xylene	<	0.0032	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	methylene chloride	<	0.001	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	n-butylbenzene	<	0.00082	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	n-propylbenzene	<	0.00086	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	naphthalene	<	0.0014	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	o-xylene	<	0.002	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	paracymene		0.014	mg/Kg	J	Surrogate recovery too low	L2664
ISD-4	8260	sec-butylbenzene	<	0.00086	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	styrene	<	0.00099	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	tert-butylbenzene	<	0.00081	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	tetrachloroethene	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	toluene		0.0036	mg/Kg	J	Surrogate recovery too low	L2664
ISD-4	8260	trans-1,2-dichloroethene	<	0.00075	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	trans-1,3-dichloropropene	<	0.00076	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	trichloroethene	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	trichloromonofluoromethane	<	0.00086	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4	8260	vinyl chloride	<	0.00065	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,1,1,2-tetrachloroethane	<	0.00056	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,1,1-trichloroethane	<	0.0021	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,1,2,2-tetrachloroethane	<	0.00079	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,1,2-trichloroethane	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,1-dichloroethane	<	0.0021	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,1-dichloroethene	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,1-dichloropropene	<	0.0021	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,2,3-trichlorobenzene	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,2,3-trichloropropane	<	0.0014	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,2,4-trichlorobenzene	<	0.0011	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,2,4-trimethylbenzene	<	0.0007	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,2-chlorotoluene	<	0.00064	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,2-dibromo-3-chloropropane	<	0.00076	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,2-dibromoethane	<	0.00062	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,2-dichlorobenzene	<	0.00091	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,2-dichloroethane	<	0.0026	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,2-dichloropropane	<	0.00064	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,3,5-trimethylbenzene	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,3-dichlorobenzene	<	0.00088	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,3-dichloropropane	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	1,4-dichlorobenzene	<	0.0007	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	2,2-dichloropropane	<	0.0041	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	4-chlorotoluene	<	0.00064	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	benzene	<	0.00049	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	bromobenzene	<	0.00071	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	bromochloromethane	<	0.00087	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	bromodichloromethane	<	0.0008	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	bromoform	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	bromomethane	<	0.00061	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	carbon tetrachloride	<	0.0017	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	chlorobenzene	<	0.00055	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	chloroethane	<	0.00067	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	chloroform	<	0.0017	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	chloromethane	<	0.0025	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	cis-1,2-dichloroethene	<	0.0022	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	cis-1,3-dichloropropene	<	0.00098	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	dibromochloromethane	<	0.00063	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	dibromomethane	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	dichlorodifluoromethane	<	0.00054	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	ethylbenzene	<	0.00094	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	hexachlorobutadiene	<	0.0014	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	isopropylbenzene	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	m+p-xylene	<	0.0029	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	methylene chloride	<	0.00094	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	n-butylbenzene	<	0.00075	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	n-propylbenzene	<	0.00078	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	naphthalene	<	0.0013	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	o-xylene	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	paracymene		0.014	mg/Kg	J	Surrogate recovery too high and too low	L2664
ISD-4Q	8260	sec-butylbenzene	<	0.00079	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	styrene	<	0.0009	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	tert-butylbenzene	<	0.00074	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	tetrachloroethene	<	0.00062	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	toluene		0.0068	mg/Kg	J	Surrogate recovery too high and too low	L2664
ISD-4Q	8260	trans-1,2-dichloroethene	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	trans-1,3-dichloropropene	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	trichloroethene	<	0.00053	mg/Kg	UJ	Surrogate recovery too low	L2664

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISD-4Q	8260	trichloromonofluoromethane	<	0.00078	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-4Q	8260	vinyl chloride	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,1,1,2-tetrachloroethane	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,1,1-trichloroethane	<	0.0023	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,1,2,2-tetrachloroethane	<	0.00084	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,1,2-trichloroethane	<	0.0017	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,1-dichloroethane	<	0.0023	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,1-dichloroethene	<	0.00064	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,1-dichloropropene	<	0.0023	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,2,3-trichlorobenzene	<	0.0013	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,2,3-trichloropropane	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,2,4-trichlorobenzene	<	0.0011	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,2,4-trimethylbenzene	<	0.00074	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,2-chlorotoluene	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,2-dibromo-3-chloropropane	<	0.00081	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,2-dibromoethane	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,2-dichlorobenzene	<	0.00097	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,2-dichloroethane	<	0.0028	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,2-dichloropropane	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,3,5-trimethylbenzene	<	0.00074	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,3-dichlorobenzene	<	0.00094	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,3-dichloropropane	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	1,4-dichlorobenzene	<	0.00074	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	2,2-dichloropropane	<	0.0044	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	4-chlorotoluene	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	benzene	<	0.00052	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	bromobenzene	<	0.00076	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	bromochloromethane	<	0.00092	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	bromodichloromethane	<	0.00085	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	bromoform	<	0.00062	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	bromomethane	<	0.00065	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	carbon tetrachloride	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	chlorobenzene	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	chloroethane	<	0.00072	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	chloroform	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	chloromethane	<	0.0027	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	cis-1,2-dichloroethene	<	0.0024	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	cis-1,3-dichloropropene	<	0.001	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	dibromochloromethane	<	0.00067	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	dibromomethane	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	dichlorodifluoromethane	<	0.00057	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	ethylbenzene	<	0.001	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	hexachlorobutadiene	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	isopropylbenzene	<	0.00072	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	m+p-xylene	<	0.0031	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	methylene chloride	<	0.001	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	n-butylbenzene	<	0.0008	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	n-propylbenzene	<	0.00083	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	naphthalene	<	0.0014	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	o-xylene	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	paracymene		0.018	mg/Kg	J	Surrogate recovery too low	L2664
ISD-5	8260	sec-butylbenzene	<	0.00084	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	styrene	<	0.00096	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	tert-butylbenzene	<	0.00078	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	tetrachloroethene	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	toluene		0.0031	mg/Kg	J	Surrogate recovery too low	L2664
ISD-5	8260	trans-1,2-dichloroethene	<	0.00073	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	trans-1,3-dichloropropene	<	0.00074	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	trichloroethene	<	0.00056	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	trichloromonofluoromethane	<	0.00083	mg/Kg	UJ	Surrogate recovery too low	L2664
ISD-5	8260	vinyl chloride	<	0.00063	mg/Kg	UJ	Surrogate recovery too low	L2664
ISL-1 (1'-2')	6010	zinc	<	3.27	mg/Kg	U	Method blank contamination	L2702
ISL-1 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,1,1-trichloroethane	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,1,2-trichloroethane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,1-dichloroethane	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,1-dichloroethene	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,1-dichloropropene	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.001	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00089	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,2-chlorotoluene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,2-dibromoethane	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,2-dichlorobenzene	<	0.00077	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,2-dichloroethane	<	0.0022	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,2-dichloropropane	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,3-dichlorobenzene	<	0.00075	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,3-dichloropropane	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	1,4-dichlorobenzene	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	2,2-dichloropropane	<	0.0035	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	4-chlorotoluene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	benzene	<	0.00042	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	bromobenzene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	bromochloromethane	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	bromodichloromethane	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	bromoform	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	bromomethane	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	carbon tetrachloride	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	chlorobenzene	<	0.00046	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	chloroethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	chloroform	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	chloromethane	<	0.0022	mg/Kg	UJ	Holding time violation (analysis)	L2702

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-1 (1'-2')	8260	cis-1,2-dichloroethene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00083	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	dibromochloromethane	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	dibromomethane	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	dichlorodifluoromethane	<	0.00045	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	ethylbenzene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	isopropylbenzene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	m+p-xylene	<	0.0025	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	methylene chloride	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	n-butylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	n-propylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	naphthalene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	o-xylene	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	paracymene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	sec-butylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	styrene	<	0.00076	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	tert-butylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	tetrachloroethene	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	toluene	<	0.0009	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	trans-1,2-dichloroethene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	trans-1,3-dichloropropene	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	trichloroethene	<	0.00045	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	trichloromonofluoromethane	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (1'-2')	8260	vinyl chloride	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2702
ISL-1 (15'-16')	6010	zinc	<	2	mg/Kg	UJ	Method blank contamination	L2702
ISL-10 (0'-2')	7421	lead		5.17	mg/Kg	J	Matrix spike recovery too high	WG5111
ISL-10 (14'-16')	6010	zinc	<	4.08	mg/Kg	U	Method blank contamination	WG5061
ISL-10 (14'-16')	7421	lead		1.98	mg/Kg	J	Matrix spike recovery too high	WG5111
ISL-11 (0'-2')	7421	lead		6.4	mg/Kg	J	Matrix spike recovery too high	WG5111
ISL-11 (14'-16')	7421	lead		3.82	mg/Kg	J	Matrix spike recovery too high	WG5111
ISL-12 (35'-36')	6010	zinc	<	2.2	mg/Kg	UJ	Method blank contamination	L2687
ISL-13 (0'-2')	7421	lead		9.07	mg/Kg	J	Matrix spike recovery too high	WG5111
ISL-13 (0'-2')	8260	1,1,1,2-tetrachloroethane	<	0.0005	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00071	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,1-dichloroethene	<	0.00054	mg/Kg	UJ	Surrogate recovery too low/RPD too high between MS and MSD	WG5214
ISL-13 (0'-2')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,2,4-trichlorobenzene	<	0.00095	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,2,4-trimethylbenzene	<	0.00063	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,2-chlorotoluene	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,2-dibromoethane	<	0.00056	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,2-dichlorobenzene	<	0.00082	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,2-dichloroethane	<	0.0024	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,2-dichloropropane	<	0.00057	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,3,5-trimethylbenzene	<	0.00062	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,3-dichlorobenzene	<	0.00079	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	1,4-dichlorobenzene	<	0.00063	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	4-chlorotoluene	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	benzene	<	0.00044	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	bromobenzene	<	0.00064	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	bromochloromethane	<	0.00078	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	bromodichloromethane	<	0.00072	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	bromoform	<	0.00053	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	bromomethane	<	0.00055	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	chlorobenzene	<	0.00049	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	chloroethane	<	0.00061	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	chloroform	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	cis-1,3-dichloropropene	<	0.00088	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	dibromochloromethane	<	0.00057	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	dichlorodifluoromethane	<	0.00048	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	ethylbenzene	<	0.00085	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	isopropylbenzene	<	0.00061	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	m-xylene/p-xylene	<	0.0026	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	methylene chloride	<	0.00085	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	n-butylbenzene	<	0.00067	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	n-propylbenzene	<	0.0007	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	paracymene	<	0.00072	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	sec-butylbenzene	<	0.00071	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	styrene	<	0.00081	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	tert-butylbenzene	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	tetrachloroethene	<	0.00056	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	toluene	<	0.00096	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	trans-1,2-dichloroethene	<	0.00062	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	trans-1,3-dichloropropene	<	0.00062	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	trichloroethene	<	0.00048	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	trichloromonofluoromethane	<	0.0007	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (0'-2')	8260	vinyl chloride	<	0.00053	mg/Kg	UJ	Surrogate recovery too low	WG5214
ISL-13 (24'-26')	6010	zinc	<	4.43	mg/Kg	U	Method blank contamination	WG5061
ISL-13 (24'-26')	7421	lead		1.86	mg/Kg	J	Matrix spike recovery too high	WG5111
ISL-14 (.5'-2')	6010	zinc	<	6.4	mg/Kg	U	Method blank contamination	L2629
ISL-14 (35'-36.5')	6010	zinc	<	1.5	mg/Kg	UJ	Method blank contamination	L2629

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-15 (25'-26')	6010	nickel	<	0.85	mg/Kg	UJ	Method blank contamination	L2683
ISL-15 (25'-26')	6010	zinc	<	3.81	mg/Kg	U	Method blank contamination	L2683
ISL-17 (1'-2')	6010	zinc	<	6.5	mg/Kg	U	Method blank contamination	L2696
ISL-17 (20'-21')	6010	zinc	<	3.74	mg/Kg	U	Method blank contamination	L2696
ISL-2 (1'-2')	7841	thallium	<	0.36	mg/Kg	UJ	Method blank contamination	L2713
ISL-2 (1'-2')	8260	trichloroethene		0.0051	mg/Kg	J	Surrogate recovery too high	L2713
ISL-2 (35'-36')	6010	zinc	<	1.5	mg/Kg	UJ	Method blank contamination	L2713
ISL-2 (35'-36')	8260	1,1,1,2-tetrachloroethane	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,1,1-trichloroethane	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,1,2,2-tetrachloroethane	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,1,2-trichloroethane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,1-dichloroethane	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,1-dichloroethene	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,1-dichloropropene	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,2,3-trichlorobenzene	<	0.001	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,2,4-trichlorobenzene	<	0.00091	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,2,4-trimethylbenzene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,2-chlorotoluene	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,2-dibromo-3-chloropropane	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,2-dibromoethane	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,2-dichlorobenzene	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,2-dichloroethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,2-dichloropropane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,3,5-trimethylbenzene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,3-dichlorobenzene	<	0.00076	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	1,4-dichlorobenzene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	2,2-dichloropropane	<	0.0035	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	4-chlorotoluene	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	benzene	<	0.00042	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	bromobenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	bromochloromethane	<	0.00075	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	bromodichloromethane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	bromoform	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	bromomethane	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	chlorobenzene	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	chloroethane	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	chloromethane	<	0.0022	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	cis-1,2-dichloroethene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	cis-1,3-dichloropropene	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	dibromochloromethane	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	dibromomethane	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	dichlorodifluoromethane	<	0.00046	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	ethylbenzene	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	isopropylbenzene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	m+p-xylene	<	0.0025	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	methylene chloride	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	n-butylbenzene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	n-propylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	naphthalene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	o-xylene	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	paracymene	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	sec-butylbenzene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	styrene	<	0.00077	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	tert-butylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	tetrachloroethene	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	toluene	<	0.00091	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	trans-1,2-dichloroethene	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	trans-1,3-dichloropropene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	trichloroethene	<	0.00045	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	trichloromonofluoromethane	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2 (35'-36')	8260	vinyl chloride	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	7841	thallium	<	0.37	mg/Kg	UJ	Method blank contamination	L2713
ISL-2-A (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,1-dichloroethene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00095	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,2-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,2-dibromoethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,2-dichlorobenzene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,2-dichloroethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,2-dichloropropane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,3-dichlorobenzene	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	1,4-dichlorobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	4-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	benzene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	bromobenzene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	bromochloromethane	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	bromodichloromethane	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	bromoform	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	bromomethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-2-A (1'-2')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	chlorobenzene	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	chloroethane	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	cis-1,3-dichloropropene	<	0.00087	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	dibromochloromethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	dichlorodifluoromethane	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	ethylbenzene	<	0.00085	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	isopropylbenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	methylene chloride	<	0.00085	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	n-butylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	n-propylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	paracymene	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	sec-butylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	styrene	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	tert-butylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	tetrachloroethene	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	toluene	<	0.00095	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	trans-1,2-dichloroethene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	trans-1,3-dichloropropene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	trichloroethene	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	trichloromonofluoromethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-2-A (1'-2')	8260	vinyl chloride	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-21 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,1-dichloroethene	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.001	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00094	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,2-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,2-dibromoethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,2-dichlorobenzene	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,2-dichloroethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,2-dichloropropane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,3-dichlorobenzene	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	1,4-dichlorobenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	2,2-dichloropropane	<	0.0036	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	4-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	benzene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	bromobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	bromochloromethane	<	0.00077	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	bromodichloromethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	bromoform	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	bromomethane	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	chlorobenzene	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	chloroethane	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	dibromochloromethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	dichlorodifluoromethane	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	ethylbenzene	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	isopropylbenzene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	methylene chloride	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	n-butylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	n-propylbenzene	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	paracymene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	sec-butylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	styrene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	tert-butylbenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	tetrachloroethene	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	toluene	<	0.00094	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	trans-1,2-dichloroethene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	trans-1,3-dichloropropene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	trichloroethene	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	trichloromonofluoromethane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (1'-2')	8260	vinyl chloride	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-21 (40'-41')	6010	nickel	<	0.59	mg/Kg	UJ	Method blank contamination	L2739
ISL-23 (1'-2')	6010	nickel	<	3.96	mg/Kg	U	Method blank contamination	L2739
ISL-24 (30'-31')	6010	nickel	<	0.4	mg/Kg	UJ	Method blank contamination	L2700
ISL-24 (30'-31')	6010	zinc	<	3.14	mg/Kg	U	Method blank contamination	L2700
ISL-25 (1'-2')	6010	zinc	<	8.33	mg/Kg	U	Method blank contamination	L2700
ISL-25 (25'-26')	6010	nickel	<	0.46	mg/Kg	UJ	Method blank contamination	L2700
ISL-25 (25'-26')	6010	zinc	<	1.8	mg/Kg	UJ	Method blank contamination	L2700

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-26 (35'-37')	6010	nickel	<	0.26	mg/Kg	UJ	Method blank contamination	L2696
ISL-26 (35'-37')	6010	zinc	<	5.71	mg/Kg	U	Method blank contamination	L2696
ISL-26-A (35'-37')	6010	nickel	<	0.48	mg/Kg	UJ	Method blank contamination	L2696
ISL-26-A (35'-37')	6010	zinc	<	0.77	mg/Kg	UJ	Method blank contamination	L2696
ISL-27 (30'-31')	6010	nickel	<	0.41	mg/Kg	UJ	Method blank contamination	L2700
ISL-27 (30'-31')	6010	zinc	<	2.94	mg/Kg	U	Method blank contamination	L2700
ISL-28 (35'-36')	6010	zinc	<	1.5	mg/Kg	UJ	Method blank contamination	L2687
ISL-29 (35'-36')	6010	zinc	<	1.8	mg/Kg	UJ	Method blank contamination	L2687
ISL-3 (1'-2')	7841	thallium	<	0.3	mg/Kg	UJ	Method blank contamination	L2713
ISL-3 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,1-dichloroethene	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00094	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,2-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,2-dibromoethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,2-dichlorobenzene	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,2-dichloroethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,2-dichloropropane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,3-dichlorobenzene	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	1,4-dichlorobenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	2,2-dichloropropane	<	0.0036	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	4-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	benzene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	bromobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	bromochloromethane	<	0.00077	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	bromodichloromethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	bromoform	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	bromomethane	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	chlorobenzene	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	chloroethane	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00087	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	dibromochloromethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	dichlorodifluoromethane	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	ethylbenzene	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	isopropylbenzene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	methylene chloride	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	n-butylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	n-propylbenzene	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	paracymene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	sec-butylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	styrene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	tert-butylbenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	tetrachloroethene	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	toluene	<	0.00095	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	trans-1,2-dichloroethene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	trans-1,3-dichloropropene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	trichloroethene		0.004	mg/Kg	J	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	trichloromonofluoromethane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (1'-2')	8260	vinyl chloride	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	6010	zinc	<	1	mg/Kg	UJ	Method blank contamination	L2713
ISL-3 (30'-31')	8260	1,1,1,2-tetrachloroethane	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,1,1-trichloroethane	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,1,2,2-tetrachloroethane	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,1,2-trichloroethane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,1-dichloroethane	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,1-dichloroethene	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,1-dichloropropene	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,2,3-trichlorobenzene	<	0.001	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,2,4-trichlorobenzene	<	0.00091	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,2,4-trimethylbenzene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,2-chlorotoluene	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,2-dibromo-3-chloropropane	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,2-dibromoethane	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,2-dichlorobenzene	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,2-dichloroethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,2-dichloropropane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,3,5-trimethylbenzene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,3-dichlorobenzene	<	0.00076	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	1,4-dichlorobenzene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	2,2-dichloropropane	<	0.0035	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	4-chlorotoluene	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	benzene	<	0.00042	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	bromobenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	bromochloromethane	<	0.00075	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	bromodichloromethane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2713

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-3 (30'-31')	8260	bromoform	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	bromomethane	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	chlorobenzene	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	chloroethane	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	chloromethane	<	0.0022	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	cis-1,2-dichloroethene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	cis-1,3-dichloropropene	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	dibromochloromethane	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	dibromomethane	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	dichlorodifluoromethane	<	0.00046	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	ethylbenzene	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	isopropylbenzene	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	m+p-xylene	<	0.0025	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	methylene chloride	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	n-butylbenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	n-propylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	naphthalene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	o-xylene	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	paracymene	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	sec-butylbenzene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	styrene	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	tert-butylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	tetrachloroethene	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	toluene	<	0.00092	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	trans-1,2-dichloroethene	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	trans-1,3-dichloropropene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	trichloroethene	<	0.00046	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	trichloromonofluoromethane	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-3 (30'-31')	8260	vinyl chloride	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-30 (35'-36')	6010	zinc	<	2	mg/Kg	UJ	Method blank contamination	L2687
ISL-31 (0'-2')	7421	lead		5.22	mg/Kg	J	Matrix spike recovery too high	WG5111
ISL-31 (0'-2')	7471	mercury		0.027	mg/Kg	J	Matrix spike recovery below 30 percent	WG5166
ISL-31 (14'-16')	7421	lead		4.87	mg/Kg	J	Matrix spike recovery too high	WG5111
ISL-32 (0'-2')	6010	nickel	<	3.6	mg/Kg	U	Method blank contamination	WG5125
ISL-32 (0'-2')	7421	lead		11.7	mg/Kg	J	Matrix spike recovery too low	WG5122
ISL-32 (0'-2')	8260	toluene		0.0024	mg/Kg	J	RPD too high between MS and MSD	WG5329
ISL-32 (14'-16')	6010	copper	<	2.78	mg/Kg	U	Method blank contamination	WG5125
ISL-32 (14'-16')	*6010*	*nickel*	<	*1.3*	*mg/Kg*	*UJ*	*Method blank contamination*	*WG5125*
ISL-32 (14'-16')	6010	zinc	<	1.1	mg/Kg	UJ	Method blank contamination	WG5125
ISL-32 (14'-16')	7421	lead		11.3	mg/Kg	J	Matrix spike recovery too low	WG5122
ISL-33 (25'-26')	6010	zinc	<	2.48	mg/Kg	U	Method blank contamination	L2700
ISL-34 (0'-2')	6010	nickel	<	2	mg/Kg	UJ	Method blank contamination	WG5125
ISL-34 (0'-2')	7421	lead		20.8	mg/Kg	J	Matrix spike recovery too low	WG5122
ISL-34 (14'-16')	6010	nickel	<	2.59	mg/Kg	U	Method blank contamination	WG5125
ISL-34 (14'-16')	6010	zinc	<	8.42	mg/Kg	U	Method blank contamination	WG5125
ISL-34 (14'-16')	7421	lead		9.84	mg/Kg	J	Matrix spike recovery too low	WG5122
ISL-35 (0'-2')	6010	nickel	<	2.56	mg/Kg	U	Method blank contamination	WG5125
ISL-35 (0'-2')	6010	zinc	<	9.42	mg/Kg	U	Method blank contamination	WG5125
ISL-35 (0'-2')	7421	lead		7.46	mg/Kg	J	Matrix spike recovery too low	WG5122
ISL-35 (19'-21')	6010	copper	<	0.92	mg/Kg	UJ	Method blank contamination	WG5125
ISL-35 (19'-21')	6010	nickel	<	0.93	mg/Kg	UJ	Method blank contamination	WG5125
ISL-35 (19'-21')	6010	zinc	<	1.2	mg/Kg	UJ	Method blank contamination	WG5125
ISL-35 (19'-21')	7421	lead		4.18	mg/Kg	J	Matrix spike recovery too low	WG5122
ISL-35 (19'-21')	7471	mercury		0.115	mg/Kg	J	Matrix spike recovery below 30 percent	WG5167
ISL-35D (0'-2')	6010	copper	<	4.06	mg/Kg	U	Method blank contamination	WG5125
ISL-35D (0'-2')	6010	nickel	<	2.55	mg/Kg	U	Method blank contamination	WG5125
ISL-35D (0'-2')	6010	zinc	<	8.91	mg/Kg	U	Method blank contamination	WG5125
ISL-35D (0'-2')	7421	lead		6.73	mg/Kg	J	Matrix spike recovery too low	WG5122
ISL-36 (1'-2')	6010	nickel	<	1.7	mg/Kg	UJ	Method blank contamination	L2659
ISL-36 (45'-46')	6010	nickel	<	0.73	mg/Kg	UJ	Method blank contamination	L2659
ISL-37 (40'-41')	6010	nickel	<	0.62	mg/Kg	UJ	Method blank contamination	L2655
ISL-37 (40'-41') DUP	6010	nickel	<	0.75	mg/Kg	UJ	Method blank contamination	L2655
ISL-39 (1'-2')	6010	nickel	<	4.3	mg/Kg	U	Method blank contamination	L2722
ISL-39 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,1,1-trichloroethane	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,1-dichloroethane	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,1-dichloroethene	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,1-dichloropropene	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.001	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00092	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,2-chlorotoluene	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,2-dibromoethane	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,2-dichlorobenzene	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,2-dichloroethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,2-dichloropropane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,3-dichlorobenzene	<	0.00076	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	1,4-dichlorobenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	2,2-dichloropropane	<	0.0035	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	4-chlorotoluene	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	benzene	<	0.00043	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	bromobenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	bromochloromethane	<	0.00075	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	bromodichloromethane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	bromoform	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	bromomethane	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-39 (1'-2')	8260	chlorobenzene	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	chloroethane	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	chloromethane	<	0.0022	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	cis-1,2-dichloroethene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00085	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	dibromochloromethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	dibromomethane	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	dichlorodifluoromethane	<	0.00046	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	ethylbenzene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	isopropylbenzene	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	m+p-xylene	<	0.0025	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	methylene chloride	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	n-butylbenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	n-propylbenzene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	naphthalene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	o-xylene	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	paracymene	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	sec-butylbenzene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	styrene	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	tert-butylbenzene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	tetrachloroethene	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	toluene		0.002	mg/Kg	J	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	trans-1,2-dichloroethene	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	trans-1,3-dichloropropene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	*8260*	*trichloroethene*	<	*0.00046*	mg/Kg	*UJ*	*Holding time violation (analysis)*	L2722
ISL-39 (1'-2')	8260	trichloromonofluoromethane	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (1'-2')	8260	vinyl chloride	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	6010	nickel	<	0.24	mg/Kg	UJ	Method blank contamination	L2722
ISL-39 (40'-41')	8260	1,1,1,2-tetrachloroethane	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,1,1-trichloroethane	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,1,2,2-tetrachloroethane	<	0.00074	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,1,2-trichloroethane	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,1-dichloroethane	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,1-dichloroethene	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,1-dichloropropene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,2,3-trichloropropane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,2,4-trichlorobenzene	<	0.00099	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,2,4-trimethylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,2-chlorotoluene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,2-dibromo-3-chloropropane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,2-dibromoethane	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,2-dichlorobenzene	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,2-dichloroethane	<	0.0025	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,2-dichloropropane	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,3,5-trimethylbenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,3-dichlorobenzene	<	0.00083	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,3-dichloropropane	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	1,4-dichlorobenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	2,2-dichloropropane	<	0.0038	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	4-chlorotoluene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	benzene	<	0.00046	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	bromobenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	bromochloromethane	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	bromodichloromethane	<	0.00075	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	bromoform	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	bromomethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	carbon tetrachloride	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	chlorobenzene	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	chloroethane	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	chloroform	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	chloromethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	cis-1,2-dichloroethene	<	0.0021	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	cis-1,3-dichloropropene	<	0.00091	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	dibromochloromethane	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	dibromomethane	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	dichlorodifluoromethane	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	ethylbenzene	<	0.00089	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	isopropylbenzene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	m+p-xylene	<	0.0027	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	methylene chloride	<	0.00089	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	n-butylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	n-propylbenzene	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	o-xylene	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	paracymene	<	0.00075	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	sec-butylbenzene	<	0.00074	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	styrene	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	*8260*	*tert-butylbenzene*	<	*0.00069*	mg/Kg	*UJ*	*Holding time violation (analysis)*	L2722
ISL-39 (40'-41')	8260	tetrachloroethene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	toluene	<	0.001	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	trans-1,2-dichloroethene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	trans-1,3-dichloropropene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	trichloroethene	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	trichloromonofluoromethane	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-39 (40'-41')	8260	vinyl chloride	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-4 (1'-3')	7841	thallium	<	0.31	mg/Kg	UJ	Method blank contamination	L2713
ISL-4 (1'-3')	8260	1,1,1,2-tetrachloroethane	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,1,2,2-tetrachloroethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,1-dichloroethene	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-4 (1'-3')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,2,4-trichlorobenzene	<	0.00094	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,2,4-trimethylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,2-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,2-dibromo-3-chloropropane	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,2-dibromoethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,2-dichlorobenzene	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,2-dichloroethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,2-dichloropropane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,3,5-trimethylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,3-dichlorobenzene	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	1,4-dichlorobenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	4-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	benzene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	bromobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	bromochloromethane	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	bromodichloromethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	bromoform	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	bromomethane	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	chlorobenzene	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	chloroethane	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	cis-1,3-dichloropropene	<	0.00087	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	dibromochloromethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	dichlorodifluoromethane	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	ethylbenzene	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	isopropylbenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	methylene chloride	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	n-butylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	n-propylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	paracymene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	sec-butylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	styrene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	tert-butylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	tetrachloroethene		0.8	mg/Kg	J	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	toluene	<	0.00095	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	trans-1,2-dichloroethene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	trans-1,3-dichloropropene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	trichloroethene		1.2	mg/Kg	J	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	trichloromonofluoromethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4 (1'-3')	8260	vinyl chloride	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	7841	thallium	<	0.31	mg/Kg	UJ	Method blank contamination	L2713
ISL-4-A (1'-3')	8260	1,1,1,2-tetrachloroethane	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,1,2,2-tetrachloroethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,1-dichloroethene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,2,3-trichloropropane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,2,4-trichlorobenzene	<	0.00095	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,2,4-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,2-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,2-dibromo-3-chloropropane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,2-dibromoethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,2-dichlorobenzene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,2-dichloroethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,2-dichloropropane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,3,5-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,3-dichlorobenzene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	1,4-dichlorobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	4-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	benzene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	bromobenzene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	bromochloromethane	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	bromodichloromethane	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	bromoform	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	bromomethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	chlorobenzene	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	chloroethane	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	cis-1,3-dichloropropene	<	0.00088	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	dibromochloromethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	dichlorodifluoromethane	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	ethylbenzene	<	0.00085	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	isopropylbenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-4-A (1'-3')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	methylene chloride	<	0.00085	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	n-butylbenzene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	n-propylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	paracymene	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	sec-butylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	styrene	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	tert-butylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	tetrachloroethene		0.2	mg/Kg	J	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	toluene	<	0.00096	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	trans-1,2-dichloroethene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	trans-1,3-dichloropropene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	trichloroethene		0.37	mg/Kg	J	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	trichloromonofluoromethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-4-A (1'-3')	8260	vinyl chloride	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-40 (30'-31')	8260	1,1,1,2-tetrachloroethane	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,1,2,2-tetrachloroethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,1-dichloroethene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,2,3-trichloropropane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,2,4-trichlorobenzene	<	0.00096	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,2,4-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,2-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,2-dibromo-3-chloropropane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,2-dibromoethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,2-dichlorobenzene	<	0.00083	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,2-dichloroethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,2-dichloropropane	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,3,5-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,3-dichlorobenzene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,3-dichloropropane	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	1,4-dichlorobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	4-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	benzene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	bromobenzene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	bromochloromethane	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	bromodichloromethane	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	bromoform	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	bromomethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	carbon tetrachloride	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	chlorobenzene	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	chloroethane	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	chloroform	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	cis-1,3-dichloropropene	<	0.00088	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	dibromochloromethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	dichlorodifluoromethane	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	ethylbenzene	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	isopropylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	methylene chloride	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	n-butylbenzene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	n-propylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	paracymene	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	sec-butylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	styrene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	tert-butylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	tetrachloroethene	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	toluene	<	0.00096	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	trans-1,2-dichloroethene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	trans-1,3-dichloropropene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	trichloroethene	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	trichloromonofluoromethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-40 (30'-31')	8260	vinyl chloride	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-41 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00051	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,1-dichloroethene	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,2,3-trichloropropane	<	0.0013	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00096	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00064	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,2-chlorotoluene	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,2-dibromoethane	<	0.00057	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,2-dichlorobenzene	<	0.00083	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,2-dichloroethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,2-dichloropropane	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00063	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,3-dichlorobenzene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	1,3-dichloropropane	<	0.0017	mg/Kg	UJ	Surrogate recovery too low	L2734

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-41 (1'-2')	8260	1,4-dichlorobenzene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	4-chlorotoluene	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	benzene	<	0.00045	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	bromobenzene	<	0.00065	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	bromochloromethane	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	bromodichloromethane	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	bromoform	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	bromomethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	carbon tetrachloride	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	chlorobenzene	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	chloroethane	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	chloroform	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00089	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	dibromochloromethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	dichlorodifluoromethane	<	0.00049	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	ethylbenzene	<	0.00086	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	isopropylbenzene	<	0.00062	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	m+p-xylene	<	0.0027	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	methylene chloride	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	n-butylbenzene	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	n-propylbenzene	<	0.00071	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	paracymene	<	0.00073	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	sec-butylbenzene	<	0.00072	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	styrene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	tert-butylbenzene	<	0.00067	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	tetrachloroethene	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	toluene	<	0.00097	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	trans-1,2-dichloroethene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	trans-1,3-dichloropropene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	trichloroethene	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	trichloromonofluoromethane	<	0.00071	mg/Kg	UJ	Surrogate recovery too low	L2734
ISL-41 (1'-2')	8260	vinyl chloride	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2734
ISL-42 (1'-2')	6010	nickel	<	3.61	mg/Kg	U	Method blank contamination	L2722
ISL-42 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,1,1-trichloroethane	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,1,2-trichloroethane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,1-dichloroethane	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,1-dichloroethene	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,1-dichloropropene	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.00099	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00089	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,2-chlorotoluene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,2-dibromoethane	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,2-dichlorobenzene	<	0.00077	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,2-dichloroethane	<	0.0022	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,2-dichloropropane	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,3-dichlorobenzene	<	0.00074	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,3-dichloropropane	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	1,4-dichlorobenzene	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	2,2-dichloropropane	<	0.0034	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	4-chlorotoluene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	benzene	<	0.00041	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	bromobenzene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	bromochloromethane	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	bromodichloromethane	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	bromoform	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	bromomethane	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	carbon tetrachloride	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	chlorobenzene	<	0.00046	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	chloroethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	chloroform	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	chloromethane	<	0.0021	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	cis-1,2-dichloroethene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	dibromochloromethane	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	dibromomethane	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	dichlorodifluoromethane	<	0.00045	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	ethylbenzene	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	isopropylbenzene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	m+p-xylene	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	methylene chloride	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	n-butylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	n-propylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	naphthalene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	o-xylene	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	paracymene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	sec-butylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	styrene	<	0.00076	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	tert-butylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	tetrachloroethene	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	toluene	<	0.00089	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	trans-1,2-dichloroethene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	trans-1,3-dichloropropene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-42 (1'-2')	8260	trichloroethene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	trichloromonofluoromethane	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (1'-2')	8260	vinyl chloride	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-42 (32'-33')	6010	nickel	<	0.3	mg/Kg	UJ	Method blank contamination	L2739
ISL-43 (1'-2')	6010	nickel	<	4.2	mg/Kg	U	Method blank contamination	L2722
ISL-43 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,1-dichloroethene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,2,3-trichloropropane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00096	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,2-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,2-dibromoethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,2-dichlorobenzene	<	0.00083	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,2-dichloroethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,2-dichloropropane	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,3-dichlorobenzene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,3-dichloropropane	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	1,4-dichlorobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	4-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	benzene	<	0.00045	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	bromobenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	bromochloromethane	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	bromodichloromethane	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	bromoform	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	bromomethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	carbon tetrachloride	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	chlorobenzene	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	chloroethane	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	chloroform	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00089	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	dibromochloromethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	dichlorodifluoromethane	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	ethylbenzene	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	isopropylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	methylene chloride	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	n-butylbenzene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	n-propylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	paracymene	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	sec-butylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	styrene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	tert-butylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	tetrachloroethene	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	toluene	<	0.00097	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	trans-1,2-dichloroethene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	trans-1,3-dichloropropene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	trichloroethene	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	trichloromonofluoromethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (1'-2')	8260	vinyl chloride	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43 (19'-20')	6010	nickel	<	1.1	mg/Kg	UJ	Method blank contamination	L2739
ISL-43-A (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,1-dichloroethene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,2,3-trichloropropane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00096	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,2-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,2-dibromoethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,2-dichlorobenzene	<	0.00083	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,2-dichloroethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,2-dichloropropane	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,3-dichlorobenzene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,3-dichloropropane	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	1,4-dichlorobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	4-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	benzene	<	0.00045	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	bromobenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	bromochloromethane	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	bromodichloromethane	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	bromoform	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	bromomethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	carbon tetrachloride	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	chlorobenzene	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2722

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-43-A (1'-2')	8260	chloroethane	<	0.0006!	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	chloroform	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	cis-1,3-dichloropropene	<	0.00089	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	dibromochloromethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	dichlorodifluoromethane	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	ethylbenzene	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	isopropylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	methylene chloride	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	n-butylbenzene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	n-propylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	paracymene	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	sec-butylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	styrene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	tert-butylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	tetrachloroethene	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	toluene	<	0.00097	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	trans-1,2-dichloroethene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	trans-1,3-dichloropropene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	trichloroethene	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	trichloromonofluoromethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-43-A (1'-2')	8260	vinyl chloride	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,1-dichloroethene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00095	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,2-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,2-dibromoethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,2-dichlorobenzene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,2-dichloroethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,2-dichloropropane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,3-dichlorobenzene	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	1,4-dichlorobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	4-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	benzene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	bromobenzene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	bromochloromethane	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	bromodichloromethane	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	bromoform	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	bromomethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	chlorobenzene	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	chloroethane	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00088	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	dibromochloromethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	dichlorodifluoromethane	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	ethylbenzene	<	0.00085	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	isopropylbenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	methylene chloride	<	0.00085	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	n-butylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	n-propylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	paracymene	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	sec-butylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	styrene	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	tert-butylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	tetrachloroethene	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	toluene	<	0.00096	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	trans-1,2-dichloroethene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	trans-1,3-dichloropropene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	trichloroethene	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	trichloromonofluoromethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (1'-2')	8260	vinyl chloride	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,1,1,2-tetrachloroethane	<	0.00046	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,1,1-trichloroethane	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,1,2,2-tetrachloroethane	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,1,2-trichloroethane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,1-dichloroethane	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,1-dichloroethene	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,1-dichloropropene	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,2,3-trichlorobenzene	<	0.00098	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,2,3-trichloropropane	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2722

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-44 (50'-51')	8260	1,2,4-trichlorobenzene	<	0.00088	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,2,4-trimethylbenzene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,2-chlorotoluene	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,2-dibromo-3-chloropropane	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,2-dibromoethane	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,2-dichlorobenzene	<	0.00076	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,2-dichloroethane	<	0.0022	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,2-dichloropropane	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,3,5-trimethylbenzene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,3-dichlorobenzene	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,3-dichloropropane	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	1,4-dichlorobenzene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	2,2-dichloropropane	<	0.0034	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	4-chlorotoluene	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	benzene	<	0.00041	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	bromobenzene	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	bromochloromethane	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	bromodichloromethane	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	bromoform	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	bromomethane	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	carbon tetrachloride	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	chlorobenzene	<	0.00045	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	chloroethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	chloroform	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	chloromethane	<	0.0021	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	cis-1,2-dichloroethene	<	0.0018	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	cis-1,3-dichloropropene	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	dibromochloromethane	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	dibromomethane	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	dichlorodifluoromethane	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	ethylbenzene	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	isopropylbenzene	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	m+p-xylene	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	methylene chloride	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	n-butylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	n-propylbenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	naphthalene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	o-xylene	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	paracymene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	sec-butylbenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	styrene	<	0.00075	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	tert-butylbenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	tetrachloroethene	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	toluene	<	0.00088	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	trans-1,2-dichloroethene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	trans-1,3-dichloropropene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	trichloroethene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	trichloromonofluoromethane	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-44 (50'-51')	8260	vinyl chloride	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-45 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,1-dichloroethene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,2,3-trichloropropane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00096	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,2-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,2-dibromoethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,2-dichlorobenzene	<	0.00083	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,2-dichloroethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,2-dichloropropane	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,3-dichlorobenzene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,3-dichloropropane	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	1,4-dichlorobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	4-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	benzene	<	0.00045	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	bromobenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	bromochloromethane	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	bromodichloromethane	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	bromoform	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	bromomethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	carbon tetrachloride	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	chlorobenzene	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	chloroethane	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	chloroform	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00089	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	dibromochloromethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	dichlorodifluoromethane	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	ethylbenzene	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	isopropylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	methylene chloride	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	n-butylbenzene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	n-propylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2734

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-45 (1'-2')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	paracymene	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	sec-butylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	styrene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	tert-butylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	tetrachloroethene	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	toluene	<	0.00097	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	trans-1,2-dichloroethene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	trans-1,3-dichloropropene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	trichloroethene	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	trichloromonofluoromethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (1'-2')	8260	vinyl chloride	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,1,1,2-tetrachloroethane	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,1,1-trichloroethane	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,1,2,2-tetrachloroethane	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,1,2-trichloroethane	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,1-dichloroethane	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,1-dichloroethene	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,1-dichloropropene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,2,3-trichloropropane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,2,4-trichlorobenzene	<	0.00098	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,2,4-trimethylbenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,2-chlorotoluene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,2-dibromo-3-chloropropane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,2-dibromoethane	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,2-dichlorobenzene	<	0.00085	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,2-dichloroethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,2-dichloropropane	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,3,5-trimethylbenzene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,3-dichlorobenzene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,3-dichloropropane	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	1,4-dichlorobenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	2,2-dichloropropane	<	0.0038	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	4-chlorotoluene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	benzene	<	0.00046	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	bromobenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	bromochloromethane	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	bromodichloromethane	<	0.00074	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	bromoform	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	bromomethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	carbon tetrachloride	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	chlorobenzene	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	chloroethane	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	chloroform	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	chloromethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	cis-1,2-dichloroethene	<	0.0021	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	cis-1,3-dichloropropene	<	0.00091	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	dibromochloromethane	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	dichlorodifluoromethane	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	ethylbenzene	<	0.00088	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	isopropylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	m+p-xylene	<	0.0027	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	methylene chloride	<	0.00088	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	n-butylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	n-propylbenzene	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	o-xylene	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	paracymene	<	0.00074	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	sec-butylbenzene	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	styrene	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	tert-butylbenzene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	tetrachloroethene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	toluene	<	0.00099	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	trans-1,2-dichloroethene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	trans-1,3-dichloropropene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	trichloroethene	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	trichloromonofluoromethane	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-45 (50'-51')	8260	vinyl chloride	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2734
ISL-46 (1'-2')	7841	thallium	<	0.34	mg/Kg	UJ	Method blank contamination	L2713
ISL-46 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,1-dichloroethene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,2,3-trichloropropane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00096	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,2-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,2-dibromoethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,2-dichlorobenzene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,2-dichloroethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,2-dichloropropane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,3-dichlorobenzene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	1,4-dichlorobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	4-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2713

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-46 (1'-2')	8260	benzene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	bromobenzene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	bromochloromethane	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	bromodichloromethane	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	bromoform	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	bromomethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	chlorobenzene	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	chloroethane	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00088	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	dibromochloromethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	dichlorodifluoromethane	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	ethylbenzene	<	0.00085	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	isopropylbenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	methylene chloride	<	0.00085	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	n-butylbenzene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	n-propylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	paracymene	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	sec-butylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	styrene	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	tert-butylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	tetrachloroethene	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	toluene	<	0.00096	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	trans-1,2-dichloroethene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	trans-1,3-dichloropropene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	trichloroethene	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	trichloromonofluoromethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (1'-2')	8260	vinyl chloride	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-46 (14'-15')	6010	nickel	<	2.36	mg/Kg	U	Method blank contamination	L2739
ISL-47 (14'-15')	6010	nickel	<	0.92	mg/Kg	UJ	Method blank contamination	L2739
ISL-48 (0'-2')	6010	nickel	<	3.28	mg/Kg	U	Method blank contamination	WG5125
ISL-48 (0'-2')	6010	zinc	<	10.8	mg/Kg	U	Method blank contamination	WG5125
ISL-48 (0'-2')	*7421*	*lead*		*7.66*	*mg/Kg*	*J*	*Matrix spike recovery too low*	*WG5122*
ISL-48 (29'-31')	6010	copper	<	1.11	mg/Kg	U	Method blank contamination	WG5125
ISL-48 (29'-31')	6010	nickel	<	0.37	mg/Kg	UJ	Method blank contamination	WG5125
ISL-48 (29'-31')	6010	zinc	<	1.6	mg/Kg	UJ	Method blank contamination	WG5125
ISL-48 (29'-31')	7421	lead		1.04	mg/Kg	J	Matrix spike recovery too low	WG5122
ISL-49 (1'-2')	8260	trichloroethene		0.0063	mg/Kg	J	Surrogate recovery too high	L2662
ISL-49 (12'-13')	6010	nickel	<	0.72	mg/Kg	UJ	Method blank contamination	L2739
ISL-50 (14'-15')	6010	nickel	<	2.62	mg/Kg	U	Method blank contamination	L2739
ISL-50 (14'-15')	8260	1,1,1,2-tetrachloroethane	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,1,2,2-tetrachloroethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,1-dichloroethene	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,2,4-trichlorobenzene	<	0.00094	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,2,4-trimethylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,2-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,2-dibromo-3-chloropropane	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,2-dibromoethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,2-dichlorobenzene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,2-dichloroethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,2-dichloropropane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,3,5-trimethylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,3-dichlorobenzene	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	1,4-dichlorobenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	4-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	benzene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	bromobenzene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	bromochloromethane	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	bromodichloromethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	bromoform	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	bromomethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	chlorobenzene	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	chloroethane	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	cis-1,3-dichloropropene	<	0.00087	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	dibromochloromethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	dichlorodifluoromethane	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	ethylbenzene	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	isopropylbenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	methylene chloride	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	n-butylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	n-propylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2739

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-50 (14'-15')	8260	paracymene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	sec-butylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	styrene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	tert-butylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	tetrachloroethene	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	toluene	<	0.00095	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	trans-1,2-dichloroethene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	trans-1,3-dichloropropene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	trichloroethene	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	trichloromonofluoromethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (14'-15')	8260	vinyl chloride	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2739
ISL-50 (3'-4')	6010	nickel	<	3.09	mg/Kg	U	Method blank contamination	L2722
ISL-50 (3'-4')	8260	1,1,1,2-tetrachloroethane	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,1,2,2-tetrachloroethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,1-dichloroethene	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,2,4-trichlorobenzene	<	0.00094	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,2,4-trimethylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,2-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,2-dibromo-3-chloropropane	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,2-dibromoethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,2-dichlorobenzene	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,2-dichloroethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,2-dichloropropane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,3,5-trimethylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,3-dichlorobenzene	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	1,4-dichlorobenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	2,2-dichloropropane	<	0.0036	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	4-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	benzene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	bromobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	bromochloromethane	<	0.00077	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	bromodichloromethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	bromoform	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	bromomethane	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	chlorobenzene	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	chloroethane	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	cis-1,3-dichloropropene	<	0.00087	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	dibromochloromethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	dichlorodifluoromethane	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	ethylbenzene	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	isopropylbenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	methylene chloride	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	n-butylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	n-propylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	paracymene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	sec-butylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	styrene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	tert-butylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	tetrachloroethene	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	toluene	<	0.00095	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	trans-1,2-dichloroethene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	trans-1,3-dichloropropene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	trichloroethene	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	trichloromonofluoromethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-50 (3'-4')	8260	vinyl chloride	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-51 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,1,1-trichloroethane	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00075	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,1,2-trichloroethane	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,1-dichloroethane	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,1-dichloroethene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,1-dichloropropene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,2,3-trichloropropane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.001	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,2-chlorotoluene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,2-dibromoethane	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,2-dichlorobenzene	<	0.00087	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,2-dichloroethane	<	0.0025	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,2-dichloropropane	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,3-dichlorobenzene	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,3-dichloropropane	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	1,4-dichlorobenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	2,2-dichloropropane	<	0.0039	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	4-chlorotoluene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	benzene	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	bromobenzene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2713

Table B2-2
Data Qualified During Validation
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Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-51 (1'-2')	8260	bromochloromethane	<	0.00083	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	bromodichloromethane	<	0.00076	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	bromoform	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	bromomethane	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	carbon tetrachloride	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	chlorobenzene	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	chloroethane	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	chloroform	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	chloromethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	cis-1,2-dichloroethene	<	0.0021	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00093	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	dibromochloromethane	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	dibromomethane	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	dichlorodifluoromethane	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	ethylbenzene	<	0.0009	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	isopropylbenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	m+p-xylene	<	0.0028	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	methylene chloride	<	0.0009	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	n-butylbenzene	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	n-propylbenzene	<	0.00075	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	naphthalene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	o-xylene	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	paracymene	<	0.00076	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	sec-butylbenzene	<	0.00075	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	styrene	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	tert-butylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	tetrachloroethene	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	toluene	<	0.001	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	trans-1,2-dichloroethene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	trans-1,3-dichloropropene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	trichloroethene	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	trichloromonofluoromethane	<	0.00075	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (1'-2')	8260	vinyl chloride	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	6010	zinc	<	1.2	mg/Kg	UJ	Method blank contamination	L2713
ISL-51 (45'-46')	8260	1,1,1,2-tetrachloroethane	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,1,2,2-tetrachloroethane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,1-dichloroethene	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,2,3-trichlorobenzene	<	0.001	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,2,4-trichlorobenzene	<	0.00093	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,2,4-trimethylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,2-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,2-dibromo-3-chloropropane	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,2-dibromoethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,2-dichlorobenzene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,2-dichloroethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,2-dichloropropane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,3,5-trimethylbenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,3-dichlorobenzene	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	1,4-dichlorobenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	2,2-dichloropropane	<	0.0036	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	4-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	benzene	<	0.00043	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	bromobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	bromochloromethane	<	0.00077	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	bromodichloromethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	bromoform	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	bromomethane	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	chlorobenzene	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	chloroethane	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	chloromethane	<	0.0022	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	cis-1,3-dichloropropene	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	dibromochloromethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	dichlorodifluoromethane	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	ethylbenzene	<	0.00083	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	isopropylbenzene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	methylene chloride	<	0.00083	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	n-butylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	n-propylbenzene	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	paracymene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	sec-butylbenzene	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	styrene	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	tert-butylbenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	tetrachloroethene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	toluene	<	0.00094	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	trans-1,2-dichloroethene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	trans-1,3-dichloropropene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	trichloroethene	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	trichloromonofluoromethane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-51 (45'-46')	8260	vinyl chloride	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-52 (45'-46')	8270	1,2,4,5-tetrachlorobenzene	<	0.16	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	1,2,4-trichlorobenzene-	<	0.098	mg/Kg	UJ	Holding time violation (extraction)	L2640

Table B2-2
Data Qualified During Validation
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Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-52 (45'-46')	8270	1,2-dichlorobenzene--	<	0.1	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	1,2-diphenylhydrazine	<	0.16	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	1,3-dichlorobenzene--	<	0.12	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	1,4-dichlorobenzene--	<	0.12	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	1-chloronaphthalene	<	0.4	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	1-naphthylamine	<	0.14	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2,3,4,6-tetrachlorophenol	<	0.2	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2,4,5-trichlorophenol	<	0.23	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2,4,6-trichlorophenol	<	0.16	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2,4-dichlorophenol	<	0.15	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2,4-dimethylphenol	<	0.13	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2,4-dinitrophenol	<	0.26	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2,4-dinitrotoluene	<	0.12	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2,6-dichlorophenol	<	0.15	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2,6-dinitrotoluene	<	0.15	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2-chloronaphthalene	<	0.21	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2-chlorophenol	<	0.12	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2-methyl naphthalene	<	0.085	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2-methylphenol	<	0.079	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2-naphthylamine	<	0.13	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2-nitroaniline	<	0.15	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2-nitrophenol	<	0.15	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	2-picoline	<	0.11	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	3,3'-dichlorobenzidine	<	0.14	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	3-methylcholanthrene	<	0.11	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	3-nitroaniline	<	0.14	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	4,6-dinitro-2-methylphenol	<	0.15	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	4-aminobiphenyl	<	0.13	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	4-bromophenyl phenyl ether	<	0.11	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	4-chloro-3-methylphenol	<	0.13	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	4-chloroaniline	<	0.15	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	4-chlorophenyl phenyl ether	<	0.14	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	4-methylphenol	<	0.079	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	4-nitroaniline	<	0.26	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	4-nitrophenol	<	0.3	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	7,12-dimethylbenz(a)anthracene	<	0.12	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	a,a-dimethylphenethylamine	<	0.15	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	acenaphthene	<	0.15	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	acenaphthylene	<	0.12	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	acetophenone	<	0.12	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	aniline	<	0.099	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	anthracene	<	0.11	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	benzidine	<	0.25	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	benzo(a)anthracene	<	0.11	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	benzo(a)pyrene	<	0.14	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	benzo(b)fluoranthene	<	0.09	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	benzo(g,h,i)perylene	<	0.13	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	benzo(k)fluoranthene	<	0.15	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	benzoic acid	<	2.3	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	benzyl alcohol	<	0.1	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	bis(2-chloroethoxy)methane	<	0.12	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	bis(2-chloroethyl)ether	<	0.089	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	bis(2-chloroisopropyl)ether	<	0.075	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	bis(2-ethylhexyl)phthalate	<	0.95	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	butyl benzyl phthalate	<	0.096	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	chrysene	<	0.17	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	di-n-butyl phthalate	<	0.16	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	di-n-octyl phthalate	<	0.11	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	dibenz(a,h)anthracene	<	0.14	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	dibenz(a,j)acridine	<	0.21	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	dibenzofuran	<	0.13	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	diethyl phthalate	<	0.21	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	dimethyl phthalate	<	0.2	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	diphenylamine	<	0.17	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	ethyl methanesulfonate	<	0.1	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	fluoranthene	<	0.16	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	fluorene	<	0.13	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	hexachlorobenzene	<	0.097	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	hexachlorobutadiene--	<	0.12	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	hexachlorocyclopentadiene	<	0.079	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	hexachloroethane	<	0.19	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	indeno(1,2,3-cd)pyrene	<	0.13	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	isophorone	<	0.12	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	methyl methanesulfonate	<	0.11	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	n-nitrosodibutylamine	<	0.12	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	n-nitrosodimethylamine	<	0.081	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	n-nitrosodiphenylamine	<	0.33	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	n-nitrosodipropylamine	<	0.12	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	n-nitrosopiperidine	<	0.14	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	naphthalene--	<	0.091	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	nitrobenzene	<	0.2	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	p-(dimethylamino)azobenzene	<	0.1	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	pentachlorobenzene	<	0.13	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	pentachloronitrobenzene	<	0.19	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	pentachlorophenol	<	0.19	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	phenacetin	<	0.24	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	phenanthrene	<	0.099	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	phenol	<	0.14	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	pronamide	<	0.15	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-52 (45'-46')	8270	pyrene	<	0.14	mg/Kg	UJ	Holding time violation (extraction)	L2640
ISL-53 (30'-31')	6010	zinc	<	1.3	mg/Kg	UJ	Method blank contamination	L2629
ISL-55 (40'-41')	6010	nickel	<	0.28	mg/Kg	UJ	Method blank contamination	L2640
ISL-56 (1'-2')	6010	nickel	<	1	mg/Kg	UJ	Method blank contamination	L2716
ISL-56 (1'-2')	6010	zinc	<	4.65	mg/Kg	U	Method blank contamination	L2716
ISL-56 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00049	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-56 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,1-dichloroethene	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.001	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00093	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00062	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,2-chlorotoluene	<	0.00057	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,2-dibromoethane	<	0.00055	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,2-dichlorobenzene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,2-dichloroethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,2-dichloropropane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00061	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,3-dichlorobenzene	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	1,4-dichlorobenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	2,2-dichloropropane	<	0.0036	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	4-chlorotoluene	<	0.00057	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	benzene	<	0.00043	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	bromobenzene	<	0.00063	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	bromochloromethane	<	0.00076	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	bromodichloromethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	bromoform	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	bromomethane	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	chlorobenzene	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	chloroethane	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	chloromethane	<	0.0022	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	dibromochloromethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	dichlorodifluoromethane	<	0.00047	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	ethylbenzene	<	0.00083	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	isopropylbenzene	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	methylene chloride	<	0.00083	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	n-butylbenzene	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	n-propylbenzene	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	paracymene	<	0.0007	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	sec-butylbenzene	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	styrene	<	0.00079	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	tert-butylbenzene	<	0.00065	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	tetrachloroethene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	toluene	<	0.00094	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	trans-1,2-dichloroethene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	trans-1,3-dichloropropene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	trichloroethene		0.0041	mg/Kg	J	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	trichloromonofluoromethane	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	L2716
ISL-56 (1'-2')	8260	vinyl chloride	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)/surrogate recovery too low	L2716
ISL-56 (50'-51')	6010	zinc	<	4.66	mg/Kg	U	Method blank contamination	L2716
ISL-56 (50'-51')	8260	1,1,1,2-tetrachloroethane	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,1,2,2-tetrachloroethane	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,1-dichloroethene	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,2,3-trichlorobenzene	<	0.001	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,2,4-trichlorobenzene	<	0.00094	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,2,4-trimethylbenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,2-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,2-dibromo-3-chloropropane	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,2-dibromoethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,2-dichlorobenzene	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,2-dichloroethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,2-dichloropropane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,3,5-trimethylbenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,3-dichlorobenzene	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	1,4-dichlorobenzene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	2,2-dichloropropane	<	0.0036	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	4-chlorotoluene	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	benzene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	bromobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	bromochloromethane	<	0.00077	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	bromodichloromethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	bromoform	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	bromomethane	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	chlorobenzene	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	chloroethane	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	cis-1,3-dichloropropene	<	0.00086	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	dibromochloromethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2716

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-56 (50'-51')	8260	dichlorodifluoromethane	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	ethylbenzene	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	isopropylbenzene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	methylene chloride	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	n-butylbenzene	<	0.00066	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	n-propylbenzene	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	paracymene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	sec-butylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	styrene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	tert-butylbenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	tetrachloroethene	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	toluene	<	0.00094	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	trans-1,2-dichloroethene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	trans-1,3-dichloropropene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	trichloroethene	<	0.00047	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	trichloromonofluoromethane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-56 (50'-51')	8260	vinyl chloride	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2716
ISL-57 (55'-56')	8260	1,1,1,2-tetrachloroethane	<	0.00048	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,1,1-trichloroethane	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,1,2,2-tetrachloroethane	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,1,2-trichloroethane	<	0.0013	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,1-dichloroethane	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,1-dichloroethene	<	0.00052	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,1-dichloropropene	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,2,3-trichlorobenzene	<	0.001	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,2,4-trichlorobenzene	<	0.00091	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,2,4-trimethylbenzene	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,2-chlorotoluene	<	0.00055	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,2-dibromo-3-chloropropane	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,2-dibromoethane	<	0.00054	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,2-dichlorobenzene	<	0.00079	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,2-dichloroethane	<	0.0023	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,2-dichloropropane	<	0.00055	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,3,5-trimethylbenzene	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	1,3-dichlorobenzene	<	0.00076	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	*8260*	*1,3-dichloropropane*	*<*	*0.0016*	*mg/Kg*	*UJ*	*Surrogate recovery too low*	*L2645*
ISL-57 (55'-56')	8260	1,4-dichlorobenzene	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	2,2-dichloropropane	<	0.0035	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	4-chlorotoluene	<	0.00055	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	benzene	<	0.00042	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	bromobenzene	<	0.00061	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	bromochloromethane	<	0.00075	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	bromodichloromethane	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	bromoform	<	0.0005	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	bromomethane	<	0.00053	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	chlorobenzene	<	0.00047	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	chloroethane	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	chloroform	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	chloromethane	<	0.0022	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	cis-1,2-dichloroethene	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	cis-1,3-dichloropropene	<	0.00084	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	dibromochloromethane	<	0.00054	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	dibromomethane	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	dichlorodifluoromethane	<	0.00046	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	ethylbenzene	<	0.00081	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	isopropylbenzene	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	m+p-xylene	<	0.0025	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	methylene chloride	<	0.00081	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	n-butylbenzene	<	0.00065	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	n-propylbenzene	<	0.00067	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	naphthalene	<	0.0011	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	o-xylene	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	paracymene	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	sec-butylbenzene	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	styrene	<	0.00078	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	tert-butylbenzene	<	0.00064	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	tetrachloroethene	<	0.00053	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	toluene	<	0.00092	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	trans-1,2-dichloroethene	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	trans-1,3-dichloropropene	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	trichloroethene	<	0.00046	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	trichloromonofluoromethane	<	0.00067	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-57 (55'-56')	8260	vinyl chloride	<	0.00051	mg/Kg	UJ	Surrogate recovery too low	L2645
ISL-58 (55'-56')	6010	zinc	<	2.27	mg/Kg	U	Method blank contamination	L2662
ISL-59 (1'-2')	6010	nickel	<	1.8	mg/Kg	UJ	Method blank contamination	L2640
ISL-59 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00051	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00071	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,1-dichloroethene	<	0.00054	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00095	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00063	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,2-chlorotoluene	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,2-dibromoethane	<	0.00056	mg/Kg	UJ	Surrogate recovery too low	L2640

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-59 (1'-2')	8260	1,2-dichlorobenzene	<	0.00082	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,2-dichloroethane	<	0.0024	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,2-dichloropropane	<	0.00057	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00062	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,3-dichlorobenzene	<	0.00079	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	1,4-dichlorobenzene	<	0.00063	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	4-chlorotoluene	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	benzene	<	0.00044	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	bromobenzene	<	0.00064	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	bromochloromethane	<	0.00078	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	bromodichloromethane	<	0.00072	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	bromoform	<	0.00053	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	bromomethane	<	0.00055	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	chlorobenzene	<	0.00049	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	chloroethane	<	0.00061	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	chloroform	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00088	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	dibromochloromethane	<	0.00057	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	dichlorodifluoromethane	<	0.00048	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	ethylbenzene	<	0.00085	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	isopropylbenzene	<	0.00061	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	methylene chloride	<	0.00085	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	n-butylbenzene	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	n-propylbenzene	<	0.0007	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	paracymene	<	0.00072	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	sec-butylbenzene	<	0.00071	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	styrene	<	0.00081	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	tert-butylbenzene	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	tetrachloroethene	<	0.00056	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	toluene	<	0.00096	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	trans-1,2-dichloroethene	<	0.00062	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	trans-1,3-dichloropropene	<	0.00062	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	trichloroethene	<	0.00048	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	trichloromonofluoromethane	<	0.0007	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-59 (1'-2')	8260	vinyl chloride	<	0.00053	mg/Kg	UJ	Surrogate recovery too low	L2640
ISL-62 (1'-2')	8260	hexachlorobutadiene		0.0047	mg/Kg	J	Surrogate recovery too high	L2713
ISL-62 (1'-2')	8260	naphthalene	<	0.0082	mg/Kg	UJ	Method blank contamination/surrogate recovery too high	L2713
ISL-62 (15'-16')	6010	zinc	<	2.34	mg/Kg	U	Method blank contamination	L2713
ISL-62 (15'-16')	8260	1,1,1,2-tetrachloroethane	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,1,1-trichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,1,2,2-tetrachloroethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,1,2-trichloroethane	<	0.0014	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,1-dichloroethane	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,1-dichloroethene	<	0.00054	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,1-dichloropropene	<	0.0019	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,2,3-trichloropropane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,2,4-trichlorobenzene	<	0.00096	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,2,4-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,2-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,2-dibromo-3-chloropropane	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,2-dibromoethane	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,2-dichlorobenzene	<	0.00082	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,2-dichloroethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,2-dichloropropane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,3,5-trimethylbenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,3-dichlorobenzene	<	0.0008	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,3-dichloropropane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	1,4-dichlorobenzene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	2,2-dichloropropane	<	0.0037	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	4-chlorotoluene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	benzene	<	0.00044	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	bromobenzene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	bromochloromethane	<	0.00078	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	bromodichloromethane	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	bromoform	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	bromomethane	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	chlorobenzene	<	0.00049	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	chloroethane	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	chloroform	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	chloromethane	<	0.0023	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	cis-1,2-dichloroethene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	cis-1,3-dichloropropene	<	0.00088	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	dibromochloromethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	dibromomethane	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	dichlorodifluoromethane	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	ethylbenzene	<	0.00085	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	isopropylbenzene	<	0.00061	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	m+p-xylene	<	0.0026	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	methylene chloride	<	0.00085	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	n-butylbenzene	<	0.00068	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	n-propylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	o-xylene	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2713

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-62 (15'-16')	8260	paracymene	<	0.00072	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	sec-butylbenzene	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	styrene	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	tert-butylbenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	tetrachloroethene	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	toluene	<	0.00096	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	trans-1,2-dichloroethene	<	0.00062	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	trans-1,3-dichloropropene	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	trichloroethene	<	0.00048	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	trichloromonofluoromethane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-62 (15'-16')	8260	vinyl chloride	<	0.00053	mg/Kg	UJ	Holding time violation (analysis)	L2713
ISL-63 (1'-2')	6010	nickel	<	4.39	mg/Kg	U	Method blank contamination	L2739
ISL-63 (40'-41')	6010	nickel	<	0.28	mg/Kg	UJ	Method blank contamination	L2739
ISL-7 (0'-2')	7421	lead		6.94	mg/Kg	J	Matrix spike recovery too high	WG5111
ISL-7 (1'-2')	6010	nickel	<	1.4	mg/Kg	UJ	Method blank contamination	L2722
ISL-7 (1'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00052	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,1,1-trichloroethane	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00074	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,1,2-trichloroethane	<	0.0015	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,1-dichloroethane	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,1-dichloroethene	<	0.00056	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,1-dichloropropene	<	0.002	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,2,3-trichloropropane	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,2,4-trichlorobenzene	<	0.00099	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,2,4-trimethylbenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,2-chlorotoluene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00071	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,2-dibromoethane	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,2-dichlorobenzene	<	0.00085	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,2-dichloroethane	<	0.0025	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,2-dichloropropane	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,3,5-trimethylbenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,3-dichlorobenzene	<	0.00083	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,3-dichloropropane	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	1,4-dichlorobenzene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	2,2-dichloropropane	<	0.0038	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	4-chlorotoluene	<	0.0006	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	benzene	<	0.00046	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	bromobenzene	<	0.00067	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	bromochloromethane	<	0.00081	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	bromodichloromethane	<	0.00075	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	bromoform	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	bromomethane	<	0.00057	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	carbon tetrachloride	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	chlorobenzene	<	0.00051	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	chloroethane	<	0.00063	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	chloroform	<	0.0016	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	chloromethane	<	0.0024	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	cis-1,2-dichloroethene	<	0.0021	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	cis-1,3-dichloropropene	<	0.00091	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	dibromochloromethane	<	0.00059	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	dibromomethane	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	dichlorodifluoromethane	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	ethylbenzene	<	0.00088	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	isopropylbenzene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	m+p-xylene	<	0.0027	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	methylene chloride	<	0.00088	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	n-butylbenzene	<	0.0007	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	n-propylbenzene	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	o-xylene	<	0.0017	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	paracymene	<	0.00075	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	sec-butylbenzene	<	0.00074	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	styrene	<	0.00084	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	tert-butylbenzene	<	0.00069	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	tetrachloroethene	<	0.00058	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	toluene	<	0.001	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	trans-1,2-dichloroethene	<	0.00064	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	trans-1,3-dichloropropene	<	0.00065	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	trichloroethene	<	0.0005	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	trichloromonofluoromethane	<	0.00073	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-7 (1'-2')	8260	vinyl chloride	<	0.00055	mg/Kg	UJ	Holding time violation (analysis)	L2722
ISL-8 (0'-2')	7421	lead		28.5	mg/Kg	J	Matrix spike recovery too high	WG5111
ISL-8 (0'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00055	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,1,1-trichloroethane	<	0.0021	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00077	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,1,2-trichloroethane	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,1-dichloroethane	<	0.0021	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,1-dichloroethene	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,1-dichloropropene	<	0.0021	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,2,3-trichlorobenzene	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,2,3-trichloropropane	<	0.0014	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,2,4-trichlorobenzene	<	0.001	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,2,4-trimethylbenzene	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,2-chlorotoluene	<	0.00063	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00075	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,2-dibromoethane	<	0.00061	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,2-dichlorobenzene	<	0.0009	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,2-dichloroethane	<	0.0026	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,2-dichloropropane	<	0.00062	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,3,5-trimethylbenzene	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,3-dichlorobenzene	<	0.00086	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,3-dichloropropane	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	1,4-dichlorobenzene	<	0.00069	mg/Kg	UJ	Surrogate recovery too low	WG5325

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-8 (0'-2')	8260	2,2-dichloropropane	<	0.004	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	4-chlorotoluene	<	0.00063	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	benzene	<	0.00048	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	bromobenzene	<	0.0007	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	bromochloromethane	<	0.00085	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	bromodichloromethane	<	0.00078	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	bromoform	<	0.00057	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	bromomethane	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	carbon tetrachloride	<	0.0017	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	chlorobenzene	<	0.00054	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	chloroethane	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	chloroform	<	0.0017	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	chloromethane	<	0.0025	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	cis-1,2-dichloroethene		0.054	mg/Kg	J	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	cis-1,3-dichloropropene	<	0.00096	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	dibromochloromethane	<	0.00062	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	dibromomethane	<	0.0017	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	dichlorodifluoromethane	<	0.00052	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	ethylbenzene	<	0.00093	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	hexachlorobutadiene	<	0.0014	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	isopropylbenzene	<	0.00067	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	m-xylene/p-xylene	<	0.0029	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	methylene chloride	<	0.00093	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	n-butylbenzene	<	0.00073	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	n-propylbenzene	<	0.00077	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	naphthalene	<	0.0013	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	o-xylene	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	paracymene	<	0.00078	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	sec-butylbenzene	<	0.00077	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	styrene	<	0.00088	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	tert-butylbenzene	<	0.00072	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	tetrachloroethene	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	toluene	<	0.001	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	trans-1,2-dichloroethene		0.011	mg/Kg	J	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	trans-1,3-dichloropropene	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	trichloroethene		0.38	mg/Kg	J	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	trichloromonofluoromethane	<	0.00077	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (0'-2')	8260	vinyl chloride	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	6010	antimony		4.2	mg/Kg	J	Matrix spike recovery below 30 percent	WG5061
ISL-8 (9'-11')	7421	lead		8.95	mg/Kg	J	Matrix spike recovery too high	WG5111
ISL-8 (9'-11')	8260	1,1,1,2-tetrachloroethane	<	0.00053	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,1,1-trichloroethane	<	0.002	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,1,2,2-tetrachloroethane	<	0.00075	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,1,2-trichloroethane	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,1-dichloroethane	<	0.002	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,1-dichloroethene	<	0.00057	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,1-dichloropropene	<	0.002	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,2,3-trichlorobenzene	<	0.0011	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,2,3-trichloropropane	<	0.0013	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,2,4-trichlorobenzene	<	0.001	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,2,4-trimethylbenzene	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,2-chlorotoluene	<	0.00061	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,2-dibromo-3-chloropropane	<	0.00072	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,2-dibromoethane	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,2-dichlorobenzene	<	0.00087	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,2-dichloroethane	<	0.0025	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,2-dichloropropane	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,3,5-trimethylbenzene	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,3-dichlorobenzene	<	0.00084	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,3-dichloropropane	<	0.0017	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	1,4-dichlorobenzene	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	2,2-dichloropropane	<	0.0039	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	4-chlorotoluene	<	0.00061	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	benzene	<	0.00047	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	bromobenzene	<	0.00067	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	bromochloromethane	<	0.00082	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	bromodichloromethane	<	0.00076	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	bromoform	<	0.00055	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	bromomethane	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	carbon tetrachloride	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	chlorobenzene	<	0.00052	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	chloroethane	<	0.00064	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	chloroform	<	0.0016	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	chloromethane	<	0.0024	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	cis-1,2-dichloroethene	<	0.0021	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	cis-1,3-dichloropropene	<	0.00092	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	dibromochloromethane	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	dibromomethane	<	0.0017	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	dichlorodifluoromethane	<	0.00051	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	ethylbenzene	<	0.00089	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	hexachlorobutadiene	<	0.0013	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	isopropylbenzene	<	0.00064	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	m-xylene/p-xylene	<	0.0028	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	methylene chloride	<	0.00089	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	n-butylbenzene	<	0.00071	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	n-propylbenzene	<	0.00074	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	naphthalene	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	o-xylene	<	0.0017	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	paracymene	<	0.00076	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	sec-butylbenzene	<	0.00075	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	styrene	<	0.00085	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	tert-butylbenzene	<	0.0007	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	tetrachloroethene	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	toluene	<	0.001	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	trans-1,2-dichloroethene	<	0.00065	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	trans-1,3-dichloropropene	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	WG5325

Table B2-2
Data Qualified During Validation
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
ISL-8 (9'-11')	8260	trichloroethene		0.55	mg/Kg	J	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	trichloromonofluoromethane	<	0.00074	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-8 (9'-11')	8260	vinyl chloride	<	0.00056	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	7421	lead		4.17	mg/Kg	J	Matrix spike recovery too high	WG5111
ISL-9 (0'-2')	8260	1,1,1,2-tetrachloroethane	<	0.00048	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,1,1-trichloroethane	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,1,2,2-tetrachloroethane	<	0.00067	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,1,2-trichloroethane	<	0.0013	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,1-dichloroethane	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,1-dichloroethene	<	0.00051	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,1-dichloropropene	<	0.0018	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,2,3-trichlorobenzene	<	0.001	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,2,3-trichloropropane	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,2,4-trichlorobenzene	<	0.0009	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,2,4-trimethylbenzene	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,2-chlorotoluene	<	0.00054	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,2-dibromo-3-chloropropane	<	0.00065	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,2-dibromoethane	<	0.00053	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,2-dichlorobenzene	<	0.00077	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,2-dichloroethane	<	0.0022	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,2-dichloropropane	<	0.00054	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,3,5-trimethylbenzene	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,3-dichlorobenzene	<	0.00075	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,3-dichloropropane	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	1,4-dichlorobenzene	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	2,2-dichloropropane	<	0.0035	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	4-chlorotoluene	<	0.00054	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	benzene	<	0.00042	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	bromobenzene	<	0.0006	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	bromochloromethane	<	0.00074	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	bromodichloromethane	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	bromoform	<	0.0005	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	bromomethane	<	0.00052	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	carbon tetrachloride	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	chlorobenzene	<	0.00046	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	chloroethane	<	0.00057	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	chloroform	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	chloromethane	<	0.0022	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	cis-1,2-dichloroethene	<	0.0019	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	cis-1,3-dichloropropene	<	0.00083	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	dibromochloromethane	<	0.00053	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	dibromomethane	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	dichlorodifluoromethane	<	0.00045	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	ethylbenzene	<	0.0008	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	hexachlorobutadiene	<	0.0012	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	isopropylbenzene	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	m-xylene/p-xylene	<	0.0025	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	methylene chloride	<	0.0008	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	n-butylbenzene	<	0.00064	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	n-propylbenzene	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	naphthalene	<	0.0011	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	o-xylene	<	0.0015	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	paracymene	<	0.00068	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	sec-butylbenzene	<	0.00067	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	styrene	<	0.00076	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	tert-butylbenzene	<	0.00063	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	tetrachloroethene	<	0.00052	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	toluene	<	0.0009	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	trans-1,2-dichloroethene	<	0.00058	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	trans-1,3-dichloropropene	<	0.00059	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	trichloroethene	<	0.00045	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	trichloromonofluoromethane	<	0.00066	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (0'-2')	8260	vinyl chloride	<	0.0005	mg/Kg	UJ	Surrogate recovery too low	WG5325
ISL-9 (9'-11')	6010	zinc	<	5.3	mg/Kg	U	Method blank contamination	WG5061
ISL-9 (9'-11')	7421	lead		4.53	mg/Kg	J	Matrix spike recovery too high	WG5111
ISW-4	8270	2-chlorophenol	<	0.0033	mg/L	J	LCS recovery too high	L2664
ISW-4	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	J	LCS recovery too high	L2664
ISW-4	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2664
ISW-4	8270	pentachlorophenol	<	0.0051	mg/L	J	LCS recovery too high	L2664
ISW-4	8270	phenol	<	0.0038	mg/L	J	LCS recovery too high	L2664
ISW-4Q	8270	2-chlorophenol	<	0.0033	mg/L	J	LCS recovery too high	L2664
ISW-4Q	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	J	LCS recovery too high	L2664
ISW-4Q	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2664
ISW-4Q	8270	pentachlorophenol	<	0.0051	mg/L	J	LCS recovery too high	L2664
ISW-4Q	8270	phenol	<	0.0038	mg/L	J	LCS recovery too high	L2664
ISW-5	8270	2-chlorophenol	<	0.0033	mg/L	J	LCS recovery too high	L2664
ISW-5	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	J	LCS recovery too high	L2664
ISW-5	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2664
ISW-5	8270	pentachlorophenol	<	0.0051	mg/L	J	LCS recovery too high	L2664
ISW-5	8270	phenol	<	0.0038	mg/L	J	LCS recovery too high	L2664
ISW-6	8270	2-chlorophenol	<	0.0033	mg/L	J	LCS recovery too high	L2664
ISW-6	8270	4-chloro-3-methylphenol	<	0.0036	mg/L	J	LCS recovery too high	L2664
ISW-6	8270	4-nitrophenol	<	0.008	mg/L	J	LCS recovery too high	L2664
ISW-6	8270	pentachlorophenol	<	0.0051	mg/L	J	LCS recovery too high	L2664
ISW-6	8270	phenol	<	0.0038	mg/L	J	LCS recovery too high	L2664

Table B2-3
Summary of Laboratory QC Nonconformances
Allied Industrial Area
Macon, Georgia
Rust Project No. 33941.000

Matrix	Method	Analysis	Rustflag	Rustflag Explanation	Analytes Affected
groundwater	6010	inorganics	Bm	Method blank contamination	33
groundwater	6010	inorganics	Ml	Matrix spike recovery too low	3
groundwater	7740	selenium	Mil	Matrix spike recovery too low	5
groundwater	7841	thallium	Mil	Matrix spike recovery too low	5
groundwater	8080	pesticides/PCBs	Sl	Surrogate recovery too low	135
groundwater	8260	volatiles	Hta	Holding time violation (analysis)	236
groundwater	8260	volatiles	Ml	Matrix spike recovery too low	2
groundwater	8260	volatiles	MlMr	Matrix spike recovery too low/RPD too high between MS and MSD	2
groundwater	8260	volatiles	Mr	RPD too high between MS and MSD	5
groundwater	8260	volatiles	Sl	Surrogate recovery too low	104
groundwater	8260	volatiles	SlMlMr	Surrogate recovery too low/matrix spike recovery too low/RPD too high between MS and MSD	3
groundwater	8260	volatiles	SlMr	Surrogate recovery too low/RPD too high between MS and MSD	1
groundwater	8260	volatiles	Su	Surrogate recovery too high	2
groundwater	8260	volatiles	SuSl	Surrogate recovery too high and too low	8
groundwater	8260	volatiles	SuSlMlMr	Surrogate recovery too high and too low/matrix spike recovery too low/RPD too high between MS and MSD	1
groundwater	8260	volatiles	SuSlMr	Surrogate recovery too high and too low/RPD too high between MS and MSD	1
groundwater	8270	semivolatiles	Bm	Method blank contamination	7
groundwater	8270	semivolatiles	Hte	Holding time violation (extraction)	178
groundwater	8270	semivolatiles	HteLl	LCS recovery too low	1
groundwater	8270	semivolatiles	HteLu	Holding time violation (extraction)/LCS recovery too high	5
groundwater	8270	semivolatiles	Ll	LCS recovery too low	26
groundwater	8270	semivolatiles	Lu	LCS recovery too high	51
groundwater	8270	semivolatiles	Mu	Matrix spike recovery too high	10
groundwater	8270	semivolatiles	Sr	Surrogate recovery below 10 percent	32
groundwater	8330	explosive residues	Ll	LCS recovery too low	146
groundwater	8330	explosive residues	Lu	LCS recovery too high	10
sediment	8260	volatiles	Sl	Surrogate recovery too low	234
sediment	8260	volatiles	SuSl	Surrogate recovery too high and too low	2
soil	6010	inorganics	Bm	Method blank contamination	78
soil	6010	inorganics	Mir	Matrix spike recovery below 30 percent	22
soil	6010	inorganics	Ml	Matrix spike recovery too low	2
soil	6010	inorganics	Mu	Matrix spike recovery too high	1
soil	7421	lead	Mil	Matrix spike recovery too low	9
soil	7421	lead	Miu	Matrix spike recovery too high	13
soil	7471	mercury	Mir	Matrix spike recovery below 30 percent	22
soil	7841	thallium	Bm	Method blank contamination	6
soil	8260	volatiles	BmSu	Method blank contamination/surrogate recovery too high	1
soil	8260	volatiles	Hta	Holding time violation (analysis)	1534
soil	8260	volatiles	HtaSl	Holding time violation (analysis)/surrogate recovery too low	70
soil	8260	volatiles	Ml	Matrix spike recovery too low	1
soil	8260	volatiles	Mr	RPD too high between MS and MSD	28
soil	8260	volatiles	Sl	Surrogate recovery too low	401
soil	8260	volatiles	SlMr	Surrogate recovery too low/RPD too high between MS and MSD	1
soil	8260	volatiles	Su	Surrogate recovery too high	3
soil	8270	semivolatiles	Hte	Holding time violation (extraction)	92
soil	8270	semivolatiles	Ml	Matrix spike recovery too low	14
soil	8270	semivolatiles	Mu	Matrix spike recovery too high	1
soil	8270	semivolatiles	Sr	Surrogate recovery below 10 percent	168
soil	8330	explosive residues	Ll	LCS recovery too low	219
soil	8330	explosive residues	Ml	Matrix spike recovery too low	7
soil	8330	explosive residues	MlLl	LCS recovery too low	6
surface water	8270	semivolatiles	Lu	LCS recovery too high	20

RUST ENVIRONMENT & INFRASTRUCTURE

A-E Daily
Quality Control Report

ER 1110-1-263
1 Oct 92

DATE 12/4/95

DAY	S	M	T	W	TH	F	S
		X					

CLIENT PROJECT MANAGER Alan Shirey ~~T Houtra~~ CA
PROJECT MNOP
RUST E&I PROJECT NO. 33941.320
CONTRACT NO. _____

WEATHER	Bright Sun	Clear X	Overcast	Rain	Snow
TEMP	To 32	32-50 X	50-70	70-85	85 up
WIND	Still	Moderate X	High	Report No.	
HUMIDITY	Dry	Moderate X	Humid	1	

SUBCONTRACTORS ON SITE: Rust- David Heller
Cathy Adams
TEG- Sam McDaniel, Robert Brademan

EQUIPMENT ON SITE: OVA
Health + Safety equipment

WORK PERFORMED (INCLUDING SAMPLING):

- D. Heller + C. Adams
  Sorted all laboratory bottles and arranged storage room.
- DPT TSL-13, TSL-7
  Two split spoons were broken and decided to set up on another DPT
- Collected one sample
- Off Site

SHEET _____ OF _____

Rev 2.93

FS08/Earth.Sci

ER 1110-1-263
1 Oct 92

PROJECT MNOP REPORT NO. 1

RUST E&I PROJECT NO. 33941.320 DATE 12/4/95

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):

C. Adams calibrated OVA

HEALTH AND SAFETY LEVELS AND ACTIVITIES:

Tyvek, Hard hat, Steel toed boots
Gloves, safety glasses
Level D

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION TAKEN:

2 split spoons were lost in ground
Move to new location

SPECIAL NOTES:

TOMORROW'S EXPECTATIONS:

Set up on new DPT and see
what rig can do

BY Cadams TITLE Geologist

SHEET 1 OF 1

Rev. 2/93 F508a/Earth.Sci

RUST ENVIRONMENT & INFRASTRUCTURE

A–E Daily Quality Control Report

ER 1110–1–263
1 Oct 92

DATE 12/5/95

DAY	S	M	T	W	TH	F	S
			X				

WEATHER	Bright Sun	Clear	Overcast	Rain X	Snow
TEMP	To 32 X	32–50	50–70	70–85	85 up
WIND	Still	Moderate	High	Report No.	
HUMIDITY	Dry	Moderate	Humid	2	

CLIENT PROJECT MANAGER Alan Shirey T. Hocum QA
PROJECT MNOP
RUST E&I PROJECT NO. 33941.320
CONTRACT NO. _____

SUBCONTRACTORS ON SITE: Rust - C. Adams, D Heller, P King
TEG

EQUIPMENT ON SITE: OVA
H & S equipment

WORK PERFORMED (INCLUDING SAMPLING):

- Begin to DPT to determine if task can be accomplished.
- Collected water from ISL-13
- Grouted DPT.
- DPT- ISL-31
  Collect 2' and 39' for groundwater sample
- Off Site

SHEET _____ OF _____

Rev. 2/93

F508/Earth.Sci

ER 1110-1-263
1 Oct 92

PROJECT MNOP REPORT NO. 2

RUST E&I PROJECT NO. 33941.320 DATE 12/5/95

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):

N/A

HEALTH AND SAFETY LEVELS AND ACTIVITIES:

Level D

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION TAKEN:

taking several hours to DPT and 4+ hours to collect vials of groundwater

SPECIAL NOTES: Call T. Stone

TOMORROW'S EXPECTATIONS: continue DPT process

BY C Adams TITLE Geologist

SHEET 2 OF 2

RUST ENVIRONMENT & INFRASTRUCTURE

A–E Daily Quality Control Report

ER 1110–1–263
1 Oct 92

DATE 12/6/95

DAY	S	M	T	W	TH	F	S
				X			

CLIENT PROJECT MANAGER Alan Shirey ~~T. Hollem~~ CA
PROJECT MNOP
RUST E&I PROJECT NO. 33941.320
CONTRACT NO. _____

WEATHER	Bright Sun	Clear	Overcast X	Rain X	Snow
TEMP	To 32 X	32–50	50–70	70–85	85 up
WIND	Still	Moderate	High	Report No.	
HUMIDITY	Dry	Moderate	Humid	3	

SUBCONTRACTORS ON SITE: Rust - D Heller, C Adams, P King
TEG - S McDaniel, R Brademan
Ken Bechely

EQUIPMENT ON SITE: OVA
H & S equipment

WORK PERFORMED (INCLUDING SAMPLING):

- Begin DPT - ISL-8
- Sampled soil at 2'
- Sampled at 9'
- Collected IGW-8
- DPT - ISL-9
- Collected soil at 9', 2' and gw
- DPT ISL-10
- Collected soil at 2', 14' and gw
- DPT ISL-11
- Collected soil at 2', 14'
- Did not collect gw due to rain
- Off Site

SHEET _____ OF _____

Rev. 2/93

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ER 1110-1-263
1 Oct 92

PROJECT MNOP REPORT NO. 3

RUST E&I PROJECT NO. 33941.320 DATE 12/6/95

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):

OVA calibrated by D Heller

HEALTH AND SAFETY LEVELS AND ACTIVITIES:

Level D

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION TAKEN:

Still taking all day to collect soil and gw samples - Discuss with T. Stone

SPECIAL NOTES:

TOMORROW'S EXPECTATIONS: DPT

BY C Adams TITLE Geologist

SHEET 1 OF 1

Rev. 2/93 F508a/Earth.Sci

RUST ENVIRONMENT & INFRASTRUCTURE

A–E Daily Quality Control Report

ER 1110-1-263
1 Oct 92

DATE 12/7/95

DAY	S	M	T	W	TH	F	S
					X		

WEATHER	Bright Sun	Clear	Overcast	Rain	Snow
			X		
TEMP	**To 32**	**32–50**	**50–70**	**70–85**	**85 up**
	X				
WIND	**Still**	**Moderate**	**High**	**Report No.**	
				4	
HUMIDITY	**Dry**	**Moderate**	**Humid**		

CLIENT PROJECT MANAGER Alan Shirey ~~T Houlihan~~ CA

PROJECT MNOP

RUST E&I PROJECT NO. 33941.320

CONTRACT NO. _____

SUBCONTRACTORS ON SITE: Rust - CAdams, DHeller, PKing
TEG
~~Bob Hadden~~ CA

EQUIPMENT ON SITE: OVA

WORK PERFORMED (INCLUDING SAMPLING):

- DPT - ISL-35
- Collect soil at 2', 19'
- Collect gwater
- DPT - ISL-48
- Collect soil at 2' and 29'
- Cannot collect H_2O
- Collect gw on ISL-11
- Collect gw on ISL-34
- off Site

SHEET _____ OF _____

Rev 2/93

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ER 1110-1-263
1 Oct 92

PROJECT MNOP REPORT NO. 4

RUST E&I PROJECT NO. _____ DATE 12/7/95

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):

N/A

HEALTH AND SAFETY LEVELS AND ACTIVITIES:

Level D

PROBLEMS ENCOUNTERED/CORRECTIVE ACTION TAKEN:

DPT not very successful
D Heller & T Stone discuss
other alternatives

SPECIAL NOTES:

TOMORROW'S EXPECTATIONS: DPT or off site

BY C Adams TITLE Geologist

SHEET ____ OF 1

Rev. 2/93 F508a/Earth.Sci

ER 1110-1-263
1 Oct 92

PROJECT Macon Naval Ordnance Plant (ERM) REPORT NO. _____

RUST E&I PROJECT NO. 33941.0320 DATE 12-8-95

QUALITY CONTROL ACTIVITIES (INCLUDING FIELD CALIBRATIONS):
HEALTH AND SAFETY LEVELS AND ACTIVITIES: Level D
PROBLEMS ENCOUNTERED/CORRECTIVE ACTION TAKEN:
IDW Drums are confirmed by David Heller to have been stolen. First noticed yesterday by Paul King & Cathy Adams. Police report filled out by Bob Hoddent. One drum had contained two 5 gallon buckets of drill cuttings, one contained ≈ 20 gallons of decon water. Recontainerized remaining soil. Moved drum inside Bldg. 3A.
SPECIAL NOTES: N/A
TOMORROW'S EXPECTATIONS:

BY Robert F. Hodde TITLE Staff Scientist
For: David Heller SHEET 1 OF 1

Rev. 2/93 F50Ba/Earth.Sci

RUST ENVIRONMENT & INFRASTRUCTURE

A-E Daily Quality Control Report

ER 1110-1-263
1 Oct 92

DATE 12-8-95

DAY	S	M	T	W	TH	F	S
						X	

WEATHER	Bright Sun	Clear X	Overcast	Rain	Snow
TEMP	To 32	~~32-50~~	50-70	70-85	85 up
WIND	Still X	Moderate	High	Report No.	
HUMIDITY	Dry	~~Moderate~~ X	Humid		

CLIENT PROJECT MANAGER Alan Shirey
PROJECT USACE MNOP HSRA Investigation
RUST E&I PROJECT NO. 33941.000
CONTRACT NO. DO #24

SUBCONTRACTORS ON SITE: ~~Layne Environmental~~ RTH.
TEG - DPT Drillers

EQUIPMENT ON SITE: SP-15 Direct Push Rig

WORK PERFORMED (INCLUDING SAMPLING):

ISL-48 (Drilled 12-7) Hole was dry NS water sample collected
ISL-11 / DPT - Re-drilled for water sample beside first (0-23' TD) boring (12 & 16) where severe weather prevented sample collection
ISL-34 / DPT 0-24' - soil & water collected
ISL-32 / DPT 0-25' TD - Soil & water collected

SHEET 1 OF 1

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DQCR NUMBER 1

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 1/15/96 REPORT NUMBER 1
PROJECT MNOP Landfill AOC NO.
WEATHER Cool, Clear TEMPERATURE RANGE 40°-65° WIND
RUST PERSONNEL ON SITE J.W. Furlow, C. Tucker
CONTRACTORS ON SITE Layne Environmental Services
VISITORS ON SITE None
TIME ON SITE 0745 TIME OFF SITE 1800

SUMMARY OF WORK PERFORMED: Constructed decon pad, offloaded well construction materials, installed Drive Points DP-3, DP-4 and DP-5. Developed all three drive points. Conducted safety meeting prior to any work being done.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: pH meter, Conductivity meter

CALIBRATION(S) PERFORMED: Field calibration

EQUIPMENT PROBLEM(S)/REMEDIES: none

SAMPLES COLLECTED* No samples collected

SAMPLE COLLECTION METHOD(S) N/A

QUALITY CONTROL N/A

PROPOSED SCHEDULE FOR TOMORROW Sample Drive Points, do Hydro Punch HP-1 boring, take groundwater sample from Hydro Punch.

ADDITIONAL REMARKS

SIGNATURE: J. W. Furlow DATE: 1/15/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 2

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 73941.320 DATE 1/16/96 REPORT NUMBER 2
PROJECT MNOP Landfill AOC NO.
WEATHER Cool, foggy to clear TEMPERATURE RANGE 35°-65°F WIND Light
RUST PERSONNEL ON SITE J. Furlow, C. Tucker
CONTRACTORS ON SITE Layne Environmental Services
VISITORS ON SITE None
TIME ON SITE 0735 TIME OFF SITE 1735

SUMMARY OF WORK PERFORMED: Sampled Drive Points DP-3, DP-4, DP-5; augered boring and took HydroPunch sample at HP-1. Drilled and sampled Soil Boring LSb-1. Shipped groundwater samples to Rust Ft. Walton office for GC screening.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: Drill Rig with hollow stem augers and 140-lb. hammer

CALIBRATION(S) PERFORMED: None

EQUIPMENT PROBLEM(S)/REMEDIES: None

SAMPLES COLLECTED* Groundwater samples from DP-3, 4, 5; HP-1; Soil samples from LSb-1.

SAMPLE COLLECTION METHOD(S) Drive Points: hand bailer; HP-1: HydroPunch I tool; LSb-1: Split spoon

QUALITY CONTROL None

PROPOSED SCHEDULE FOR TOMORROW Continue with soil sampling

ADDITIONAL REMARKS

SIGNATURE: J. W. Furlow DATE: 1/16/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 3

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 1/17/96 REPORT NUMBER 3
PROJECT MNOP Landfill AOC NO.
WEATHER Cool, Cloudy TEMPERATURE RANGE 40°- 60°F WIND Light
RUST PERSONNEL ON SITE J.W. Furlow, C. Tucker
CONTRACTORS ON SITE Layne Environmental
VISITORS ON SITE None
TIME ON SITE 0740 TIME OFF SITE 1830

SUMMARY OF WORK PERFORMED: Performed continuous split spoon sampling at soil boring locations LSL-2, LSL-3 and LSL-9. Took QC and QA samples at each of the above locations. Shipped samples to USACOE SAD laboratory and Hydrologic laboratories.

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: PPE

CALIBRATION(S) PERFORMED: None

EQUIPMENT PROBLEM(S)/REMEDIES: None

SAMPLES COLLECTED* Soil samples by split spoon to depths of 10 feet bgs at LSL-2, LSL-3 and LSL-9. QA and QC samples at LSL-2, LSL-3, and LSL-9

SAMPLE COLLECTION METHOD(S) Continuous split spoon

QUALITY CONTROL Work plan

PROPOSED SCHEDULE FOR TOMORROW Continue soil sampling

ADDITIONAL REMARKS

SIGNATURE: J. W. Furlow DATE: 1/17/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 4

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 1/18/96 REPORT NUMBER 4
PROJECT MNOP Landfill AOC NO.
WEATHER Cool, Cloudy TEMPERATURE RANGE 50°-60° WIND Light
RUST PERSONNEL ON SITE J. W. Furlow, C. Tucker
CONTRACTORS ON SITE Layne Environmental
VISITORS ON SITE Glenn Boylan
TIME ON SITE 0745 TIME OFF SITE 1720

SUMMARY OF WORK PERFORMED: Drilled and sampled Soil Borings LSL-4 and L3L-8. Unable to recover sufficient sample volume from LSL-8. Will resample LSL-8 with hand auger. Shipped LSL-4 soil samples to laboratory.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: OVA, Split spoon sampler

CALIBRATION(S) PERFORMED: None

EQUIPMENT PROBLEM(S)/REMEDIES:

SAMPLES COLLECTED* Soil samples from 0'-2' and 4'-6' from LSL-4

SAMPLE COLLECTION METHOD(S) Split spoon sampler

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Continue with soil sampling

ADDITIONAL REMARKS

SIGNATURE: J. W. Furlow DATE: 1/18/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 5

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 1/19/96 REPORT NUMBER 5
PROJECT MNOP Landfill AOC NO.
WEATHER Cloudy, cold, windy TEMPERATURE RANGE 25° - 40° WIND Strong
RUST PERSONNEL ON SITE J.W. Furlow, C. Tucker
CONTRACTORS ON SITE Layne Env.
VISITORS ON SITE None
TIME ON SITE 0750 TIME OFF SITE 1730

SUMMARY OF WORK PERFORMED: Drilled and sampled soil Boring LSL-6. Installed Drive Points DP-1, DP-2, DP-6, DP-7. Bailed mud and sediment from all four drive points.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: OVA

CALIBRATION(S) PERFORMED: Calibrated OVA

EQUIPMENT PROBLEM(S)/REMEDIES: None

SAMPLES COLLECTED* Soil Samples from boring LSL-6, depth of 0-2' and 6'-8'

SAMPLE COLLECTION METHOD(S) Split spoon

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Meet with Fugro for demonstration of direct push technology

ADDITIONAL REMARKS

SIGNATURE: J.W. Furlow DATE: 1/19/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE: AND SAMPLE I.D. NUMBERS

DQCR NUMBER 6

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 1/22/96 REPORT NUMBER 6
PROJECT MNOP Landfill AOC NO.
WEATHER Cool, Sunny TEMPERATURE RANGE 30° - 55°F WIND Light
RUST PERSONNEL ON SITE J.W. Forlow
CONTRACTORS ON SITE Layne Environmental
VISITORS ON SITE None
TIME ON SITE 0930 TIME OFF SITE 1815

SUMMARY OF WORK PERFORMED: Installed Drive Points DP-8, 9 and 10. Sampled Drive Points DP-1, 2, 6, 7, 8, 9, 10. shipped samples to Rust office at Ft. Walton Beach, Fla. for GC screening. Grouted up boreholes previously drilled for soil samples

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: pH / Conductivity meter

CALIBRATION(S) PERFORMED: Calibrated pH / Conductivity meter ; calibrated OVA

EQUIPMENT PROBLEM(S)/REMEDIES: None

SAMPLES COLLECTED* Groundwater samples from Drive Points DP-1, 2, 6, 7, 8, 9, 10

SAMPLE COLLECTION METHOD(S) Bailer

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Resume soil sampling

ADDITIONAL REMARKS

SIGNATURE: J.W. Forlow DATE: 1/22/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 7

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 1/23/96 REPORT NUMBER 7
PROJECT MNOP Landfill AOC NO.
WEATHER Cool, sunny TEMPERATURE RANGE 40°-65°F WIND Light
RUST PERSONNEL ON SITE J.W. Furlow, G. Ragsdale
CONTRACTORS ON SITE Layne Environmental
VISITORS ON SITE None
TIME ON SITE 0745 TIME OFF SITE 1745

SUMMARY OF WORK PERFORMED: Grouted up previously-drilled boreholes; moved drums of purge water and soil cuttings to staging area; drilled and sampled soil boring LSL-7; shipped samples to lab.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: OVA

CALIBRATION(S) PERFORMED: Calibrated OVA

EQUIPMENT PROBLEM(S)/REMEDIES: None

SAMPLES COLLECTED* Soil samples from boring LSL-7, from depths of 0-2 feet and 6-8 feet.

SAMPLE COLLECTION METHOD(S) Split spoon

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Continue drilling soil borings and sampling

ADDITIONAL REMARKS

SIGNATURE: James W. Furlow DATE: 1/23/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 8

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 1/24/96 REPORT NUMBER 8
PROJECT MNOP Landfill AOC NO.
WEATHER Rainy, cool to sunny TEMPERATURE RANGE 40°-60°F WIND Strong
RUST PERSONNEL ON SITE J. Furlow, G. Raggdale
CONTRACTORS ON SITE Layne Env.
VISITORS ON SITE None
TIME ON SITE 0745 TIME OFF SITE 1825

SUMMARY OF WORK PERFORMED: Sampled soil borings LSL-10 and LSL-11. Shipped soil samples to laboratory.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: OVA

CALIBRATION(S) PERFORMED: Calibrated OVA

EQUIPMENT PROBLEM(S)/REMEDIES: After lunch, OVA would not light up. Unable to get it operative for remainder of day.

SAMPLES COLLECTED* Soil samples from LSL-10 and LSL-11

SAMPLE COLLECTION METHOD(S) Split spoon

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Drill and sample LSL-5 and LSL-8

ADDITIONAL REMARKS

SIGNATURE: James W. Furlow DATE: 1/24/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 9

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 1/25/96 REPORT NUMBER 9
PROJECT MNDP Landfill AOC NO.
WEATHER Clear, Cool TEMPERATURE RANGE 35°-50°F WIND Light
RUST PERSONNEL ON SITE J. Furlow, G. Ragsdale
CONTRACTORS ON SITE Layne Environmental
VISITORS ON SITE None
TIME ON SITE 0750 TIME OFF SITE 1820

SUMMARY OF WORK PERFORMED: Installed Monitor Well MW-8 & 11 JWF 1/26/96

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: None

CALIBRATION(S) PERFORMED: None

EQUIPMENT PROBLEM(S)/REMEDIES: Replacement OVA from Greenville did not arrive.

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S)

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Drill and sample soil borings LSL-5 and LS6-8

ADDITIONAL REMARKS

SIGNATURE: J. W. Furlow DATE: 1/25/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 10

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 1/26/96 REPORT NUMBER 10
PROJECT MNOP Landfill AOC NO.
WEATHER Cool, cloudy TEMPERATURE RANGE 40°-60°F WIND Moderate
RUST PERSONNEL ON SITE J. Furlow, G. Ragsdale
CONTRACTORS ON SITE Layne Env.
VISITORS ON SITE None
TIME ON SITE 0745 TIME OFF SITE 1825

SUMMARY OF WORK PERFORMED: Grouted up Monitor well MW-11; Drilled and sampled Soil Borings LSL-5 and LSL-8; shipped samples.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: OVA

CALIBRATION(S) PERFORMED: Calibrated, or attempted to calibrate, OVA

EQUIPMENT PROBLEM(S)/REMEDIES: OVA would not function

SAMPLES COLLECTED* Soil samples from LSL-5 (0-2 and 8-10) and LSL-8 (0-2 and 4-5)

SAMPLE COLLECTION METHOD(S) Split spoon

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Install Drive Points 11 and 12

ADDITIONAL REMARKS

SIGNATURE: J. W. Furlow DATE: 1/26/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 11

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 1/27/96 REPORT NUMBER 11
PROJECT MNOP LandFill AOC NO.
WEATHER Rainy to Clear, Cool TEMPERATURE RANGE 40°F-55°F WIND Moderate
RUST PERSONNEL ON SITE J.W. Furlow
CONTRACTORS ON SITE Layne Env.
VISITORS ON SITE None
TIME ON SITE 0745 TIME OFF SITE 1810

SUMMARY OF WORK PERFORMED: Installed and developed Drive Points DP-11 and DP-12. Drilled Monitor well MW-6.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: OVM

CALIBRATION(S) PERFORMED:

EQUIPMENT PROBLEM(S)/REMEDIES:

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S)

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Finish MW-6

ADDITIONAL REMARKS

SIGNATURE: J.W. Furlow DATE: 1/27/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 12

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 1/28/96 REPORT NUMBER 12
PROJECT MNOP Landfill AOC NO.
WEATHER Clear, Cool TEMPERATURE RANGE 25° - 55° WIND Light
RUST PERSONNEL ON SITE J. Furlow
CONTRACTORS ON SITE Layne Env.
VISITORS ON SITE None
TIME ON SITE 0745 TIME OFF SITE 1735

SUMMARY OF WORK PERFORMED: Grouted up soil Borings; cleared paths to Monitor wells MW-9 and MW-10

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: Chainsaw

CALIBRATION(S) PERFORMED: Tightened chain

EQUIPMENT PROBLEM(S)/REMEDIES: None

SAMPLES COLLECTED*: None

SAMPLE COLLECTION METHOD(S)

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Install MW-6

ADDITIONAL REMARKS Water in swamp rose overnight, flooded MW-6 location.

SIGNATURE: J. W. Furlow DATE: 1/29/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 13

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 1/29/96 REPORT NUMBER 13
PROJECT MNOP Landfill AOC NO.
WEATHER Cloudy, cool TEMPERATURE RANGE 40°-60°F WIND Light
RUST PERSONNEL ON SITE J.W. Furlow
CONTRACTORS ON SITE Layne Env.
VISITORS ON SITE None
TIME ON SITE 0740 TIME OFF SITE 1755

SUMMARY OF WORK PERFORMED: Installed Monitor Well MW-6; got drill rig unstuck from mud.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: None

CALIBRATION(S) PERFORMED: None

EQUIPMENT PROBLEM(S)/REMEDIES: None

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S)

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Drill and install monitor wells.

ADDITIONAL REMARKS

SIGNATURE: J.W. Furlow DATE: 1/29/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 14

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.220 DATE 1/30/96 REPORT NUMBER 14
PROJECT MNOP Landfill AOC NO.
WEATHER Cool, Cloudy TEMPERATURE RANGE 50°- 70°F WIND Light
RUST PERSONNEL ON SITE J.W. Furlow
CONTRACTORS ON SITE Layne Env.
VISITORS ON SITE Bill Enfinger (Layne Env.)
TIME ON SITE 0742 TIME OFF SITE 1750

SUMMARY OF WORK PERFORMED: Attempted to move swamp buggy drill rig onto Monitor Well MW-9 location. Drill rig became totally stuck in soft mud, will not move in any direction. Afternoon was spent developing Monitor well MW-11.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: PPE

CALIBRATION(S) PERFORMED: None

EQUIPMENT PROBLEM(S)/REMEDIES: Drill rig stuck in mud. No remedy yet.

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S)

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Get drill rig out, develop monitor wells, install pads

ADDITIONAL REMARKS

SIGNATURE: J. W. Furlow DATE: 1/30/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

 DQCR NUMBER 15

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 1/31/96 REPORT NUMBER 14
PROJECT MNOP Landfill AOC NO.
WEATHER Cool, cloudy, rain TEMPERATURE RANGE 50°-35°F WIND strong
RUST PERSONNEL ON SITE J.W. Furlow
CONTRACTORS ON SITE Layne Env.
VISITORS ON SITE None
TIME ON SITE 0750 TIME OFF SITE 0715

SUMMARY OF WORK PERFORMED: Retrieved stuck bailer from MW-11; installed pads and protective housings on MW-11 and MW-6; attempted to hand auger to depth of 15' at MW-9 location.

LEVEL OF HEALTH & SAFETY PROTECTION level D

EQUIPMENT USED: Hand auger

CALIBRATION(S) PERFORMED:

EQUIPMENT PROBLEM(S)/REMEDIES: Bailer was stuck in MW-11; a variety of methods were attempted for removal, all unsuccessful. Bailer was finally removed by pulling very hard on nylon rope.

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S) N/A

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW off until following Monday

ADDITIONAL REMARKS

SIGNATURE: J. W. Furlow DATE: 1/31/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE: AND SAMPLE I.D. NUMBERS

DQCR NUMBER 15

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 2/5/96 REPORT NUMBER 15
PROJECT MNOP Landfill AOC NO.
WEATHER Clear, very cold TEMPERATURE RANGE 15°-35°F WIND Light
RUST PERSONNEL ON SITE J.W. Furlow
CONTRACTORS ON SITE Layne Env.
VISITORS ON SITE None
TIME ON SITE 0920 TIME OFF SITE 1730

SUMMARY OF WORK PERFORMED: Developed Monitor well MW-11, installed protective posts around MW-11. Installed two protective posts at MW-6.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: OVM

CALIBRATION(S) PERFORMED: Calibrated OVM

EQUIPMENT PROBLEM(S)/REMEDIES: None

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S)

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Install MW-10 with hand auger.

ADDITIONAL REMARKS

SIGNATURE: J. W. Furlow DATE: 2/5/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 16

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 2/6/96 REPORT NUMBER 16
PROJECT MNOP Landfill AOC NO.
WEATHER Clear, Cold TEMPERATURE RANGE 20°-40°F WIND Light
RUST PERSONNEL ON SITE J.W. Furlow
CONTRACTORS ON SITE Layne Env.
VISITORS ON SITE None
TIME ON SITE 0740 TIME OFF SITE 1840

SUMMARY OF WORK PERFORMED: Hand augered, sampled and installed monitor wells MW-10 and MW-7 (0-2) interval for both wells. Shipped samples to laboratory.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: OVM

CALIBRATION(S) PERFORMED: Calibrated OVM

EQUIPMENT PROBLEM(S)/REMEDIES: Bobcat front end loader stuck in mud.

SAMPLES COLLECTED* Soil samples from MW-10 (0-2') and MW-7 (0-2')

SAMPLE COLLECTION METHOD(S) Hand Auger

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Sample and install Monitor wells MW-9 and MW-8

ADDITIONAL REMARKS

SIGNATURE: J. W. Furlow DATE: 2/6/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 17

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941-320 DATE 2/7/96 REPORT NUMBER 17
PROJECT MNOP Landfill AOC NO.
WEATHER Clear, cold TEMPERATURE RANGE 20° - 50°F WIND Light
RUST PERSONNEL ON SITE J.W. Furlow
CONTRACTORS ON SITE Layne Environmental
VISITORS ON SITE None
TIME ON SITE 0740 TIME OFF SITE 1738

SUMMARY OF WORK PERFORMED: Hand augered, sampled and installed MW-9. Sampled 6-8' interval for lab analysis. Augered and sampled MW-6 (2'-4' interval), also collected QA and QC samples from 2-4' at MW-6. Packed and shipped all samples to Hydrologic Labs and SAD Labs. Layne crew got ATV drill rig and Bobcat out of swamp.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: OVM

CALIBRATION(S) PERFORMED: Calibrated OVM

EQUIPMENT PROBLEM(S)/REMEDIES: Equipment out of mud

SAMPLES COLLECTED* MW-9 (6'-8'); MW-6 (2'-4'); MW-6 (2'-4') a for QA; MW-6 (2'-4') b for QC

SAMPLE COLLECTION METHOD(S) Hand Auger

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Auger, sample and install MW-8

ADDITIONAL REMARKS

SIGNATURE: J.W. Furlow DATE: 2/7/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 18

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 2/8/96 REPORT NUMBER 18
PROJECT MNOP Landfill AOC NO.
WEATHER Clear, Cool TEMPERATURE RANGE 40°- 65° WIND Light
RUST PERSONNEL ON SITE J W Furlow
CONTRACTORS ON SITE Layne Environmental
VISITORS ON SITE None
TIME ON SITE 0740 TIME OFF SITE 1800

SUMMARY OF WORK PERFORMED: Hand augered, sampled and installed Monitor Well MW-8. Transported materials to MW-7, 8, 9 and 10 for pad and post installation.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: OVM

CALIBRATION(S) PERFORMED: Calibrated OVM

EQUIPMENT PROBLEM(S)/REMEDIES: None

SAMPLES COLLECTED* Soil samples from MW-8 (0-2')

SAMPLE COLLECTION METHOD(S) Hand auger

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Install pads and posts on monitor wells

ADDITIONAL REMARKS

SIGNATURE: J.W. Furlow DATE: 2/8/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 19

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 2/9/96 REPORT NUMBER 20
PROJECT MNOP Landfill AOC NO.
WEATHER Cloudy, cool TEMPERATURE RANGE 40°-70°F WIND Moderate
RUST PERSONNEL ON SITE J.W. Furlow
CONTRACTORS ON SITE Layne Environmental
VISITORS ON SITE None
TIME ON SITE 0735 TIME OFF SITE 1705

SUMMARY OF WORK PERFORMED: Installed pads and posts on Monitor Wells MW-7, -8, -9 and -10. Transported IDW drums to decon/staging area.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: None

CALIBRATION(S) PERFORMED: None

EQUIPMENT PROBLEM(S)/REMEDIES: None

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S)

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Off for weekend

ADDITIONAL REMARKS

SIGNATURE: J.W. Furlow DATE: 2/9/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 20

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 2/12/96 REPORT NUMBER 20
PROJECT MNOP Landfill AOC NO.
WEATHER Clear, cold TEMPERATURE RANGE 35°- 45°F WIND Strong
RUST PERSONNEL ON SITE J.W. Furlow
CONTRACTORS ON SITE Layne Environmental
VISITORS ON SITE None
TIME ON SITE 0850 TIME OFF SITE 1805

SUMMARY OF WORK PERFORMED: Completed installation of protective posts on monitor wells; development of monitor wells MW-9 and MW-10; measurement of static water levels in all monitor wells and drive points on site.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: ~~None~~ pH/conductivity meter

CALIBRATION(S) PERFORMED: ~~None~~ calibrated pH/cond. meter

EQUIPMENT PROBLEM(S)/REMEDIES: None

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S)

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Complete development of all monitor wells installed

ADDITIONAL REMARKS

SIGNATURE: J.W. Furlow DATE: 2/12/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 21

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 2/13/96 REPORT NUMBER 21
PROJECT MNOP Landfill AOC NO.
WEATHER Clear, Cold TEMPERATURE RANGE 25° - 60°F WIND light
RUST PERSONNEL ON SITE J.W. Furlow
CONTRACTORS ON SITE Layne Environmental
VISITORS ON SITE None
TIME ON SITE 0730 TIME OFF SITE 1750

SUMMARY OF WORK PERFORMED: Developed monitor wells MW-6, MW-7, MW-8, installed all protective posts, painted all protective posts, abandoned drive points DP-1 through DP-12 (all drive points)

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: pH/conductivity meter

CALIBRATION(S) PERFORMED: calibrated pH/cond. meter

EQUIPMENT PROBLEM(S)/REMEDIES: None

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S)

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW Clean up & demobilize

ADDITIONAL REMARKS

SIGNATURE: J.W. Furlow DATE: 2/13/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER 22

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.320 DATE 2/14/96 REPORT NUMBER 22
PROJECT MNDP Landfill AOC NO.
WEATHER Clear, Cool TEMPERATURE RANGE 40° - 60°F WIND Moderate
RUST PERSONNEL ON SITE J.W. Furlow
CONTRACTORS ON SITE Layne Environmental
VISITORS ON SITE None
TIME ON SITE 0745 TIME OFF SITE 1530

SUMMARY OF WORK PERFORMED: Completed well construction, decon'd equipment, demobilized to Atlanta.

LEVEL OF HEALTH & SAFETY PROTECTION Level D

EQUIPMENT USED: None

CALIBRATION(S) PERFORMED: None

EQUIPMENT PROBLEM(S)/REMEDIES: None

SAMPLES COLLECTED* None

SAMPLE COLLECTION METHOD(S)

QUALITY CONTROL

PROPOSED SCHEDULE FOR TOMORROW None

ADDITIONAL REMARKS

SIGNATURE: J. W. Furlow DATE: 2/14/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DAILY QUALITY CONTROL REPORT

JOB NUMBER 33941 DATE 19MAR96 REPORT NUMBER 0396-01

PROJECT & LOCATION MNOP LANDFILL, MACON GA

WEATHER OVERCAST TEMPERATURE RANGE 42-45°F WIND 10-20 MPH

SEC PERSONNEL ON SITE NONE | RUST PERSONNEL R.G. RAGSDALE J CONLEY TIME ON SITE 0815

SUMMARY OF SITE ACTIVITIES

PURGED + SAMPLED 2 MONITORING WELLS; LOCATED OTHER WELLS TO BE SAMPLED

LEVEL OF HEALTH & SAFETY PROTECTION D

INSTRUMENTATION USED pH METER, THERMOMETER, SPECIFIC CONDUCTANCE

CALIBRATION(S) PERFORMED pH METER

INSTRUMENT PROBLEMS / REMEDIES NONE

SAMPLES COLLECTED* 1-ROUNDWATER 1-GRAB SAMPLES FROM MONITOR WELLS MW-6 & MW-11

SAMPLE COLLECTION METHOD(S) SAMPLES COLLECTED VIA BAILER

QUALITY CONTROL SAMPLES* NONE TAKEN

ADDITIONAL REMARKS SAMPLES SHIPPED VIA FEDEX TO HYDROLOGIC INC. IN BRIGHTON, CO

SIGNATURE: R.G. Ragsdale

* INDICATE SAMPLE MEDIA: GROUND WATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I. D. NUMBERS

DAILY QUALITY CONTROL REPORT

JOB NUMBER 33941 DATE 20MAR96 REPORT NUMBER 0396-02

PROJECT & LOCATION MNOP LANDFILL MACON GA

WEATHER PARTLY CLOUDY TEMPERATURE RANGE 35-42°F WIND 10-15MPH

RUST SEC PERSONNEL ON SITE R.A. RAILSDALE J. CONLEY TIME ON SITE

SUMMARY OF SITE ACTIVITIES PURGING & SAMPLING WELLS

LEVEL OF HEALTH & SAFETY PROTECTION D

INSTRUMENTATION USED OVA (MW-5 = 6.8 PPM)

CALIBRATION(S) PERFORMED YES

INSTRUMENT PROBLEMS / REMEDIES VOVE - INSTRUMENT INOP AFTER WELL MW-8

SAMPLES COLLECTED* SEDIMENT SAMPLES COLLECTED AT LOCATION LSD-14 SLIGHTLY SOUTH OF MW-4; TOOK SPLIT SAMPLE FROM MW-11 (SAMPLE ID MW-11S) TO SEND TO THE ACE LAB

SAMPLE COLLECTION METHOD(S) SEDIMENT - STAINLESS STEEL SPOON + BOWL; GROUNDWATER BAILER

QUALITY CONTROL SAMPLES* GROUNDWATER GRAB SAMPLES (MW-11S)

ADDITIONAL REMARKS MW-11S SAMPLES TAKEN WITHIN 24HRS OF ORIGINAL SVOLUME WELL PURGE EVOLUTION

SIGNATURE: R.D. Railsdale

* INDICATE SAMPLE MEDIA: GROUND WATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I. D. NUMBERS

DAILY QUALITY CONTROL REPORT

JOB NUMBER 33941.320 DATE 03-21-96 REPORT NUMBER 0396-03

PROJECT & LOCATION MWDF LANDFILL, MACON GA

WEATHER SUNNY TEMPERATURE RANGE 54°-62° WIND 5-10 MPH

RUST PERSONNEL ON SITE R.O. RAGSDALE / J. CONLEY TIME ON SITE 0730

SUMMARY OF SITE ACTIVITIES PURGING & SAMPLING WELLS
PURGED MW-7

LEVEL OF HEALTH & SAFETY PROTECTION D

INSTRUMENTATION USED 10.4 METER PH CHEM METER

CALIBRATION(S) PERFORMED

INSTRUMENT PROBLEMS / REMEDIES MVA INOP

SAMPLES COLLECTED* GROUNDWATER SAMPLES FOR MW-8, 9, +10; RADIUM FOR MW6 & MW11; SEDIMENT & SURFACE WATER W/ QA&QC - LSW-11, LSW-11D & LSW11S & LSD-11, LSD-11D & LSD-11S.

SAMPLE COLLECTION METHOD(S) BAILER (STAINLESS STEEL) DECONNED BETWEEN WELLS

QUALITY CONTROL SAMPLES* LSW-11D, LSW-11S & LSD-11D, LSD-11S

ADDITIONAL REMARKS
ROCKY CREEK STILL HIGH BUT DOWN SOME

SIGNATURE: R.O. Ragsdale

* INDICATE SAMPLE MEDIA: GROUND WATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I. D. NUMBERS

DAILY QUALITY CONTROL REPORT

JOB NUMBER 33941.320 DATE 03/22/96 REPORT NUMBER 0396-04

PROJECT & LOCATION MWDP LANDFILL, MACON GA

WEATHER SUNNY TEMPERATURE RANGE 40-55° WIND 5-10 MPH

SEC PERSONNEL ON SITE NONE / RUST PERSONNEL ON SITE: R.G. RAGSDALE & J.A. CONLEY TIME ON SITE 0750

SUMMARY OF SITE ACTIVITIES SAMPLING

LEVEL OF HEALTH & SAFETY PROTECTION

INSTRUMENTATION USED pH METER & SP COND METER

CALIBRATION(S) PERFORMED

INSTRUMENT PROBLEMS / REMEDIES

SAMPLES COLLECTED* LSD/LSW10, LSD/LSW12, LSD/LSW13, & MW-7

SAMPLE COLLECTION METHOD(S) BAILER, AUGER, BOWL & SPOON

QUALITY CONTROL SAMPLES* LSD/LSW12 D&S FOR HYDROLOGIC & SADLAB

ADDITIONAL REMARKS

SIGNATURE: R.G. Ragsdale

* INDICATE SAMPLE MEDIA: GROUND WATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I. D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.30 DATE 3/25/96 REPORT NUMBER _____
PROJECT ALLIED INDUSTRIAL PARK AOC NO. _____
WEATHER MILD + CLOUDY TEMPERATURE RANGE 60 WIND S - SW
RUST PERSONNEL ON SITE MIKE TAYLOR
CONTRACTORS ON SITE FUGRO
VISITORS ON SITE TIM FUHLOW
TIME ON SITE 08:10 TIME OFF SITE 19:43

SUMMARY OF WORK PERFORMED: SOIL SAMPLING IN VICINITY OF MW-11, SOIL SAMPLING AT LOCATION SL-14

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT

CALIBRATION(S) PERFORMED: OVM

EQUIPMENT PROBLEM(S)/REMEDIES: N/A

SAMPLES COLLECTED* SOIL, GRAB, SL-14 0.5-2' / SOIL, GRAB, SL-14 35-36.5'

SAMPLE COLLECTION METHOD(S) DPT

QUALITY CONTROL _____

PROPOSED SCHEDULE FOR TOMORROW CONTINUE SOIL AND GROUNDWATER SAMPLING

ADDITIONAL REMARKS _____

SIGNATURE: _____ DATE: 3/25/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 3/26/96 REPORT NUMBER _____
PROJECT ALLIED INDUSTRIAL PARK AOC NO. _____
WEATHER MILD + FOGGY TEMPERATURE RANGE 50 - 70 WIND SLIGHT + VARIABLE
RUST PERSONNEL ON SITE MIKE TAYLOR
CONTRACTORS ON SITE FUGRO
VISITORS ON SITE N/A
TIME ON SITE 07:57 TIME OFF SITE 19:34

SUMMARY OF WORK PERFORMED: SOIL AND GROUNDWATER SAMPLING AT ISL-4, ISL-52, ISL-53

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT

CALIBRATION(S) PERFORMED: OVM

EQUIPMENT PROBLEM(S)/REMEDIES: N/A

SAMPLES COLLECTED* SOIL, GRAB, ISL-52 0.5-2' / ISL-53 0.5-2' / ISL-53 30-31'
GROUNDWATER, GRAB, IGW-14

SAMPLE COLLECTION METHOD(S) DPT, BAILER, PENISTALTIC PUMP + CHECK BALL

QUALITY CONTROL TRIP BLANK / TEMP BLANK

PROPOSED SCHEDULE FOR TOMORROW CONTINUE SOIL + GROUNDWATER SAMPLING

ADDITIONAL REMARKS N/A

SIGNATURE: _____ DATE: 3/26/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.316 DATE 3/27/96 REPORT NUMBER _____
PROJECT ALLIED INDUSTRIAL PARK (MANOP SITE) AOC NO. _____
WEATHER ~~Hot~~ MILD + LIGHT RAIN TEMPERATURE RANGE 50-55 WIND SLIGHT VARIABLE
RUST PERSONNEL ON SITE MIKE TAYLOR
CONTRACTORS ON SITE FUGRO
VISITORS ON SITE CAROLINE MURRAY (FUGRO)
TIME ON SITE 07:01 TIME OFF SITE 19:23

SUMMARY OF WORK PERFORMED: SOIL AND GROUNDWATER SAMPLING USING DPT

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT

CALIBRATION(S) PERFORMED: OVM

EQUIPMENT PROBLEM(S)/REMEDIES: _____

SAMPLES COLLECTED* SOIL GRAB ISL-SY 0.5-2' / ISL-SY 4.5-6' / ISL-SS 1-2'
GROUNDWATER, GRAB IGW-53 / IGW-54 / ~~TRIP~~ ALL 3/28/96

SAMPLE COLLECTION METHOD(S) BAILER, SILICON VALVE, TUBE PUSH

QUALITY CONTROL _____

PROPOSED SCHEDULE FOR TOMORROW CONTINUE SOIL AND GROUNDWATER SAMPLING

ADDITIONAL REMARKS M.T.

SIGNATURE: Mike Taylor DATE: 3/27/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 3/28/96 REPORT NUMBER _____
PROJECT ALLIED INDUSTRIAL PARK AOC NO. _____
WEATHER COOL & LIGHT RAIN TEMPERATURE RANGE 45-50 WIND SLIGHT VARIABLE
RUST PERSONNEL ON SITE MIKE TAYLOR
CONTRACTORS ON SITE GEO
VISITORS ON SITE _____
TIME ON SITE 07.01 TIME OFF SITE 19:34

SUMMARY OF WORK PERFORMED: SOIL AND GROUNDWATER SAMPLING USING DPT

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT

CALIBRATION(S) PERFORMED: OVM

EQUIPMENT PROBLEM(S)/REMEDIES: _____

SAMPLES COLLECTED* SOIL, QA/QC, ISC-55 1-2 / ISC-55 40-41' / ISC-52 45-46' / ISC-59 1-2'
GROUNDWATER, QA/QC, ICW-55 54' / ICW-52 54'

SAMPLE COLLECTION METHOD(S) BAILER, BAILER WITH VALVE, TUBE ABLE

QUALITY CONTROL _____

PROPOSED SCHEDULE FOR TOMORROW CONTINUE SOIL & GROUNDWATER SAMPLING

ADDITIONAL REMARKS _____

SIGNATURE: _____ DATE: 3/28/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.31 DATE 3/29/96 REPORT NUMBER _____
PROJECT ALLIED INDUSTRIAL PARK (ARMY SITE) AOC NO. _____
WEATHER COOL & CLOUDY TEMPERATURE RANGE 45-65 WIND SLIGHT VARIABLE
RUST PERSONNEL ON SITE MIKE TAYLOR
CONTRACTORS ON SITE EUGENE
VISITORS ON SITE N/A
TIME ON SITE 06:55 TIME OFF SITE 19:40

SUMMARY OF WORK PERFORMED: COLLECTED SOIL AND GROUNDWATER SAMPLES USING DPT.

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT

CALIBRATION(S) PERFORMED: OVM

EQUIPMENT PROBLEM(S)/REMEDIES: N/A

SAMPLES COLLECTED* SOIL CVOC 8260 TO-30 8270 PP METALS, ISL-59 55-56' / ISL-57 1-3' / ISL-57 55-56'
GROUNDWATER, CVOC 8260, 8270, 8330 PP METALS, IGW-59 64' / IGW-57 64'

SAMPLE COLLECTION METHOD(S) TUBE PUSH, SHILEN, CHECK BALL AND PERISTALTIC PUMP

QUALITY CONTROL N/A

PROPOSED SCHEDULE FOR TOMORROW CONTINUE SOIL AND GROUNDWATER SAMPLING

ADDITIONAL REMARKS N/A

SIGNATURE: _____ DATE: 3/29/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 3/30/96 REPORT NUMBER _____
PROJECT ALLIED INDUSTRIAL PARK (ANNEX SITE) AOC NO. _____
WEATHER COOL & CLOUDY TEMPERATURE RANGE 45-60 WIND 13MPH NE
RUST PERSONNEL ON SITE MIKE TAYLOR
CONTRACTORS ON SITE FUGRO
VISITORS ON SITE _____
TIME ON SITE 06:53 TIME OFF SITE 18:52

SUMMARY OF WORK PERFORMED: SOIL AND GROUND WATER SAMPLING WITH DPT

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT

CALIBRATION(S) PERFORMED: OVM

EQUIPMENT PROBLEM(S)/REMEDIES: _____

SAMPLES COLLECTED* SOIL, GRAB, 5260 5270, 93.36 PP METALS, ISL-17 1-2'/ISL-19 70-71'

SAMPLE COLLECTION METHOD(S) TUBE DUSIO

QUALITY CONTROL —

PROPOSED SCHEDULE FOR TOMORROW CONTINUE SOIL + GROUNDWATER SAMPLING

ADDITIONAL REMARKS N/A

SIGNATURE: _____ DATE: 3/30/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 3/31/96 REPORT NUMBER _____
PROJECT ALLIED INDUSTRIAL PARK AOC NO. _____
WEATHER COOL & CLOUDY TEMPERATURE RANGE 40-45 WIND SLIGHT & VARIABLE TO STRONG NE
RUST PERSONNEL ON SITE MICHAEL TAYLOR
CONTRACTORS ON SITE EUGENE
VISITORS ON SITE N/A
TIME ON SITE 07:00 TIME OFF SITE 16:33

SUMMARY OF WORK PERFORMED: SOIL AND GROUNDWATER SAMPLING USING DPT

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT

CALIBRATION(S) PERFORMED: OVM

EQUIPMENT PROBLEM(S)/REMEDIES: N/A

SAMPLES COLLECTED* SOIL, GRAB, ISL-4S 1-2' / ISL-1S 55-56' / GROUNDWATER, GRAB, IGW-1S 51'

SAMPLE COLLECTION METHOD(S) BAILER, BALL CHECK, TUBE PUSH

QUALITY CONTROL N/A

PROPOSED SCHEDULE FOR TOMORROW CONTINUE SOIL & GROUNDWATER SAMPLING

ADDITIONAL REMARKS PUNCTURED WATER LINE IN LOCATION OF ISL-4S, DID NOT SAMPLE AT LOCATION, SUSPENDED WORK FOR DAY, CONTACTED MACON WATER AUTHORITY

SIGNATURE: _____ DATE: 3/31/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 4/1/96 REPORT NUMBER _____
PROJECT ALLIED INDUSTRIAL PARK (MAIN SITE) AOC NO. _____
WEATHER COOL + CLOUDY TEMPERATURE RANGE 40-55 WIND MODERATE VARIABLE
RUST PERSONNEL ON SITE MICHAEL TAYLOR + TOM HUT 4/1/96
CONTRACTORS ON SITE FIELD
VISITORS ON SITE CHES (HUSH)
TIME ON SITE 06:51 TIME OFF SITE 19:54

SUMMARY OF WORK PERFORMED: SOIL AND GROUNDWATER SAMPLING USING DPT AT ISL-37, ISL-38

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT

CALIBRATION(S) PERFORMED: PID M

EQUIPMENT PROBLEM(S)/REMEDIES: N/A

SAMPLES COLLECTED* SOIL GRAB ISL-37 REP 1-2 / ISL-37 REP WA-41 / ISL-37 1-2 / ISL-37 WA-41 / ISL-37 DUP 1-2 / ISL-37 DUP 40-41 / ISL-38 1-2 / ISL-38 40-41
GROUNDWATER GRAB GW-37 REP / GW-37 / GW-37 DUP

SAMPLE COLLECTION METHOD(S) BOILER CHECK BAIL, TUBE PUSH

QUALITY CONTROL DUPLICATE AND REPLICATE SAMPLES COLLECTED.

PROPOSED SCHEDULE FOR TOMORROW CONTINUE SOIL + GROUNDWATER SAMPLING

ADDITIONAL REMARKS N/A

SIGNATURE: _____ DATE: 4/1/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 7/2/96 REPORT NUMBER _____
PROJECT ALLIED INDUSTRIAL PARK AOC NO. _____
WEATHER CAST & CLEAR TEMPERATURE RANGE 40-65 WIND SLIGHT VARIABLE
RUST PERSONNEL ON SITE MIKE TAYLOR
CONTRACTORS ON SITE FLUOR
VISITORS ON SITE GILES (NUST)
TIME ON SITE 0700 TIME OFF SITE _____

SUMMARY OF WORK PERFORMED: SOIL AND GROUNDWATER SAMPLING AT ISC-35, ISC-36. CONCRETE COMING.

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT, CONCRETE CORE

CALIBRATION(S) PERFORMED: OVM

EQUIPMENT PROBLEM(S)/REMEDIES: _____

SAMPLES COLLECTED: SOIL GRAB ISC-36 4-5' / ISC-36 45-46'
GROUNDWATER GRAB ISW-35 / ISW-36

SAMPLE COLLECTION METHOD(S) BAILER, CHECK VALVE, TUBE SPLIT

QUALITY CONTROL NIL

PROPOSED SCHEDULE FOR TOMORROW CONTINUE SOIL AND GROUNDWATER SAMPLING

ADDITIONAL REMARKS _____

SIGNATURE: _____ DATE: 7/2/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 4/3/96 REPORT NUMBER _____
PROJECT ALLIED INDUSTRIAL PARK AOC NO. _____
WEATHER COOL + CLEAR TEMPERATURE RANGE 40 - 75 WIND N/A
RUST PERSONNEL ON SITE MIKE TAYLOR
CONTRACTORS ON SITE EUGEO
VISITORS ON SITE THOMAS STONE, GILES (HUST)
TIME ON SITE 06:57 TIME OFF SITE 17:44

SUMMARY OF WORK PERFORMED: SOIL AND GROUNDWATER SAMPLING USING DPT.

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT

CALIBRATION(S) PERFORMED: PID

EQUIPMENT PROBLEM(S)/REMEDIES: N/A

SAMPLES COLLECTED* SOIL: DUP-B, ISL-55 1-3' / ISL-55 5-6 / ISL-49 1-2 / ISL-47 1-2
GROUNDWATER DUP-B, IGW-53

SAMPLE COLLECTION METHOD(S) BAILER, CHECK BALL, TUBE PISTON

QUALITY CONTROL N/A

PROPOSED SCHEDULE FOR TOMORROW MOBE POSTPONED UNTIL TUESDAY, 4/9/96

ADDITIONAL REMARKS PIT PROBE REFUSAL AT 14' IN THE LOCATIONS IN ISL-47 AND 16.3' IN ISL-47

SIGNATURE: _____ DATE: 4/3/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 4/9/96 REPORT NUMBER 1
PROJECT USACE Allied Industrial Park AOC NO. _____
WEATHER Clear TEMPERATURE RANGE 45→65° WIND —
RUST PERSONNEL ON SITE Rich O'Keefe
CONTRACTORS ON SITE Fugro (David E. Kohout and John F. Wilson)
VISITORS ON SITE —
TIME ON SITE 0730 TIME OFF SITE 1915

SUMMARY OF WORK PERFORMED: Sampled Soil + Groundwater (GW) at ISL-15, ISL-16, ISL-12

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT Technology (Rig)

CALIBRATION(S) PERFORMED: OVM — O.K. 100 ppm Iso-Butylene

EQUIPMENT PROBLEM(S)/REMEDIES: —

SAMPLES COLLECTED* ISL-15-1-2 (Soil) ISL-16-1-2 (Soil) ISL-12-1-2 (Soil)
ISL-15-25-26 (Soil) ISL-16-30-31 (Soil) ISL-12-35-36 (Soil)
ISL-15 (GW) ISL-16 (GW)

SAMPLE COLLECTION METHOD(S) Tube Push (Soil), Hydropunch (GW)

QUALITY CONTROL —

PROPOSED SCHEDULE FOR TOMORROW Continue Soil + GW Sampling

ADDITIONAL REMARKS

SIGNATURE: Rich O'Keefe DATE: 4/9/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 4/10/96 REPORT NUMBER 2
PROJECT USACE Allied Industrial Park AOC NO. _____
WEATHER Clear TEMPERATURE RANGE 35-65° WIND —
RUST PERSONNEL ON SITE Rich O'Keefe
CONTRACTORS ON SITE Fugro (Dave + John)
VISITORS ON SITE —
TIME ON SITE 0700 TIME OFF SITE 1830

SUMMARY OF WORK PERFORMED: Finished sampling at ISL-12, ISL-30, ISL-29, ISL-28

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT Rig

CALIBRATION(S) PERFORMED: OVM - O.K.

EQUIPMENT PROBLEM(S)/REMEDIES: —

SAMPLES COLLECTED*
ISL-12 (GW)
ISL-30-1-2 (Soil) ISL-29-1-2 (Soil) ISL-28-1-2 (Soil)
ISL-30-35-36 (Soil) ISL-29-35-36 (Soil) ISL-28-35-36 (Soil)
ISL-30 (GW) ISL-29 (GW) ISL-28 (GW)

SAMPLE COLLECTION METHOD(S) Tube Push, Hydropunch

QUALITY CONTROL —

PROPOSED SCHEDULE FOR TOMORROW Continue Soil + GW sampling

ADDITIONAL REMARKS —

SIGNATURE: Rich O'Keefe DATE: 4/10/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 4/11/96 REPORT NUMBER 3
PROJECT USACE Allied Industrial Park AOC NO. —
WEATHER Clear TEMPERATURE RANGE 40-70° WIND —
RUST PERSONNEL ON SITE Rich O'Keefe
CONTRACTORS ON SITE Fugro (Dave + John)
VISITORS ON SITE —
TIME ON SITE 0700 TIME OFF SITE 1930

SUMMARY OF WORK PERFORMED: Sampled ISL-17, ISL-26, ISL-27

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT Rig

CALIBRATION(S) PERFORMED: OVM - O.K.

EQUIPMENT PROBLEM(S)/REMEDIES: —

SAMPLES COLLECTED*

ISL-17-1-2 (Soil)	ISL-26-1-2-a (Dup)	ISL-26-35-37-b (Sp	
ISL-27-1-2 (Soil)	ISL-17-20-21 (Soil)	ISL-26-1-2-b (Split)	IGW-26 (GW)
ISL-27-30-31 (Soil)	ISL-17 (GW)	ISL-26-35-37 (Soil)	IGW-26-a (Dup)
IGW-27 (GW)	ISL-26-1-2	ISL-26-35-37-a (Dup)	IGW-26-b (Split)

SAMPLE COLLECTION METHOD(S) Tube Push, Hydropunch

QUALITY CONTROL xx-a (Duplicate) Sent to same lab (Hydrologic)
xx-b (Split) Sent to SAD

PROPOSED SCHEDULE FOR TOMORROW Continue Soil + GW Sampling

ADDITIONAL REMARKS —

SIGNATURE: Rich O'Keefe DATE: 4/11/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 53941.310 DATE 4/12/96 REPORT NUMBER 4
PROJECT USACE Allied Industrial Park AOC NO. _____
WEATHER Clear TEMPERATURE RANGE 45-75° WIND —
RUST PERSONNEL ON SITE Rich O'Keefe
CONTRACTORS ON SITE Fugro (Dave + John)
VISITORS ON SITE —
TIME ON SITE 0700 TIME OFF SITE 1900

SUMMARY OF WORK PERFORMED: Sampled at locations ISL-25, ISL-24 and ISL-33, ISL-48.

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT Rig

CALIBRATION(S) PERFORMED: OVM - O.K.

EQUIPMENT PROBLEM(S)/REMEDIES: —

SAMPLES COLLECTED• ISL-25-1-2 ISL-24-1-2 ISL-33-1-2 IGW-48
ISL-25-25-26 ISL-24-30-31 ISL-33-25-26
IGW-25 IGW-24 IGW-33

SAMPLE COLLECTION METHOD(S) Tube Push, Hydropunch

QUALITY CONTROL —

PROPOSED SCHEDULE FOR TOMORROW Continue Soil and Groundwater Sampling

ADDITIONAL REMARKS ISL (Soil)
IGW (Groundwater) All wipe -0
Happy Birthday to me.

SIGNATURE: Rich O'Keefe DATE: 4/12/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 4/13/96 REPORT NUMBER 5
PROJECT USACE Allied Industrial Park AOC NO. —
WEATHER Overcast / Rain TEMPERATURE RANGE 55-70° WIND —
RUST PERSONNEL ON SITE Rich O'Keefe
CONTRACTORS ON SITE Fugro (Dave + John)
VISITORS ON SITE
TIME ON SITE 0700 TIME OFF SITE 1830

SUMMARY OF WORK PERFORMED: Grouted previous holes 4/9 - 4/12
Sampled at ISL-61, ISL-1, ISL-62

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT Rig

CALIBRATION(S) PERFORMED: OVM - O.K.

EQUIPMENT PROBLEM(S)/REMEDIES: —

SAMPLES COLLECTED* ISL-61-1-2, IGW-61; ISL-1-1-2, ISL-1-15-16, IGW-1; ISL-62-1-2, ISL-62-15-16, IGW-62

SAMPLE COLLECTION METHOD(S) Tube Push, Hydropunch

QUALITY CONTROL —

PROPOSED SCHEDULE FOR TOMORROW Continue Soil + GW Sampling

ADDITIONAL REMARKS Tornadoe watch!

SIGNATURE: Rich O'Keefe DATE: 4/13/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 4/14/96 REPORT NUMBER 6
PROJECT USACE Allied Industrial Park AOC NO. —
WEATHER Overcast TEMPERATURE RANGE 60-80° WIND —
RUST PERSONNEL ON SITE Rich O'Keefe
CONTRACTORS ON SITE Fugro (Dave + John)
VISITORS ON SITE
TIME ON SITE 0700 TIME OFF SITE 1900

SUMMARY OF WORK PERFORMED: Sampled at ISL-51, ISL-4, ISL-3

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT Rig

CALIBRATION(S) PERFORMED: OVM - OK

EQUIPMENT PROBLEM(S)/REMEDIES: Broke rods on rig on ISL-3, materials recovered. Resumed pushing.

SAMPLES COLLECTED*

ISL-51-1-2	ISL-4-1-2	ISL-3-1-2
ISL-51-45-46	ISL-4-1-2-a	ISL-3-30-31
TRIP BLK-51	ISL-4-1-2-b	

SAMPLE COLLECTION METHOD(S) Tube Push, Hydropunch

QUALITY CONTROL
-a (Duplicate) Hydrologic
-b (Split) STN

PROPOSED SCHEDULE FOR TOMORROW Continue Soil + GW Sampling

ADDITIONAL REMARKS

SIGNATURE: Rich O'Keefe DATE: 4/14/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

 DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 4/15/96 REPORT NUMBER 7
PROJECT USACE Alfred Industrial Park AOC NO. —
WEATHER Overcast / Rain TEMPERATURE RANGE 55-70 WIND —
RUST PERSONNEL ON SITE Rich O'Keefe
CONTRACTORS ON SITE Fugro (Dave + John)
VISITORS ON SITE —
TIME ON SITE 0700 TIME OFF SITE 1900

SUMMARY OF WORK PERFORMED: Sampled at locations ISL-46, ISL-2, and ISL-3.

Theresa,
Can you check and see if I sent in a ISL-46-1-2 sample? If so, it was sampled today. Rich

LEVEL OF HEALTH 0
EQUIPMENT USED

CALIBRATION(S) PERFORMED: OVM - O.K.

EQUIPMENT PROBLEM(S)/REMEDIES: —

SAMPLES COLLECTED* ISL-46-1-2, ISL-2-1-2, IGW-2, IGW-3, IGW-46, ISL-2-1-2-a, IGW-2-a, ISL-2-1-2-b, IGW-2-b, ISL-2-35-36

SAMPLE COLLECTION METHOD(S) Tube Push, Hydropunch

QUALITY CONTROL -a Duplicates
-b Splits

PROPOSED SCHEDULE FOR TOMORROW Continue Soil + GW Sampling

ADDITIONAL REMARKS

SIGNATURE: Rich O'Keefe DATE: 4/15/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 4/16/96 REPORT NUMBER 8
PROJECT USACE Allied Industrial Park AOC NO. —
WEATHER Clear TEMPERATURE RANGE 50-70° WIND _____
RUST PERSONNEL ON SITE Rich O'Keefe
CONTRACTORS ON SITE Fugro (Dave + John)
VISITORS ON SITE Theresa Stone (RUST)
TIME ON SITE 0700 TIME OFF SITE 1900

SUMMARY OF WORK PERFORMED: Sampled at ISL-56, ISL-7, and ISL-39

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT Rig

CALIBRATION(S) PERFORMED: OVM OK.

EQUIPMENT PROBLEM(S)/REMEDIES: —

SAMPLES COLLECTED*
ISL-56-1-2
ISL-56-50-51
IGW-56
ISL-50-3-4
ISL-7-1-2
ISL-39-1-2
ISL-39-40-41

SAMPLE COLLECTION METHOD(S) Tube Push, Hydropunch

QUALITY CONTROL —

PROPOSED SCHEDULE FOR TOMORROW Continue Soil + GW Sampling

ADDITIONAL REMARKS Refusal at ISL-50, again at ISL-4, ISL-7, no water yet at ISL-39

SIGNATURE: Rich O'Keefe DATE: 4/16/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

RUST ENVIRONMENT & INFRASTRUCTURE

A–E Daily Quality Control Report

ER 1110-1-263
1 Oct 92

DATE 4/17/96

DAY	S	M	T	W (X)	TH	F	S

WEATHER	Bright Sun	Clear (circled)	Overcast	Rain	Snow
TEMP	To 32	32-50	50-70 (X)	70-85	85 up
WIND	Still	Moderate (X)	High	Report No.	
HUMIDITY	Dry (X)	Moderate	Humid		

CLIENT PROJECT MANAGER ____________

PROJECT Allied Ind Park Macon GA

RUST E&I PROJECT NO. 32941.310

CONTRACT NO. ____________

SUBCONTRACTORS ON SITE:

Ed Escobar + Joe Corbitt with Fraga [illegible]

EQUIPMENT ON SITE: Fraga Rig DPT

WORK PERFORMED (INCLUDING SAMPLING):

calibrate OVA [illegible] with [illegible] calibration [illegible]

ISC-42 collect samples from 1 to 2 feet

ISC-43 samples 1 to 2 feet

ISC-44 samples collected from 1 to 2 feet + 45 to [illegible] feet

ISC-45 samples 1-2 + 50 51 [illegible]

[signature]

SHEET 1 OF 1

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DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 4/17/96 REPORT NUMBER 9
PROJECT USACE Allied Industrial Park AOC NO. —
WEATHER Clear TEMPERATURE RANGE 40-70° WIND —
RUST PERSONNEL ON SITE Rich O'Keefe
CONTRACTORS ON SITE Fugro (Dave + John)
VISITORS ON SITE Theresa Stone, Lester Williams, Ed + Joe (Fugro)
TIME ON SITE 0700 TIME OFF SITE 2000

SUMMARY OF WORK PERFORMED: 2nd Fugro crew on site. They will conduct soil sampling. We will continue w/ GW sampling. Sampled water (ground) at ISL-39, ISL-43, ISL-43, ISL-49, ISL-47, and ISL-44

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT Rig

CALIBRATION(S) PERFORMED: — OVM given to Lester Williams

EQUIPMENT PROBLEM(S)/REMEDIES: —

SAMPLES COLLECTED*

IGW-39	IGW-47	IGW-47
IGW-39-9	IGW-43	IGW-44
IGW-39-D	IGW-49	

SAMPLE COLLECTION METHOD(S) Hydropunch

QUALITY CONTROL -a (Duplicate)
-b (Split)

PROPOSED SCHEDULE FOR TOMORROW Continue Soil + GW Sampling

ADDITIONAL REMARKS Split sampling of soil + GW w/ 2nd rig.

SIGNATURE: Rich O'Keefe DATE: 4/17/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941.310 DATE 4/18/96 REPORT NUMBER 10
PROJECT USACE Allied Industrial Park AOC NO. —
WEATHER Clear TEMPERATURE RANGE 50-80° WIND —
RUST PERSONNEL ON SITE Rich O'Keefe / Lester Williams
CONTRACTORS ON SITE Fugro (Dave, John, Ed, Joe)
VISITORS ON SITE
TIME ON SITE 0700 TIME OFF SITE 2020

SUMMARY OF WORK PERFORMED: Sampled at ISL-7, ISL-45, ISL-40, ISL-41, ISL-6, ISL-23, ISL-5

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT Rig

CALIBRATION(S) PERFORMED: —

EQUIPMENT PROBLEM(S)/REMEDIES: —

SAMPLES COLLECTED: IGW-7, IGW-41, IGW-5, IGW-45, IGW-6, IGW-40, IGW-23

SAMPLE COLLECTION METHOD(S) Hydropunch

QUALITY CONTROL —

PROPOSED SCHEDULE FOR TOMORROW Continue / Finish Soil + GW Sampling

ADDITIONAL REMARKS See Letter / Chain of Custody for Soils collected

SIGNATURE: Rich O'Keefe DATE: 4/18/96

INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

RUST ENVIRONMENT & INFRASTRUCTURE

A–E Daily Quality Control Report

ER 1110–1–263
1 Oct 92

DATE 4/18/96

DAY	S	M	T	W	TH	F	S
					X		

WEATHER	Bright Sun	Clear X	Overcast	Rain	Snow
TEMP	To 32	32–50	50–70 X	70–85	85 up
WIND	Still	Moderate X	High	Report No.	
HUMIDITY	Dry X	Moderate	Humid		

CLIENT PROJECT MANAGER _____

PROJECT 33941.310

RUST E&I PROJECT NO. Allied Ind. Pk

CONTRACT NO. _____

SUBCONTRACTORS ON SITE: FRUTO

EQUIPMENT ON SITE: FRUTO Rig

WORK PERFORMED (INCLUDING SAMPLING):

700 Arrive on site

822 ISC-10 Sample – (1'-2') refusal @ 35'

1000 ISC-11 Sample 1'-2' + 35'-36'

1210 ISC-6 Sample - 1'-2' / 45'-46'

1450 ISC-5 Sample 1'-2' / 40'-41'

1730 ISC-20 Sample 1'-2' / Refusal @ 15 feet

SHEET _____ OF _____

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RUST ENVIRONMENT & INFRASTRUCTURE

A–E Daily Quality Control Report

ER 1110-1-263
1 Oct 92

DATE 4/19/96

DAY	S	M	T	W	TH	F	S
						X	

WEATHER	Bright Sun	Clear	Overcast X	Rain	Snow
TEMP	To 32	32–50	50–70 X	70–85	85 up
WIND	Still	Moderate X	High	Report No.	
HUMIDITY	Dry	Moderate	Humid X		

CLIENT PROJECT MANAGER _____
PROJECT 33941.310
RUST E&I PROJECT NO. Allied Ind Park
CONTRACT NO. _____

SUBCONTRACTORS ON SITE: FRUTO

EQUIPMENT ON SITE: FRUTO RIG

WORK PERFORMED (INCLUDING SAMPLING):

655 - arrive on site
740 ISC-21 collect samples (1'-2') + (40-41')
740 ISC-23 Samples (1'-2') refusal at 20 feet (15-16') collected for second Sample
1051 ISC-22 sample (1'-2') refusal at 20.5 feet (15-16') collected
1230 ISC-60 sample (1'-2') + (35-36')
1700 ISC-63 Sample (1-2) + (40-41')
1900 ISC-46 (re drilled refusal target samples) 14'-15' samples collected
1920 ISC-47 (re drilled) 14'-15' samples collected
1950 ISC-49 (re drilled) (12-13') samples collected
2000 ISC-50 re drilled (14'-15') samples collected
2100 off site

SHEET 1 OF 1

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DQCR NUMBER _____

DAILY QUALITY CONTROL REPORT

PROJECT NUMBER 33941310 DATE 4/19/96 REPORT NUMBER 11
PROJECT USACE Allied Industrial Park AOC NO. —
WEATHER Cloudy TEMPERATURE RANGE 55-80° WIND —
RUST PERSONNEL ON SITE Rick O'Keefe / Lester Williams
CONTRACTORS ON SITE Fugro (Dave, John, Ed, Joe,)
VISITORS ON SITE —
TIME ON SITE 0700 TIME OFF SITE 1500 (O'Keefe) (Williams)

SUMMARY OF WORK PERFORMED: Sampled GW at ISL-60, ISL-21, ISL-22

LEVEL OF HEALTH & SAFETY PROTECTION D

EQUIPMENT USED: DPT Rig

CALIBRATION(S) PERFORMED: —

EQUIPMENT PROBLEM(S)/REMEDIES: —

SAMPLES COLLECTED* IGW-60, IGW-21, JGW-60-a, IGW-22, IGW-60-b

SAMPLE COLLECTION METHOD(S) Hydropunch

QUALITY CONTROL -a Duplicate
-b Splits

PROPOSED SCHEDULE FOR TOMORROW _____

ADDITIONAL REMARKS _____

SIGNATURE: Rick O'Keefe DATE: 4/19/96

*INDICATE SAMPLE MEDIA: GROUNDWATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS

RUST ENVIRONMENT & INFRASTRUCTURE

A–E Daily Quality Control Report

ER 1110-1-263
1 Oct 92

DATE 4/20/96

DAY	S	M	T	W	TH	F	S
							X

WEATHER	Bright Sun	Clear	Overcast X	Rain	Snow
TEMP	To 32	32–50	50–70 X	70–85	85 up
WIND	Still	Moderate X	High	Report No.	
HUMIDITY	Dry	Moderate X	Humid		

CLIENT PROJECT MANAGER _____

PROJECT 33941.310

RUST E&I PROJECT NO. Allied Ind Park

CONTRACT NO. _____

SUBCONTRACTORS ON SITE: FRUTO

EQUIPMENT ON SITE: FRUTO RIG

WORK PERFORMED (INCLUDING SAMPLING):

700 Arrive on site
745 ISL-93 (Rockhill) 19'-20' sample collected
850 ISL-92 (Rockhill) (32-33') sample collected
945 Drillers off-site
950 ZW call. T. Stone to check on
1130 all samples packed & shipped at Fedex, off-site Friday

SHEET 1 OF 1

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RUST ENVIRONMENT & INFRASTRUCTURE

A–E Daily Quality Control Report

ER 1110–1–263
1 Oct 92

DATE 4/23/96

DAY	S	M	T	W	TH	F	S
			X				

WEATHER	Bright Sun	Clear	Overcast X	Rain X	Snow
TEMP	To 32	32–50	50–70	70–85	85 up
WIND	Still	Moderate X	High	Report No.	
HUMIDITY	Dry	Moderate	Humid X		

CLIENT PROJECT MANAGER _____
PROJECT Allied Industrial Park
RUST E&I PROJECT NO. 33941.320
CONTRACT NO. _____

SUBCONTRACTORS ON SITE: None (Williams & B. Posick & Rust E+I T. Stone)

EQUIPMENT ON SITE: Sampling equipment, OVM etc.

WORK PERFORMED (INCLUDING SAMPLING):

730 Arrive on-site prep for day
930-1130 Walk site + scope locations with T. Stone
1130-1230 Lunch
1230-1330 Walk landfill site + scope locations with T. Stone
1330 to 1700 collect downgradient sample points on valley creek
CSW-9, CSD-9, CSW-8, CSD-8
1700 Off-site for day

SHEET 1 OF 1

Rev. 2/93

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RUST ENVIRONMENT & INFRASTRUCTURE

A–E Daily Quality Control Report

ER 1110–1–263
1 Oct 92

DATE 4/24/96

DAY	S	M	T	W	TH	F	S
				X			

WEATHER	Bright Sun	Clear X	Overcast	Rain	Snow
TEMP	To 32	32–50	50–70 X	70–85	85 up
WIND	Still	Moderate X	High	Report No.	
HUMIDITY	Dry	Moderate X	Humid		

CLIENT PROJECT MANAGER _____
PROJECT Allied Industrial Park
RUST E&I PROJECT NO. 33941.320
CONTRACT NO. _____

SUBCONTRACTORS ON SITE: None — L. Williams > Rust E&I; B. Posick > Rust E&I

EQUIPMENT ON SITE: Sampling Equipment

WORK PERFORMED (INCLUDING SAMPLING):

730 Arrive onsite Meet for day — *"LSW" - surface water
850 LSW-7, LSD-7 — "LSD" - sediment
925 LSW-6
950 LSW-4
1030 LSW-5, LSD-5
1145-1200 LSW-3 LSD-3
1315-1330 LSW-2, LSD-2
1400-1410 LSW-1, LSD-1
1430 Visit Landfill - Number of FENEX
1435-1530 Pack samples etc.

SHEET _____ OF _____

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RUST ENVIRONMENT & INFRASTRUCTURE

A–E Daily Quality Control Report

ER 1110-1-263
1 Oct 92

DATE 4/25/96

DAY

S	M	T	W	TH	F	S
				X		

CLIENT PROJECT MANAGER ______

PROJECT Allied Industrial Park

RUST E&I PROJECT NO. 33941.320

CONTRACT NO. ______

WEATHER	Bright Sun	Clear X	Overcast	Rain	Snow
TEMP	To 32	32-50	50-70 X	70-85	85 up
WIND	Still	Moderate X	High	Report No.	
HUMIDITY	Dry X	Moderate	Humid		

SUBCONTRACTORS ON SITE: None — L. Williams, B. Posick } Rust E&I

EQUIPMENT ON SITE: Sampling Equipment

WORK PERFORMED (INCLUDING SAMPLING):

840 @ site try to measure wl's, no key for piezos, cut lock @ PZ-5. wl = 16.05

950 B. Posick arrives, start hand auger boring near landfill (LSC-12), collect samples from (1-2') and (3'-4')

1115 Move to LSC-13 boring (≈100' south of MW-6), collect samples from (1'to 2' feet) and (3' to 4')

1230 off site

1430 on-site prep for taking WL's

1430-1700 Record water levels in all wells on-site (6 piezos + 11 mon. wells)

1910 after cleaning out office off site for day.

[signature]

SHEET 1 OF 1

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RUST ENVIRONMENT & INFRASTRUCTURE

A–E Daily Quality Control Report

ER 1110-1-263
1 Oct 92

DATE 5-6-96

DAY	S	M	T	W	TH	F	S
		(M)					

WEATHER	Bright Sun	Clear X	Overcast	Rain	Snow
TEMP	To 32	32–50	50–70	70–85 X	85 up
WIND	Still	Moderate X	High	Report No.	
HUMIDITY	Dry	Moderate X	Humid		

CLIENT PROJECT MANAGER Alan Shirey
PROJECT USACE MNOP HSRA Investigation
RUST E&I PROJECT NO. 33941
CONTRACT NO. DO #24

SUBCONTRACTORS ON SITE:

Entech Inc (survey crew)

EQUIPMENT ON SITE: survey equipment

WORK PERFORMED (INCLUDING SAMPLING):

8:00 am - Re-staked sample locations @ former landfill. Could not locate DP-11 Surveyors ~~~~ identify survey markers.

12:00 - Re-staked sample locations @ Allied Industrial Park. Sample locations identified: ISL-17, ISL-14, ISL-15, ISL-12, ISL-13, ISL-19, ISL-28, ISL-29, ISL-30, ISL-24, ISL-25, ISL-26, ISL-27, ISL-32, ISL-33, ISL-34, ISL-35, ISL-8, ISL-9, ISL-10, ISL-11, ISL-62

6:00 pm Left site

Theresa Stone

SHEET _____ OF _____

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RUST ENVIRONMENT & INFRASTRUCTURE

A–E Daily Quality Control Report

ER 1110–1–263
1 Oct 92

DATE 5-7-96

DAY	S	M	T	W	TH	F	S
			X				

WEATHER	(Bright Sun)	Clear	Overcast	Rain	Snow
TEMP	To 32	32–50	50–70	70–85	(85 up)
WIND	(Still)	Moderate	High	Report No.	
HUMIDITY	Dry	(Moderate)	Humid		

CLIENT PROJECT MANAGER Alan Shirey
PROJECT USACE MMOP HSRA Investigation
RUST E&I PROJECT NO. 33941
CONTRACT NO. DO #24

SUBCONTRACTORS ON SITE:

Entech Inc. (survey crew)

EQUIPMENT ON SITE: survey equipment

WORK PERFORMED (INCLUDING SAMPLING):

Restaked remaining locations at Allied Industrial Park: ISL-61, ISL-1, ISL-2, ISL-3, ISL-4, ISL-63, ISL-18, ISL-16, ISL-5, ISL-6, ISL-7, ISL-20 ISL-21, ISL-23, ISL-24

*NOTE: Could not locate ISL-60

Found to borings not grouted. Filled with bentonite chips & hydrated with on-site tap water.

Theresa Stone

SHEET _____ OF _____

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APPENDIX C

RISK REDUCTION STANDARDS EVALUATION FOR THE ALLIED INDUSTRIAL PARK

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of the Risk Reduction Standards (RRS) evaluation was to determine whether contamination detected in the soils and/or groundwater at the Allied Industrial Park (AIP) Landfill complies with one of four RRS established in the Hazardous Sites Response Act (HSRA). The RRS evaluation was conducted under the framework established by HSRA.

The scope of work included a complete compliance evaluation for **groundwater** Type 1 and Type 3 RRS. This was conducted through a comparative analysis of site groundwater contaminant concentrations to the concentrations provided in Table 1 of Appendix III of the HSRA regulations. A preliminary evaluation of compliance with **soil** Type 1 and 3 RRS was accomplished through a comparative analysis of site soil contaminant concentrations to the RRS provided in Table 2 of Appendix III of the HSRA regulations followed by evaluation of other HSRA defined criteria.

For constituents in soil and groundwater which exceeded Type 1 and Type 3 RRS, Type 2 and Type 4 RRS evaluations were performed. Type 2 and Type 4 RRS were calculated using criteria established in HSRA and the contaminant concentrations were subsequently compared to those standards.

1.2 ORGANIZATION OF REPORT

This report is organized with the Type 1 and Type 3 RRS evaluations in Sections 2.0 and 3.0 followed by Type 2 and 4 RRS evaluations in Sections 4.0 and 5.0. The Type 1 and 3 standards are often referred to as the "fast-track" options for residential and non-residential scenarios. The fast-track options are easier to calculate because they use standardized exposure assumptions provided by the Georgia EPD. In most cases the evaluation of the fast-track options is a simple comparative analysis to concentrations levels already established in HSRA. In Sections 4.0 and 5.0 Rust, following the RRS process, has evaluated the Type 2 and Type 4 RRS by applying site specific risk assessment information to the residential and non-residential scenarios.

2.0 TYPE 1 RISK REDUCTION STANDARDS

2.1 GROUNDWATER REQUIREMENTS

The criteria for meeting the Type 1 Risk Reduction Standards (RRS) are described in Rule 391-3-19-.07 of Georgia Department of Natural Resources Environmental Protection Division, Hazardous Site Response. The Type 1 RRS is often referred to as the "fast track" option that uses conservative exposure assumptions. Evaluation of these standards only requires a simple comparison of the site groundwater analytical data to constituent levels that are written into the HSRA rules. Criteria for meeting Type 1 (residential) RRS are as follows: *(Note that criteria for Type 1 and Type 3 for groundwater are the same.)*

"At any point within ground water 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 detection limit concentration. If two or more regulated organic compounds are present in ground water, 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."

2.2 RESULTS OF TYPE 1 RRS EVALUATION ON GROUNDWATER

During this evaluation the Type 1 RRS criteria were compared to detected concentrations from groundwater samples collected at the AIP. Analytes that were detected which have no HSRA standards established were compared to background or detection limit.

A number of analytes were detected in groundwater samples collected from the AIP that exceeded the Type 1 groundwater RRS. Parameters which were detected at levels exceeding HSRA groundwater limits in Table 1 of Appendix III of HSRA include:

- 1,1-dichloroethene
- beryllium
- bis(2-ethylhexyl)phthalate
- chloromethane
- copper
- mercury
- nickel
- trichloroethene
- zinc
- antimony
- arsenic
- cadmium
- chromium
- lead
- methylene chloride
- thallium
- vinyl chloride

The following compounds were also detected but have no HSRA limits set:

- 1,2,4-trimethylbenzene
- 2,6-dinitrotoluene
- a,a-dimethylphenethylamine
- cis-1,2-dichloroethene

Table C2-1 provides a complete listing of all groundwater detections which were found to exceed the RRS. The most frequent exceedances were from metals including cadmium, chromium, lead, and nickel. These parameters were exceeded at the majority of DPT groundwater sampling locations. Antimony, arsenic, beryllium copper, thallium, and zinc were detected in only one or two groundwater samples above their respective RRS (Table C2-1). Mercury was detected in three groundwater samples at concentrations of 0.002 and 0.003 milligrams per liter (mg/L) which slightly exceeded the RRS of 0.002 mg/L. Chromium, lead, mercury and nickel were all detected in background DPT boring locations exceeding their respective RRS. Beryllium, cadmium and thallium were also detected in borings ISL-60 and ISL-61 which, while not established as background points are clearly in an up gradient position to all of the industrial areas and/or suspected source areas at the AIP.

The most frequently detected volatile organic compound (VOC) exceeding the RRS is trichloroethene (TCE). The RRS standard of 0.005 mg/L was exceeded at 22 direct push technology (DPT) groundwater sample locations (Table C2-1). In addition, the RRS was exceeded for 1,1-dichloroethene and vinyl chloride at IGW-9 and exceeded for chloromethane at IGW-14. However, it should be noted that these "hits" were qualified by the laboratory as J-values and should only be considered estimates. Methylene chloride was detected in four groundwater samples at estimated (J-value) concentrations of 0.011 mg/L to 0.031 mg/L. The RRS for methylene chloride is 0.005 mg/L.

Bis(2-ethylhexyl)phthalate was detected at five locations exceeding the RRS. However, each of these detections was flagged as estimated.

Several compounds were detected that did not have RRS established. Cis-1,2 dichloroethene was detected in three DPT groundwater samples including IGW-9 (6.3J mg/L), IGW-24 (0.044 mg/L), IGW-28 (0.011 mg/L) and IGW-8 (0.005 mg/L). A single detection of 1,2,4-trimethylbenzene was observed in IGW-9 and single detections of 2,6-dinitrotolune and a,a-dimethylphenethylamine were observed in IGW-15. In accordance with the RRS process, these detections would be considered to exceed the RRS for these compounds since these parameters do not have a standard and were not detected in background groundwater samples.

2.3 SOIL REQUIREMENTS

The criteria for meeting the Type 1 RRS are described in Rule 391-3-19-.07 of Georgia Department of Natural Resources Environmental Protection Division, Hazardous Site Response.

Criteria for meeting Type 1 (residential) RRS for soil are as follows:

"(c) Criteria for soil. Concentrations at any point above the uppermost groundwater zone in soil that has been affected by a release shall not exceed the concentrations given in Table 2 of Appendix III or, for those substances not listed, the least of the concentrations from Items 1 through 3 below:

1. Concentrations which will not cause contamination of groundwater at levels which exceed Type groundwater criteria, determined as the highest of the soil concentrations in Items (i)-(iii) below:

(i) Soil concentrations in Appendix I, excluding any values given in square brackets;
(ii) Multiplication of the Type 1 groundwater concentrations criteria by a factor of 100.
(iii) Demonstration through use of the Toxicity Characteristic Leaching Procedure, SW846 Method 1311, or other method approved by the director that a concentration in soil will not generate leachate concentrations that exceed Type 1 groundwater criteria.

[Note: For substances excluded under Item (i) above and not listed on Table 1 of Appendix III, the concentration under Rule 391-3-19-.07(6)(c)(1) shall be considered non-calculable.]

2. 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 of RAGS, Part B, and standard residential exposure assumptions in Table 3 of Appendix III.

3. 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) via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 6 of RAGS, Part B, and standard residential exposure assumptions in Table 3 of Appendix III.

[Note: Where concentrations are non-calculable under Items 1-3 above, the soil criterion shall be the higher of the background or detection limit concentrations.]"

2.4 RESULTS OF TYPE 1 RRS EVALUATION ON SOIL

To evaluate compliance with the Type 1 soil RRS for the site, the results of soil sampling were compared first with concentration limits provided in Table 2 of Appendix III of the HSRA regulation. For those compounds that were detected, but not listed in Table 2 of Appendix III, the detected analytes were compared to the highest of the soil concentrations of either the (1) soil concentration in Appendix I of the HSRA regulation, excluding any values given in square brackets, or (2) multiplication of the Type 1 groundwater concentrations by a factor of 100. For the purpose of this project, the detected soil analytes were not further evaluated against the other criteria established in Parts 1 through 3 of the Type 1 criteria quoted above. Because the Type 1 standard was not in compliance further evaluations were not considered necessary.

Few analytes were detected in soil samples collected from the AIP that exceeded the Type 1 soil RRS based upon the criteria of exceedences of concentrations in Table 2 of Appendix III or the higher of concentrations of those described in Item 1 of Rule 391-3-19-.07(6)(c). Table C2-2 provides a listing of all soil detections exceeding these criteria.

Parameters exceeding Type 1 RRS of Table 2 of Appendix III (of HSRA) include antimony, cadmium, chromium, and zinc. These criteria were exceeded at six different soil sampling locations (Table C2-2). Criteria for TCE and PCE were exceeded at locations ISL-4 and ISL-8.

3.0 TYPE 3 RISK REDUCTION STANDARDS

3.1 GROUNDWATER REQUIREMENTS

Type 3 (non-residential) groundwater RRSs are exactly the same as the Type 1 (Section 2.1).

3.2 RESULTS OF TYPE 3 RRS EVALUATION ON GROUNDWATER

The results of Type 3 groundwater RRSs are exactly the same as the Type 1 (Section 2.2).

3.3 SOIL REQUIREMENTS

Criteria for meeting Type 3 (non-residential) RRS for soil are as follows:

"1. Concentrations at any point above the uppermost groundwater zone in soil that has been affected by a release shall not exceed the higher of concentrations described in Item 1 of Rule 391-3-19-.07(6)(c) or those listed in Table 2 of Appendix III.

2. Concentrations in surface soil (soil within 2 feet of the land surface shall not exceed the lower of the concentrations defined in Items (i) and (ii) below. If neither of the calculations implied below can be made, the surface soil criterion shall be equal to the criterion of Item 1 above. In no event shall compliance with the surface soil criteria be achieved by applying two feet of clean soil onto the original land surface.

(i). 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.

(ii). 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 of RAGS, Part B, and standard nonresidential exposure assumptions in Table 3 of Appendix III."

3.4 RESULTS OF TYPE 3 RRS EVALUATION ON SOIL

The evaluation of compliance with the Type 3 soil RRS for the site was performed in two steps. The first part of the above quoted Type 3 RRS was evaluated by comparing soil analytical results with the higher of concentration limits provided in Table 2 of Appendix III (of HSRA) or the higher of

concentrations described in Item 1 of Rule 391-3-19-.07(6)(c). The second part of the Type 3 criteria was accomplished by calculating if any surface soil detections (samples collected within 2 feet of the land surface) exceeded the lower of the concentrations defined in Items (i) and (ii) of part 2.

Evaluation of the first part of the Type 3 RRS criteria is the same as that described above under Type 1 (see Section 2.4). Hence, the Type 3 RRS are exceeded for antimony, cadmium, chromium, and zinc at 6 soil sampling locations, and for TCE and PCE at two soil sampling locations.

Evaluation of the second part of the Type 3 RRS for soil indicates no exceedences for surface soils of these criteria. Calculations are identical to those described in Section 4.0 using the Risk Assessment Guidance for Superfund (RAGS) Part B (EPA, 1991a).

4.0 TYPE 2 RISK REDUCTION STANDARDS

Type 2 RRS calculations were performed for only those groundwater constituents which exceeded Types 1 or 3 RRS. A total of 12 analytes (seven organics and five inorganics) in groundwater were identified for Type 2 RRS analysis (Table C4-1).

4.1 GROUNDWATER REQUIREMENTS

Per HSRA Rule 391-3-19-.07(7), Type 2 RRS establish media concentrations at which constituents pose no significant risk or hazard based on a site-specific, residential use scenario. To comply with Type 2 standards, all source materials must meet the criteria established herein.

For groundwater, HSRA 391-3-19-.07(7b) states that the Type 2 RRS is the lesser of Items 1 and 2 below:

"1) Concentrations which are unlikely to result in noncancer toxic effects on human health via ingestion of, or inhalation of volatiles from ground water, 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 risks is less than 10^{-5} via ingestion and inhalation of, and inhalation of volatiles from ground water, determined using Equation 1 from RAGS Part B, and site-specific exposure factors for the residential use scenario."

If neither of the risk-based concentrations can be calculated for a particular chemical, the Type 2 RRS is then the higher of: 1) the constituent concentration in Table 1 of Appendix III (HSRA 391-3-19); 2) the background concentration; or 3) the detection limit concentration.

In situations where risk-based concentrations are less than the detection limit and/or background concentration for a chemical, the greater of the detection limit or background concentration becomes the Type 2 RRS.

4.2 EXPOSURE ASSUMPTIONS AND TOXICITY VALUES FOR GROUNDWATER

Site-specific exposure parameters used to solve RAGS Part B Equations 1 and 2 (EPA, 1991a) are described below. For the residential use scenario, groundwater from the Allied Industrial Park area is assumed to be used as a sole source of potable water for an adult receptor. Inhalation exposure to volatiles from groundwater is assumed to occur while showering as well as during other household activities. These assumptions are incorporated into Equations 1 and 2 of RAGS Part B.

The residential exposure factors used in developing Type 2 RRS are presented in Table C4-2. The standard adult body weight of 70 kilogram (kg) was used in all derivations (EPA, 1995b; EPA, 1990a; EPA 1991b). For the residential exposure scenario, an exposure duration of 30 years was applied. This value represents the national upper-bound (90th percentile) time at one residence (EPA, 1995a; EPA 1991b). The typical residential exposure frequency of 350 days per year (days/yr) (EPA, 1991b; EPA, 1995a) was assumed for exposures to groundwater. The averaging time was assumed as 30 years for noncarcinogenic exposures and 70 years for carcinogenic exposures.

The mean adult tap water intake for Atlanta, Georgia residents (1.4 liters per day (L/day)) was used for the groundwater ingestion rate (from Table 2-1; EPA, 1995b). An inhalation rate of 13.3 m^3/day, which is a daily mean value (including resting periods) for a residential setting (p 3-46; EPA, 1995b), was used for the resident.

Toxicity information used in this evaluation was obtained from sources outlined in EPA guidance (EPA, 1995a). The preferable source was the Integrated Risk Information System (IRIS; EPA, 1996). If values were not available from IRIS, the Health Effects Assessment Summary Tables (HEAST; EPA, 1995c) or the EPA National Center for Environmental Assessment (NCEA) was consulted. The NCEA values are considered provisional or interim values. Oral and inhalation toxicological information for the RRS constituents are presented in Table C4-3.

4.3 RISK-BASED EQUATIONS AND TYPE 2 RRS RESULTS FOR GROUNDWATER

Using the exposure factors outlined in Section 4.2 along with Equations 1 and 2 from RAGS part B (EPA, 1991a), Type 2 risk-based concentrations were developed for each groundwater constituent. The volatilization factor for VOCs (K in RAGS Part B equations) in groundwater was conservatively assumed as 1.0, which represents all VOCs in water entering the atmosphere. If the residential exposure factors (Table C4-2) are inserted into the equations (RAGS part B Equations 1 and 2) and the equations are reduced, the resulting risk-based concentration (RBC) equations for residential exposure to groundwater are:

for noncarcinogenic effects,

$$RBC_{ncar} = THI / [(0.0192/RfD_o) + (0.182/RfD_i)];$$

and for carcinogenic effects,

$$RBC_{car} = TR / [(8.22E\text{-}03 \times SF_o) + (7.81E\text{-}02 \times SF_i)]$$

where:

RBC_{car} = Carcinogenic Risk-Based Concentration (mg/L),

RBC_{ncar}	=	Noncarcinogenic Risk-Based Concentration (mg/L),
THI	=	Target Hazard Index (unitless)
TR	=	Target Risk Level (unitless)
RFDo	=	Oral Reference Dose (mg/kg-day)
RFDi	=	Inhalation Reference Dose (mg/kg-day)
Sfo	=	Oral Slope Factor (kg-day/mg)
Sfi	=	Inhalation Slope Factor (kg-day/mg)

Toxicity values (Table C4-3) and HSRA-required target risk (10^{-5}) or target hazard (1.0) values are inserted into the above RBC equations, which are then solved for the Type 2 risk-based concentrations. Type 2 carcinogenic and noncarcinogenic risk-based concentrations are summarized along with the other criteria required by HSRA [319-3-91-.07(7)] in Table C4-4.

The final Type 2 RRS are also designated in Table C4-4. Three constituents (2,6-dinitrotoluene, a,a-dimethylphenethylamine, and vinyl chloride) had final RRS equal to their detection limit. This was a result of the calculated risk-based concentration being less than the detection limit. Detection limits were obtained from EPA (1990b) and were assumed to be equivalent to quantitation limits for organics and detection limits for inorganics. Two constituents, chromium and lead, had background concentrations as final RRS. The remaining RRS (Table C4-4) were obtained from the risk-based concentrations.

The constituents which exceeded the Type 2 RRS at least once are cadmium (detected 27 times and exceeded criteria 1 time), chromium (detected 58 times and exceeded criteria 43 times), dimethylphenethylamine (detected 1 time and exceeded criteria 1 time), lead (detected 59 times and exceeded criteria 35 times), trichloroethene (detected 27 times and exceeded criteria 17 times), vinyl chloride (detected and exceeded criteria 1 time) and cis-1,2-dichloroethene (detected 3 times and exceed criteria one time). All other constituents under consideration (1,2,4-trimethylbenzene, 2,6-dinitrotoluene, bis(2-ethylhexyl)phthalate, mercury, and nickel) did not exceed the RRS at any point in groundwater. All samples exceeding the Type 2RRS are provided in Table C4-5.

4.4 SOIL REQUIREMENTS

For soil, HSRA 391-3-19-.07(7c) states:

"(c) *Criteria for soil. Concentrations at any point above the uppermost groundwater zone in soil that has been affected by a release shall not exceed the least of the concentrations in Items 1 through 3 below, or for those substances for which calculations cannot be made, the highest of the concentrations in Table 2 of Appendix III, background concentrations, or detection limit concentrations:*

1) Concentrations which will not cause contamination of groundwater which exceed Type 2 groundwater criteria, 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 well could be installed.

2) Concentrations which are unlikely to result in any noncancer toxic effects on human health via ingestion along with inhalation of volatiles and particulates, determined using Equation 7 from RAGS Part B, and site specific exposure factors fro the residential use scenario.

3) Concentrations for which the upper bound on the estimated excess cancer risks 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."

In situations where calculated risk-based concentrations are less than the detection limit and/or background concentration for a chemical, the greater of the detection limit or background concentration becomes the Type 2 RRS.

4.5 EXPOSURE ASSUMPTIONS AND TOXICITY VALUES FOR SOIL

For the residential scenario, the receptor is assumed to reside within the Industrial Park Area. Thus, exposure to soil occurs via incidental ingestion as well as inhalation of volatiles and particulates from soil. Volatilization factors for estimating soil-to-air transfer (used in Equations 6 and 7, RAGS Part B) were estimated following RAGS guidance (EPA, 1991a; Equation 8). The derivation of volatilization factors for VOCs is presented in Table C4-6. The default particulate emission factor (PEF; 6.79E+8 m^3/kg) from EPA Draft Soil Screening Guidance (EPA, 1994) was used in RAGS Part B Equations 6 and 7.

The residential exposure factors used in developing Type 2 RRS are presented in Table C4-2. The body weight, exposure duration, exposure frequency, inhalation rate, and averaging time were the same as those used for groundwater exposures (Section 4.2). The mean incidental soil ingestion rate (home and yard exposures) for adults in residential settings (60.5 mg/day) was used to represent a reasonable soil ingestion rate (Table 2-260; EPA, 1995b).

The hierarchy of sources for toxicity information was the same as that identified for groundwater (Section 2.2). Toxicity values are presented in Table C4-3.

4.6 RISK-BASED EQUATIONS AND TYPE 2 RRS RESULTS FOR SOIL

Using the exposure factors outlined in Section 4.5 along with Equations 6 and 7 from RAGS part B (EPA, 1991a), Type 2 risk-based concentrations were developed for each soil constituent. If the residential exposure factors (Table C4-2) are inserted into the equations (RAGS part B Equations 6 and 7 and the equations are reduced, the resulting RBC equations for residential exposure to soil are:

for noncarcinogenic effects,

$$RBC_{ncar} = THI / \{ (8.29E\text{-}7/RfD_o) + [0.182/RfD_i \times ((1/PEF)+(1/VF))] \};$$

and for carcinogenic effects,

$$RBC_{car} = TR / \{ (3.55E\text{-}7 \times SF_o) + [7.81E\text{-}2 \times SF_i \times ((1/PEF)+(1/VF))] \}$$

where:

RBC_{car}	=	Carcinogenic Risk-Based Concentration (mg/kg),
RBC_{ncar}	=	Noncarcinogenic Risk-Based Concentration (mg/kg),
THI	=	Target Hazard Index (unitless)
VF	=	Volatilization Factor (chemical specific - Table 4; m^3/kg)
PEF	=	Particulate Emission Factor (6.79E+08 m^3/kg)
TR	=	Target Risk Level (unitless)
RFDo	=	Oral Reference Dose (mg/kg-day)
RFDi	=	Inhalation Reference Dose (mg/kg-day)
Sfo	=	Oral Slope Factor (kg-day/mg)
Sfi	=	Inhalation Slope Factor (kg-day/mg)

Toxicity values (Table C4-3) and HSRA-required target risk (10^{-5}) or target hazard (1.0) values are inserted into the above RBC equations, which are then solved for the Type 2 risk-based concentrations.

Type 2 soil standards which are protective of leaching to groundwater were estimated using Equation 8 of EPA Draft Soil Screening Guidance (EPA, 1994). The derivations are presented in Table C4-7. Leachate standards for metals were not derived due to the high degree of uncertainty associated with metal partitioning data. The groundwater concentrations used as the leachate goal were estimated following the protocol outlined in Section 4.1 through 4.3.

The final Type 2 soil RRS are designated in Table C4-4. Three constituents, cis-1,2-dichloroethene, tetrachloroethene, and trichloroethene, had RRS equal to their detection limits. The remaining RRS were obtained from risk-based concentrations.

The derived Type 2 RRS (Table C4-4) were compared with maximum detected concentrations in groundwater and soil from the AIP. The maximum concentrations for the analytes under consideration can be found in Table C4-1. In order to comply with Type 2 RRS, all media concentrations must be equal to or less than the derived Type 2 media standards.

Of the seven soil constituents, only tetrachloroethene and trichloroethene exceeded the Type 2 RRS. Tetrachloroethene exceeded the criteria one time (ISL-4 1'-3') and trichloroethene exceed the criteria two times (ICL-4 1'-3' and ISL-8 9'-11'). All other constituents were present at concentrations less than the Type 2 RRS.

5.0 TYPE 4 RISK REDUCTION STANDARDS

Per HSRA Rule 391-3-19-.07(7), Type 4 RRS establish media concentrations which pose no significant risk or hazard based on a site-specific, non-residential use scenario. To comply with Type 4 standards, all source materials must meet the criteria established herein.

5.1 GROUNDWATER REQUIREMENTS

Type 4 groundwater RRS are developed (using a non-residential use scenario) following exactly the same methodology as stated in the Type 2 RRS derivation (Section 4.1).

5.2 EXPOSURE ASSUMPTIONS AND TOXICITY VALUES FOR GROUNDWATER

For the non-residential use scenario, the most likely receptor is a person employed at the industrial park (i.e. office or light industrial worker). Although a public water supply is present at the industrial park, exposure to groundwater is assumed through ingestion and inhalation of volatiles. This assumption is consistent with HSRA requirements and also is consistent with the industrial exposure assumptions promulgated by EPA (EPA, 1991b). Ingestion is assumed to occur through use of groundwater as the potable water supply. Inhalation exposures are assumed to occur from normal use of potable water, from irrigation adjacent to the facility, and from any miscellaneous use of water in business operations (process water, washing floors and equipment, etc.).

The exposure factors used in developing Type 4 RRS are presented in Table C4-2. The standard adult body weight of 70 kg was used in all derivations (EPA, 1995b; EPA, 1990a; EPA 1991b). For the worker exposure scenario, an exposure duration (ED) of 25 years was applied. This value represents the national upper-bound (95th percentile) time spent at one work location (EPA, 1995a; EPA 1991b). An exposure frequency (EF) of 250 days/yr was used to represent a normal work schedule (EPA, 1991b). The averaging time was assumed as 30 years for noncarcinogenic exposures and 70 years for carcinogenic exposures.

The groundwater ingestion rate of 1.0 L/day was assumed to represent water ingestion while at work (EPA, 1991b). An inhalation rate of 13.6 m^3/day was selected for the worker. This inhalation rate is based on a moderate activity level (inhalation = 1.7 m^3/hr; p3-46, EPA, 1995b) for an 8-hour workday.

Toxicity sources for Type 4 derivations are the same as those listed in the Type 2 RRS derivation (Section 4.2). Oral and inhalation toxicological information is presented in Table C4-3.

5.3 RISK-BASED EQUATIONS AND TYPE 4 RRS RESULTS FOR GROUNDWATER

Using the exposure factors outlined in Section 5.2 along with Equations 1 and 2 from RAGS part B (EPA, 1991a), Type 4 risk-based concentrations were developed for each groundwater constituent. The volatilization factor for VOCs (K in RAGS Part B equations) in groundwater was conservatively assumed as 1.0, which represents all VOCs in water entering the atmosphere. If the exposure factors (Table C4-3) are inserted into the equations (RAGS part B Equations 1 and 2) and the equations are reduced, the resulting RBC equations for the worker exposure to groundwater are:

for noncarcinogenic effects,

$$RBC_{ncar} = THI / [(9.78E\text{-}3/RfD_o) + (6.65E\text{-}2/RfD_i)];$$

and for carcinogenic effects,

$$RBC_{car} = TR / [(3.49E\text{-}3 \times SF_o) + (2.38E\text{-}2 \times SF_i)]$$

where:

RBC_{car}	=	Carcinogenic Risk-Based Concentration (mg/L),
RBC_{ncar}	=	Noncarcinogenic Risk-Based Concentration (mg/L),
THI	=	Target Hazard Index (unitless)
TR	=	Target Risk Level (unitless)
RFDo	=	Oral Reference Dose (mg/kg-day)
RFDi	=	Inhalation Reference Dose (mg/kg-day)
Sfo	=	Oral Slope Factor (kg-day/mg)
Sfi	=	Inhalation Slope Factor (kg-day/mg)

Toxicity values (Table C4-3) and HSRA-required target risk (10^{-5}) or target hazard (1.0) values are inserted into the above RBC equations, which are then solved for the Type 4 risk-based concentrations. Type 4 carcinogenic and noncarcinogenic risk-based concentrations are summarized along with the other criteria required by HSRA [319-3-91-.07(7)] in Table C-10. The final Type 4 RRSs are also designated in Table C5-1.

Three constituents (2,6-dinitrotoluene, a,a-dimethylphenethylamine, and vinyl chloride) had final RRS equal to their detection limit. This was a result of the calculated risk-based concentration being less than the detection limit. Detection limits were obtained from EPA (1990b) and were assumed to be equivalent to quantitation limits for organics and detection limits for inorganics. The background concentration for lead served as the final RRS. The remaining RRSs (see Table C5-1) were obtained from the risk-based concentrations.

Comparing site data with Type 4 RRS reveals that chromium (detected 62 times and exceeded criteria 42 times), dimethylphenethylamine (detected and exceeded criteria one time), lead (detected 63 times and exceeded criteria 35 times), trichloroethene (detected 27 times and exceeded criteria 12 times), and vinyl chloride (detected and exceeded criteria 1 time) exceed the Type 4 standards. All other constituents under consideration had maximum detected groundwater concentrations equal to or less than their respective Type 4 RRS.

5.4 SOIL REQUIREMENTS

For soil, HSRA 391-3-19-.07(7c) requirements for Type 4 RRS follow the same methodology described in Section 4.4 (Type 2 Soil RRS) while using the non-residential scenario.

5.5 EXPOSURE ASSUMPTIONS AND TOXICITY VALUES FOR SOIL

As for groundwater, the most likely receptor for AIP soil is an on-site worker. Exposure is assumed to occur through incidental ingestion as well as inhalation of volatiles and particulates.

The worker exposure factors used in developing Type 4 RRS are presented in Table C4-2. The body weight, exposure duration, exposure frequency, inhalation rate, and averaging time were the same as those used for groundwater exposures (Section 5.2). The soil ingestion rate was assumed as 50 mg/day (EPA, 1991b).

Volatilization factors for estimating soil-to-air transfer (used in Equations 6 and 7, RAGS Part B; EPA, 1991a) were estimated following RAGS guidance (EPA, 1991a; Equation 8). The derivation of volatilization factors for VOCs is presented in Table C4-5. The default particulate emission factor (6.79E+8 m^3/kg) from EPA Draft Soil Screening Guidance (EPA, 1994) was used in RAGS Part B Equations 6 and 7.

Toxicity sources for Type 4 soil RRS derivations are the same as those listed in the Type 2 RRS derivation. Toxicity values are presented in Table C4-3.

5.6 RISK-BASED EQUATIONS AND TYPE 4 RRS RESULTS FOR SOIL

Using the exposure factors outlined in Section 5.5 along with Equations 6 and 7 from RAGS part B, Type 4 risk-based concentrations were developed for each soil constituent. If the worker exposure factors (Table C4-2) are inserted into the equations (RAGS part B Equations 6 and 7) and the equations are reduced, the resulting RBC equations for the well sampler exposure to soil are:

for noncarcinogenic effects,

$RBC_{ncar} = THI / \{ (4.89E\text{-}7/RfD_o) + [0.133/RfD_i \times ((1/PEF)+(1/VF))] \};$

and for carcinogenic effects,

$RBC_{car} = TR / \{ (1.75E\text{-}7 \times SF_o) + [4.75E\text{-}2 \times SF_i \times ((1/PEF)+(1/VF))] \}$

where:

RBC_{car}	=	Carcinogenic Risk-Based Concentration (mg/kg),
RBC_{ncar}	=	Noncarcinogenic Risk-Based Concentration (mg/kg),
THI	=	Target Hazard Index (unitless)
VF	=	Volatilization Factor (chemical specific - Table 4; m^3/kg)
PEF	=	Particulate Emission Factor (6.79E+08 m^3/kg)
TR	=	Target Risk Level (unitless)
RFDo	=	Oral Reference Dose (mg/kg-day)
RFDi	=	Inhalation Reference Dose (mg/kg-day)
Sfo	=	Oral Slope Factor (kg-day/mg)
Sfi	=	Inhalation Slope Factor (kg-day/mg)

Toxicity values (Table C4-3) and HSRA-required target risk (10^{-5}) or target hazard (1.0) values are inserted into the above RBC equations, which are then solved for the Type 4 risk-based concentrations.

Type 4 soil RRS which are protective of leaching to groundwater were estimated using Equation 8 of EPA Draft Soil Screening Guidance (EPA, 1994). The derivations are presented in Table C4-6. Leachate standards for metals were not derived due to the high degree of uncertainty associated with metal partitioning data. The groundwater concentrations used as the leachate goal were estimated following the protocol outlined in Sections 5.1 through 5.3.

Type 4 carcinogenic and noncarcinogenic risk-based concentrations are summarized along with the other criteria required by HSRA [319-3-91-.07(7)] in Table C5-1. The final Type 4 RRS are also designated in Table C5-1.

Two constituents, tetrachloroethene and trichloroethene, had RRS equal to their detection limits. One RRS (for cis-1,2-dichloroethene) was based on the soil-to-groundwater leaching standard. The remaining RRS were obtained from risk-based concentrations (Table C5-1).

The derived Type 4 RRS (Table C5-1) were compared with maximum detected concentrations from the Allied Industrial Park groundwater and soil. The maximum concentrations of the constituents under consideration are presented in Table C4-1. In order to comply with Type 4 Risk Reduction

Standards, all media concentrations must be equal to or less than the derived Type 4 media standards.

Of the seven soil constituents, only tetrachloroethene and trichloroethene exceeded the Type 4 RRS. Tetrachloroethene and trichloroethene were found to exceed the type 4 RRS in one sample (ISL-4(1'-3'). All other constituents were present at concentrations less than the Type 4 RRSs.

6.0 REFERENCES

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Table C2-1
Summary of Records Exceeding HSRA Type 1 and Type 3 Groundwater Standards
Allied Industrial Park
Rust Project 33941.000

Sample ID	Parameter	Result	HSRA Limit[1]	Unit	Flag	Detection Limit
IGW-9	1,1-dichloroethene	0.0078	0.007	mg/L	J	0.00048
IGW-25	antimony	0.025	0.006	mg/L	J	0.022
IGW-43	antimony	0.028	0.006	mg/L	J	0.022
IGW-11	arsenic	0.076	0.05	mg/L	J	0.049
IGW-35D	arsenic	0.061	0.05	mg/L	J	0.049
IGW-21	bis(2-ethylhexyl)phthalate	0.048	0.006	mg/L	J	0.026
IGW-26	bis(2-ethylhexyl)phthalate	0.032	0.006	mg/L	J	0.026
IGW-26-A	bis(2-ethylhexyl)phthalate	0.044	0.006	mg/L	J	0.026
IGW-30	bis(2-ethylhexyl)phthalate	0.032	0.006	mg/L	J	0.026
IGW-60	bis(2-ethylhexyl)phthalate	0.044	0.006	mg/L	J	0.026
IGW-60-A	bis(2-ethylhexyl)phthalate	0.055	0.006	mg/L	J	0.026
IGW-63	bis(2-ethylhexyl)phthalate	0.054	0.006	mg/L	J	0.026
IGW-1	cadmium	0.00508	0.005	mg/L		0.0019
IGW-10	cadmium	0.0276	0.005	mg/L		0.0019
IGW-13	cadmium	0.00667	0.005	mg/L		0.0019
IGW-17	cadmium	0.0248	0.005	mg/L		0.0019
IGW-2	cadmium	0.00978	0.005	mg/L		0.0019
IGW-24	cadmium	0.0257	0.005	mg/L		0.0019
IGW-26	cadmium	0.00505	0.005	mg/L		0.0019
IGW-27	cadmium	0.018	0.005	mg/L		0.0019
IGW-30	cadmium	0.0107	0.005	mg/L		0.0019
IGW-31	cadmium	0.00511	0.005	mg/L		0.0019
IGW-32	cadmium	0.0067	0.005	mg/L		0.0019
IGW-6	cadmium	0.00647	0.005	mg/L		0.0019
IGW-63	cadmium	0.0119	0.005	mg/L		0.0019
IGW-8	cadmium	0.0166	0.005	mg/L		0.0019
IGW-9	cadmium	0.0121	0.005	mg/L		0.0019
IGW-14	chloromethane	0.0047	0.003	mg/L	J	0.004
IGW-1	chromium	1.11	0.1	mg/L		0.0045
IGW-10	chromium	0.204	0.1	mg/L		0.0045
IGW-12	chromium	1.62	0.1	mg/L		0.0045
IGW-14	chromium	0.17	0.1	mg/L		0.0045
IGW-15	chromium	0.58	0.1	mg/L		0.0045
IGW-16	chromium	0.459	0.1	mg/L		0.0045
IGW-17	chromium	0.999	0.1	mg/L		0.0045
IGW-2	chromium	1.93	0.1	mg/L		0.0045
IGW-2-A	chromium	0.329	0.1	mg/L		0.0045
IGW-21	chromium	1.98	0.1	mg/L		0.0045
IGW-22	chromium	1.79	0.1	mg/L		0.0045

J = indicates an estimated value
mg/L = milligrams per liter

Table C2-1
Summary of Records Exceeding HSRA Type 1 and Type 3 Groundwater Standards
Allied Industrial Park
Rust Project 33941.000

Sample ID	Parameter	Result	HSRA Limit[1]	Unit	Flag	Detection Limit
IGW-23	chromium	1.2	0.1	mg/L		0.0045
IGW-24	chromium	0.74	0.1	mg/L		0.0045
IGW-25	chromium	3.22	0.1	mg/L		0.0045
IGW-26	chromium	0.871	0.1	mg/L		0.0045
IGW-26-A	chromium	0.354	0.1	mg/L		0.0045
IGW-27	chromium	1.31	0.1	mg/L		0.0045
IGW-28	chromium	1.29	0.1	mg/L		0.0045
IGW-29	chromium	0.719	0.1	mg/L		0.0045
IGW-3	chromium	1.05	0.1	mg/L		0.0045
IGW-30	chromium	0.967	0.1	mg/L		0.0045
IGW-31	chromium	0.205	0.1	mg/L		0.0045
IGW-32	chromium	0.101	0.1	mg/L		0.0045
IGW-33	chromium	0.536	0.1	mg/L		0.0045
IGW-36	chromium	1.58	0.1	mg/L		0.0045
IGW-37	chromium	0.134	0.1	mg/L		0.0045
IGW-37 DUP	chromium	0.124	0.1	mg/L		0.0045
IGW-38	chromium	0.202	0.1	mg/L		0.0045
IGW-39	chromium	0.871	0.1	mg/L		0.0045
IGW-39-A	chromium	0.611	0.1	mg/L		0.0045
IGW-40	chromium	0.786	0.1	mg/L		0.0045
IGW-41	chromium	1.34	0.1	mg/L		0.0045
IGW-42	chromium	0.949	0.1	mg/L		0.0045
IGW-43	chromium	3.46	0.1	mg/L		0.0045
IGW-44	chromium	0.186	0.1	mg/L		0.0045
IGW-45	chromium	1.01	0.1	mg/L		0.0045
IGW-46	chromium	1.47	0.1	mg/L		0.0045
IGW-47	chromium	1.28	0.1	mg/L		0.0045
IGW-48	chromium	0.351	0.1	mg/L		0.0045
IGW-49	chromium	0.63	0.1	mg/L		0.0045
IGW-5	chromium	1.49	0.1	mg/L		0.0045
IGW-51	chromium	0.258	0.1	mg/L		0.0045
IGW-52	chromium	0.627	0.1	mg/L		0.0045
IGW-53	chromium	0.893	0.1	mg/L		0.0045
IGW-54	chromium	0.675	0.1	mg/L		0.0045
IGW-55	chromium	2.77	0.1	mg/L		0.0045
IGW-56	chromium	0.512	0.1	mg/L		0.0045
IGW-57	chromium	0.689	0.1	mg/L		0.0045
IGW-58	chromium	2.47	0.1	mg/L		0.0045
IGW-59	chromium	1.16	0.1	mg/L		0.0045
IGW-6	chromium	1.02	0.1	mg/L		0.0045

J = indicates an estimated value

mg/L = milligrams per liter

Table C2-1
Summary of Records Exceeding HSRA Type 1 and Type 3 Groundwater Standards
Allied Industrial Park
Rust Project 33941.000

Sample ID	Parameter	Result	HSRA Limit[1]	Unit	Flag	Detection Limit
IGW-60	chromium	0.434	0.1	mg/L		0.0045
IGW-60-A	chromium	0.421	0.1	mg/L		0.0045
IGW-63	chromium	0.864	0.1	mg/L		0.0045
IGW-7	chromium	0.154	0.1	mg/L		0.0045
IGW-8	chromium	0.326	0.1	mg/L		0.0045
IGW-53	copper	3.51	1.3	mg/L		0.0073
IGW-1	lead	0.11	0.015	mg/L		0.0018
IGW-10	lead	0.027	0.015	mg/L		0.00089
IGW-12	lead	0.018	0.015	mg/L		0.00089
IGW-15	lead	0.018	0.015	mg/L		0.00089
IGW-16	lead	0.15	0.015	mg/L		0.0018
IGW-17	lead	0.18	0.015	mg/L		0.0045
IGW-2	lead	0.082	0.015	mg/L		0.00089
IGW-21	lead	0.071	0.015	mg/L		0.00089
IGW-22	lead	0.037	0.015	mg/L		0.00089
IGW-23	lead	0.043	0.015	mg/L		0.00089
IGW-24	lead	0.055	0.015	mg/L		0.00089
IGW-25	lead	0.0703	0.015	mg/L		0.00089
IGW-26	lead	0.017	0.015	mg/L		0.00089
IGW-27	lead	0.051	0.015	mg/L		0.00089
IGW-29	lead	0.02	0.015	mg/L		0.00089
IGW-3	lead	0.047	0.015	mg/L		0.00089
IGW-30	lead	0.068	0.015	mg/L		0.00089
IGW-36	lead	0.0502	0.015	mg/L		0.00089
IGW-38	lead	0.021	0.015	mg/L		0.00089
IGW-39-A	lead	0.019	0.015	mg/L		0.00089
IGW-40	lead	0.028	0.015	mg/L		0.00089
IGW-41	lead	0.041	0.015	mg/L		0.00089
IGW-42	lead	0.026	0.015	mg/L		0.00089
IGW-43	lead	0.063	0.015	mg/L		0.00089
IGW-45	lead	0.09	0.015	mg/L		0.0018
IGW-46	lead	0.029	0.015	mg/L		0.00089
IGW-47	lead	0.05	0.015	mg/L		0.00089
IGW-48	lead	0.017	0.015	mg/L		0.00089
IGW-49	lead	0.053	0.015	mg/L		0.00089
IGW-5	lead	0.049	0.015	mg/L		0.00089
IGW-52	lead	0.075	0.015	mg/L		0.00089
IGW-53	lead	0.14	0.015	mg/L		0.0018
IGW-54	lead	0.017	0.015	mg/L		0.00089
IGW-55	lead	0.045	0.015	mg/L		0.00089
IGW-56	lead	0.065	0.015	mg/L		0.00089

J = indicates an estimated value
mg/L = milligrams per liter

Table C2-1
Summary of Records Exceeding HSRA Type 1 and Type 3 Groundwater Standards
Allied Industrial Park
Rust Project 33941.000

Sample ID	Parameter	Result	HSRA Limit[1]	Unit	Flag	Detection Limit
IGW-57	lead	0.028	0.015	mg/L		0.00089
IGW-58	lead	0.204	0.015	mg/L		0.0045
IGW-59	lead	0.027	0.015	mg/L		0.00089
IGW-6	lead	0.044	0.015	mg/L		0.00089
IGW-63	lead	0.017	0.015	mg/L		0.00089
IGW-8	lead	0.121	0.015	mg/L		0.0018
IGW-9	lead	0.032	0.015	mg/L		0.00089
IGW-17	mercury	0.0022	0.002	mg/L		0.00005
IGW-27	mercury	0.0034	0.002	mg/L		0.00005
IGW-10	methylene chloride	0.012	0.005	mg/L	J	0.00075
IGW-63	methylene chloride	0.031	0.005	mg/L	J	0.0023
IGW-8	methylene chloride	0.011	0.005	mg/L	J	0.00075
IGW-9	methylene chloride	0.011	0.005	mg/L	J	0.00075
IGW-1	nickel	0.368	0.1	mg/L		0.0056
IGW-12	nickel	0.498	0.1	mg/L		0.0056
IGW-15	nickel	0.181	0.1	mg/L		0.0056
IGW-16	nickel	0.145	0.1	mg/L		0.0056
IGW-17	nickel	0.16	0.1	mg/L		0.0056
IGW-2	nickel	0.489	0.1	mg/L		0.0056
IGW-2-A	nickel	0.119	0.1	mg/L		0.0056
IGW-21	nickel	0.479	0.1	mg/L		0.0056
IGW-22	nickel	0.518	0.1	mg/L		0.0056
IGW-23	nickel	0.309	0.1	mg/L		0.0056
IGW-24	nickel	0.176	0.1	mg/L		0.0056
IGW-25	nickel	0.875	0.1	mg/L		0.0056
IGW-26	nickel	0.392	0.1	mg/L		0.0056
IGW-26-A	nickel	0.147	0.1	mg/L		0.0056
IGW-27	nickel	0.48	0.1	mg/L		0.0056
IGW-28	nickel	0.447	0.1	mg/L		0.0056
IGW-29	nickel	0.248	0.1	mg/L		0.0056
IGW-3	nickel	0.267	0.1	mg/L		0.0056
IGW-30	nickel	0.258	0.1	mg/L		0.0056
IGW-33	nickel	0.148	0.1	mg/L		0.0056
IGW-36	nickel	0.36	0.1	mg/L		0.0056
IGW-38	nickel	0.155	0.1	mg/L		0.0056
IGW-39	nickel	0.25	0.1	mg/L		0.0056
IGW-39-A	nickel	0.204	0.1	mg/L		0.0056
IGW-40	nickel	0.209	0.1	mg/L		0.0056
IGW-41	nickel	0.261	0.1	mg/L		0.0056
IGW-42	nickel	0.255	0.1	mg/L		0.0056
IGW-43	nickel	0.606	0.1	mg/L		0.0056

J = indicates an estimated value
mg/L = milligrams per liter

Table C2-1
Summary of Records Exceeding HSRA Type 1 and Type 3 Groundwater Standards
Allied Industrial Park
Rust Project 33941.000

Sample ID	Parameter	Result	HSRA Limit[1]	Unit	Flag	Detection Limit
IGW-45	nickel	0.205	0.1	mg/L		0.0056
IGW-46	nickel	0.453	0.1	mg/L		0.0056
IGW-47	nickel	0.194	0.1	mg/L		0.0056
IGW-48	nickel	0.116	0.1	mg/L		0.0056
IGW-49	nickel	0.136	0.1	mg/L		0.0056
IGW-5	nickel	0.263	0.1	mg/L		0.0056
IGW-52	nickel	0.208	0.1	mg/L		0.0056
IGW-53	nickel	0.443	0.1	mg/L		0.0056
IGW-54	nickel	0.151	0.1	mg/L		0.0056
IGW-55	nickel	0.891	0.1	mg/L		0.0056
IGW-56	nickel	0.133	0.1	mg/L		0.0056
IGW-57	nickel	0.2	0.1	mg/L		0.0056
IGW-58	nickel	0.606	0.1	mg/L		0.0056
IGW-59	nickel	0.326	0.1	mg/L		0.0056
IGW-6	nickel	0.129	0.1	mg/L		0.0056
IGW-60	nickel	0.214	0.1	mg/L		0.0056
IGW-60-A	nickel	0.195	0.1	mg/L		0.0056
IGW-63	nickel	0.377	0.1	mg/L		0.0056
IGW-10	trichloroethene	0.017	0.005	mg/L	J	0.00042
IGW-12	trichloroethene	0.03	0.005	mg/L		0.00042
IGW-13	trichloroethene	0.018	0.005	mg/L		0.00042
IGW-14	trichloroethene	0.34	0.005	mg/L		0.00084
IGW-17	trichloroethene	5.1	0.005	mg/L		0.01
IGW-24	trichloroethene	0.34	0.005	mg/L		0.00042
IGW-26	trichloroethene	0.0065	0.005	mg/L		0.00042
IGW-27	trichloroethene	0.0065	0.005	mg/L		0.00042
IGW-28	trichloroethene	0.3	0.005	mg/L	J	0.00042
IGW-29	trichloroethene	0.091	0.005	mg/L		0.00042
IGW-3	trichloroethene	0.0073	0.005	mg/L		0.00042
IGW-30	trichloroethene	0.55	0.005	mg/L		0.00042
IGW-31	trichloroethene	0.02	0.005	mg/L		0.00042
IGW-33	trichloroethene	0.062	0.005	mg/L		0.00042
IGW-34	trichloroethene	0.015	0.005	mg/L		0.00042
IGW-38	trichloroethene	0.053	0.005	mg/L	J	0.00042
IGW-52	trichloroethene	0.13	0.005	mg/L		0.00042
IGW-53	trichloroethene	0.02	0.005	mg/L		0.00042
IGW-55	trichloroethene	0.11	0.005	mg/L	J	0.00042
IGW-57	trichloroethene	0.012	0.005	mg/L	J	0.00042
IGW-63	trichloroethene	0.57	0.005	mg/L	J	0.0021
IGW-8	trichloroethene	11	0.005	mg/L	J	0.42
IGW-9	trichloroethene	62	0.005	mg/L	J	0.42

J = indicates an estimated value

mg/L = milligrams per liter

Table C2-1
Summary of Records Exceeding HSRA Type 1 and Type 3 Groundwater Standards
Allied Industrial Park
Rust Project 33941.000

Sample ID	Parameter	Result	HSRA Limit[1]	Unit	Flag	Detection Limit
IGW-9	vinyl chloride	0.08	0.002	mg/L	J	0.00047
IGW-31	zinc	2.71	2	mg/L		0.0052
Non-Tech Background						
IGW-61	beryllium	0.00483	0.004	mg/L		0.00016
IGW-61	cadmium	0.0126	0.005	mg/L		0.0019
IGW-61	chromium	1	0.1	mg/L		0.0045
IGW-61	lead	0.22	0.015	mg/L		0.0045
IGW-61	mercury	0.0032	0.002	mg/L		0.00005
IGW-61	nickel	0.229	0.1	mg/L		0.0056
IGW-62	chromium	0.577	0.1	mg/L		0.0045
IGW-62	nickel	0.233	0.1	mg/L		0.0056
IGW-62	thallium	0.0029	0.002	mg/L	J	0.00079
Background Points						
IGW-18	chromium	0.204	0.1	mg/L		0.0045
IGW-19	chromium	0.706	0.1	mg/L		0.0045
IGW-19	lead	0.041	0.015	mg/L		0.00089
IGW-19	nickel	0.208	0.1	mg/L		0.0056

Parameters Exceeding HSRA Limits[1]
1,1-dichloroethene
antimony
arsenic
beryllium
bis(2-ethylhexyl)phthalate
cadmium
chloromethane
chromium
copper
lead
mercury
methylene chloride
nickel
thallium
trichloroethene
vinyl chloride
zinc

Parameters that were detected at Allied but no limits
1,2,4-trimethylbenzene
2,6-dinitrotoluene
a,a-dimethylphenethylamine
cis-1,2-dichloroethene

[1] = These analytes were detected in the Allied Industrial Area at levels exceeding HSRA water limits in Table 1 of Appendix III.
J = indicates an estimated value
mg/L = milligrams per liter

Non-Tech Background are points that technically were not designated as background points but are positioned in an ugradient locations to the site industrial areas.

Table C2-2
Summary of Records Exceeding HSRA Soil Criteria
Allied Industrial Park
Rust Project 33941.000

Allied Industrial Park Soil

Records exceeding the higher of the HSRA soil notification standards or groundwater standard x 100

Sample ID	Parameter	Result	Standard[1]	Unit	Flag	Detection Limit
ISL-4 (1'-3')	tetrachloroethene	0.8	0.5	mg/Kg	J	0.0055
ISL-4 (1'-3')	trichloroethene	1.2	0.5	mg/Kg	J	0.0048
ISL-8 (9'-11')	trichloroethene	0.55	0.5	mg/Kg	J	0.0025

[1] = these values are the higher of either the HSRA notification Standards or the HSRA groundwater standard x 100.

Records exceeding the HSRA Type 1 soil standards as listed in Table 2 of Appendix III.

Sample ID	Parameter	Result	HSRA Soil[2]	Unit	Flag	Detection Limit	Background[3]
ISL-11 (0'-2')	zinc	218	100	mg/Kg		0.59	10.035
ISL-44 (1'-2')	chromium	181	100	mg/Kg		0.51	12.46
ISL-54 (.5'-2')	zinc	326	100	mg/Kg		0.59	10.035
ISL-55 (1'-2')	zinc	538	100	mg/Kg		0.58	10.035
ISL-7 (0'-2')	cadmium	2.27	2	mg/Kg		0.22	0.28
ISL-8 (0'-2')	cadmium	2.32	2	mg/Kg		0.23	0.28
ISL-8 (9'-11')	antimony	4.2	4	mg/Kg	J	2.7	

[2] = HSRA Type 1 standards from Table 2 of Appendix III.
[3] = average concentration of this analyte detected in soil samples collected from background points ISL-18 and ISL-19

mg/kg = milligrams per kilogram
J = indicates an estimated value

Parameters Exceeding Type 1 criteria
antimony
cadmium
chromium
zinc

Parameters Exceeding the higher concentration of the Notification criteria or Groundwater standards x 100
tetrachloroethene
trichloroethene

Parameters that were detected at Allied with no established limits
cis-1,2-dichloroethene

Table C4-1
Constituents for Development of Type 2 and 4
Risk Reduction Standards[1]
Allied Industrial Park
Macon Naval Ordnance Plant
Rust Project No. 33941.000

Chemical	Units	Maximum Concentration	Mean Background Concentration
Groundwater			
1,2,4-trimethylbenzene	mg/L	2.30E-03	NA
2,6-dinitrotoluene	mg/L	1.00E-02	NA
bis(2-ethylhexyl)phthalate	mg/L	6.00E-02	NA
cadmium	mg/L	3.00E-02	2.90E-03
chromium	mg/L	3.46E+00	4.55E-01
cis-1,2-dichloroethene	mg/L	4.00E-02	NA
dimethylphenethylamine	mg/L	1.00E-02	NA
lead	mg/L	2.20E-01	2.50E-02
mercury	mg/L	3.40E-03	4.00E-04
nickel	mg/L	8.90E-01	1.45E-02
trichloroethene	mg/L	1.10E+01	NA
vinyl chloride	mg/L	8.00E-02	NA
Soil			
antimony	mg/kg	4.20E+00	ND
cadmium	mg/kg	2.32E+00	2.80E-01
chromium	mg/kg	1.81E+02	1.25E+01
cis-1,2-dichloroethene	mg/kg	5.40E-02	NA
tetrachloroethene	mg/kg	8.00E-01	NA
trichloroethene	mg/kg	1.20E+00	NA
zinc	mg/kg	5.38E+02	1.00E+01

mg/kg = milligrams per kilogram
mg/L = milligrams per liter

[1]- Constituents were selected based on HSRA Type 1 and 3 standard exceedence.
NA - Not applicable
ND - No data

Table C4-2
Values Used for Exposure Parameters
Type 2 and Type 4 Risk Reduction Standard Development
Allied Industrial Park
Macon Naval Ordnance Plant
Rust Project No. 33941.000

Exposure Parameter	Units	Non-Resident*			Resident Adult		
		Soil	Ground Water	Reference	Soil	Ground Water	Reference
Body Weight (BW)	kg	70	70	1,3	70	70	1,3
Exposure Duration (ED)	yr	25	25	1,3	30	30	1,3
Exposure Frequency (EF)	d/yr	250	250	3	350	350	2,3
Ingestion Rate	mg/d	50		3	60.5		4
	L/d		1	3		1.4	5
Inhalation Rate	m^3/day	13.6	13.6	6	13.3	13.3	7
Fraction from Source	unitless	1	1	2	1	1	2

*Non-residential receptor is assumed to be an office/light industrial worker.
(1) EPA, 1995b Review Draft Exposure Factors Handbook; EPA, 1990a Exposure Factors Handbook.
(2) EPA 1995a Region IV Risk Assessment Bulletin
(3) EPA 1991b RAGS Supplemental Guidance - Default Values
(4) Mean intake value for resident adults (home and yard exposures) from Table 2-260, EPA (1995b)
(5) Mean ingestion rate for Atlanta residents, Table 2-1, EPA (1995b).
(6) Represents an 8-hour workday at a moderate activity level (1.7 m^3/hr x 8 hr/day), as suggested on p 3-46, EPA (1995b).
(7) Recommended average daily inhalation rate, p 3-46, EPA (1995b).

kg = kilogram
yr = year
d/yr = days per year
mg/d = milligrams per day
L/d = liters per day
m^3/day = cubic meters per day

Table C4-3
Toxicity Information
Type 2 and Type 4 Risk Reduction Standard Development
Allied Industrial Park
Macon Naval Ordnance Plant
Rust Project No. 33941.000

Chemical	Oral RfD mg/kg-day	Oral RfD Source	Inhal RfD mg/kg-day	Inhal RfD source	Oral SF kg-day/mg	Oral SF Source	Inhal SF kg-day/mg	Inhal SF Source	Weight-of-Evidence	Source
1,2,4-trimethylbenzene	5.00E-02	NCEA	ND	NA	ND	NA	ND	NA	ND	NA
1,2-dichloroethene (cis)	1.00E-02	HEAST	ND	NA	ND	NA	ND	NA	D	IRIS
2,6-dinitrotoluene	1.00E-03	HEAST	ND	NA	6.80E-01	IRIS	ND	NA	B2	IRIS
antimony	4.00E-04	IRIS	ND	NA	ND	NA	ND	HEAST	ND	NA
bis(2-ethylhexyl)phthalate	2.00E-02	IRIS	ND	NA	1.40E-02	IRIS	ND	NA	B2	IRIS
cadmium	5.00E-04	HEAST	ND	NA	ND	NA	6.30E+00	IRIS	ND	NA
chromium	5.00E-03	IRIS	ND	NA	ND	NA	4.10E+01	IRIS	A	IRIS
dimethylphenethylamine	ND	NA	ND	NA	ND	ND	ND	NA	ND	NA
lead	ND	NA	ND	NA	ND	NA	ND	NA	B2	IRIS
mercury	3.00E-04	HEAST	8.57E-05	HEAST	ND	NA	ND	NA	D	IRIS
nickel	2.00E-02	IRIS	ND	NA	ND	NA	ND	NA	ND	NA
terachloroethene	1.00E-02	IRIS	ND	NA	5.20E-02	NCEA	2.00E-03	NCEA	B2	NCEA
trichloroethene	ND	NA	ND	NA	1.10E-02	NCEA	6.00E-03	NCEA	ND	NA
vinyl chloride	ND	NA	ND	NA	1.90E+00	HEAST	3.00E-01	HEAST	A	HEAST
zinc	3.00E-01	IRIS	ND	NA	ND	NA	ND	NA	D	IRIS

ND - No Data Available
NA - Not Applicable
Weight of evidence classifications: A -known human carcinogen; B - probable carcinogen; C -possible carcinogen; D -not classifiable.
IRIS - Intergrated Risk Information System (EPA, 1996b)
HEAST - Health Effects Summary Tables (EPA, 1995c)
NCEA - National Center for Environmental Assessment
RfD - Noncarcinogenic reference dose
SF - Carcinogenic slope factor
mg/kg-day = milligrams per kilogram per day
kg-day/mg = killigrams per day per milligram

Table C4-4
Type 2 Risk Reduction Standards
Allied Industrial Park
Macon Naval Ordnance Plant
Rust Project No. 33941.000

Compounds of Potential Concern (COPC)	Risk Based Concentrations[1] (mg/L)		Soil-to-Groundwater Leaching[6]	Other possible standards [2]			Final Risk[4] Reduction
	Carcinogenic	Noncarcinogenic	Standard (mg/kg)	Appendix III[3] (mg/L)	Background (mg/L)	Detection Limit[5] (mg/L)	Standard (mg/L)
Groundwater							
1,2,4-trimethylbenzene	ND	2.60E+00	NA	NA	NA	1.00E-03	2.60E+00
1,2-dichloroethene (cis)	ND	5.21E-01	NA	NA	NA	1.00E-03	5.21E-01
2,6-dinitrotoluene	1.79E-03	5.21E-02	NA	NA	NA	1.00E-02	1.00E-02
bis(2-ethylhexyl)phthalate	8.69E-02	1.04E+00	NA	NA	NA	1.00E-02	8.69E-02
cadmium	ND	2.60E-02	NA	NA	2.90E-03	4.00E-03	2.60E-02
chromium	ND	2.60E-01	NA	NA	4.55E-01	1.00E-03	4.55E-01
dimethylphenethylamine	ND	ND	NA	ND	NA	1.00E-03	1.00E-03
lead	ND	ND	NA	1.50E-02	2.50E-02	1.00E-03	2.50E-02
mercury	ND	1.56E-02	NA	NA	4.00E-04	2.00E-04	1.56E-02
nickel	ND	1.04E+00	NA	NA	1.45E-02	4.00E-02	1.04E+00
trichloroethene	1.79E-02	ND	NA	NA	NA	1.00E-03	1.79E-02
vinyl chloride	2.56E-04	ND	NA	NA	NA	1.00E-03	1.00E-03
Soil	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2-dichloroethene (cis)	ND	1.21E+04	4.57E-01	NA	NA	6.25E-01	6.25E-01
antimony	ND	4.83E+02	NA	NA	ND	2.56E+00	4.83E+02
cadmium	1.38E+04	6.03E+02	NA	NA	2.80E-01	2.08E-01	6.03E+02
chromium	2.12E+03	6.03E+03	NA	NA	1.25E+01	5.00E-01	2.12E+03
tetrachloroethene	1.69E+02	1.21E+04	1.73E-02	NA	NA	6.25E-01	6.25E-01
trichloroethene	7.20E+01	ND	8.66E-03	NA	NA	6.25E-01	6.25E-01
zinc	ND	3.62E+05	NA	NA	1.00E+01	5.90E-01	3.62E+05

ND - No data available.

NA - Not applicable

[1] - Based on ingestion and inhalation of volatiles (see text Section 2.1.3).

[2] - Dictated by the Hazardous Site Response (HSRA) guidance (Chapter 391-3-19; Type II Risk Reduction Standards).

[3] - Regulatory groundwater criteria, as stated in HSRA guidance (Chapter 391-3-19; Appendix III).

[4] - Final Risk Reduction Standard is lesser of carcinogenic and noncarcinogenic risk-based concentrations.
If risk-based concentration is not calculable, final standard is greater of Appendix III, background, or detection limit value.
If the detection limit and/or background is greater than the determined risk reduction standard, then the greater of the background or detection limit becomes the final Type II standard.

[5] - Estimated quantitation limit (organics) or detection limit (inorganics) from EPA (1990b). Detection limits for metals in soil are the average constituent detection limit reported in data package.

[6] - See Table C4-6 for derivation.

mg/L = milligrams per liter

mg/kg = milligrams per kilogram

Table C4-5
Summary of Records Exceeding HSRA Type 2 and 4 Risk Reduction Standards
Allied Industrial Park
Macon Naval Ordnance Plant
Rust Project No. 33941.000

Samp ID	Parameter	HSRA Limits			Unit	Flag	Exceed RRS Type 2?	Exceed RRS Type 4?
		Result	Type 2[1]	Type 4[2]				
IGW-15	a,a-dimethylphenethylamine	0.014	0.001	0.001	mg/L		Yes	Yes
IGW-9	cis-1,2-dichloroethene	6.3	0.521	1.020	mg/L		Yes	Yes
IGW-10	cadmium	0.0276	0.026	0.051	mg/L		Yes	
IGW-1	chromium	2.11	0.455	0.511	mg/L		Yes	Yes
IGW-12	chromium	2.62	0.455	0.511	mg/L		Yes	Yes
IGW-15	chromium	0.58	0.455	0.511	mg/L		Yes	Yes
IGW-16	chromium	0.459	0.455	0.511	mg/L		Yes	
IGW-17	chromium	0.999	0.455	0.511	mg/L		Yes	Yes
IGW-19	chromium	0.706	0.455	0.511	mg/L		Yes	Yes
IGW-2	chromium	2.93	0.455	0.511	mg/L		Yes	Yes
IGW-21	chromium	2.98	0.455	0.511	mg/L		Yes	Yes
IGW-22	chromium	2.79	0.455	0.511	mg/L		Yes	Yes
IGW-23	chromium	2.2	0.455	0.511	mg/L		Yes	Yes
IGW-24	chromium	0.74	0.455	0.511	mg/L		Yes	Yes
IGW-25	chromium	4.22	0.455	0.511	mg/L		Yes	Yes
IGW-26	chromium	0.871	0.455	0.511	mg/L		Yes	Yes
IGW-27	chromium	2.31	0.455	0.511	mg/L		Yes	Yes
IGW-28	chromium	2.29	0.455	0.511	mg/L		Yes	Yes
IGW-29	chromium	0.719	0.455	0.511	mg/L		Yes	Yes
IGW-3	chromium	2.05	0.455	0.511	mg/L		Yes	Yes
IGW-30	chromium	0.967	0.455	0.511	mg/L		Yes	Yes
IGW-33	chromium	0.536	0.455	0.511	mg/L		Yes	Yes
IGW-36	chromium	2.58	0.455	0.511	mg/L		Yes	Yes
IGW-39	chromium	0.871	0.455	0.511	mg/L		Yes	Yes
IGW-40	chromium	0.786	0.455	0.511	mg/L		Yes	Yes
IGW-41	chromium	2.34	0.455	0.511	mg/L		Yes	Yes
IGW-42	chromium	0.949	0.455	0.511	mg/L		Yes	Yes
IGW-43	chromium	4.46	0.455	0.511	mg/L		Yes	Yes
IGW-45	chromium	2.01	0.455	0.511	mg/L		Yes	Yes
IGW-46	chromium	2.47	0.455	0.511	mg/L		Yes	Yes
IGW-47	chromium	2.28	0.455	0.511	mg/L		Yes	Yes
IGW-49	chromium	0.63	0.455	0.511	mg/L		Yes	Yes
IGW-5	chromium	2.49	0.455	0.511	mg/L		Yes	Yes
IGW-52	chromium	0.627	0.455	0.511	mg/L		Yes	Yes
IGW-53	chromium	0.893	0.455	0.511	mg/L		Yes	Yes
IGW-54	chromium	0.675	0.455	0.511	mg/L		Yes	Yes
IGW-55	chromium	3.77	0.455	0.511	mg/L		Yes	Yes
IGW-56	chromium	0.512	0.455	0.511	mg/L		Yes	Yes
IGW-57	chromium	0.689	0.455	0.511	mg/L		Yes	Yes
IGW-58	chromium	3.47	0.455	0.511	mg/L		Yes	Yes
IGW-59	chromium	2.16	0.455	0.511	mg/L		Yes	Yes
IGW-6	chromium	2.02	0.455	0.511	mg/L		Yes	Yes

Table C4-5
Summary of Records Exceeding HSRA Type 2 and 4 Risk Reduction Standards
Allied Industrial Park
Macon Naval Ordnance Plant
Rust Project No. 33941.000

Samp ID	Parameter	HSRA Limits			Unit	Flag	Exceed RRS Type 2?	Exceed RRS Type 4?
		Result	Type 2[1]	Type 4[2]				
IGW-61	chromium	2	0.455	0.511	mg/L		Yes	Yes
IGW-62	chromium	0.577	0.455	0.511	mg/L		Yes	Yes
IGW-63	chromium	0.864	0.455	0.511	mg/L		Yes	Yes
IGW-1	lead	0.11	0.025	0.025	mg/L		Yes	Yes
IGW-10	lead	0.027	0.025	0.025	mg/L		Yes	Yes
IGW-16	lead	0.15	0.025	0.025	mg/L		Yes	Yes
IGW-17	lead	0.18	0.025	0.025	mg/L		Yes	Yes
IGW-19	lead	0.041	0.025	0.025	mg/L		Yes	Yes
IGW-2	lead	0.082	0.025	0.025	mg/L		Yes	Yes
IGW-21	lead	0.071	0.025	0.025	mg/L		Yes	Yes
IGW-22	lead	0.037	0.025	0.025	mg/L		Yes	Yes
IGW-23	lead	0.043	0.025	0.025	mg/L		Yes	Yes
IGW-24	lead	0.055	0.025	0.025	mg/L		Yes	Yes
IGW-25	lead	0.0703	0.025	0.025	mg/L		Yes	Yes
IGW-27	lead	0.051	0.025	0.025	mg/L		Yes	Yes
IGW-3	lead	0.047	0.025	0.025	mg/L		Yes	Yes
IGW-30	lead	0.068	0.025	0.025	mg/L		Yes	Yes
IGW-36	lead	0.0502	0.025	0.025	mg/L		Yes	Yes
IGW-40	lead	0.028	0.025	0.025	mg/L		Yes	Yes
IGW-41	lead	0.041	0.025	0.025	mg/L		Yes	Yes
IGW-42	lead	0.026	0.025	0.025	mg/L		Yes	Yes
IGW-43	lead	0.063	0.025	0.025	mg/L		Yes	Yes
IGW-45	lead	0.09	0.025	0.025	mg/L		Yes	Yes
IGW-46	lead	0.029	0.025	0.025	mg/L		Yes	Yes
IGW-47	lead	0.05	0.025	0.025	mg/L		Yes	Yes
IGW-49	lead	0.053	0.025	0.025	mg/L		Yes	Yes
IGW-5	lead	0.049	0.025	0.025	mg/L		Yes	Yes
IGW-52	lead	0.075	0.025	0.025	mg/L		Yes	Yes
IGW-53	lead	0.14	0.025	0.025	mg/L		Yes	Yes
IGW-55	lead	0.045	0.025	0.025	mg/L		Yes	Yes
IGW-56	lead	0.065	0.025	0.025	mg/L		Yes	Yes
IGW-57	lead	0.028	0.025	0.025	mg/L		Yes	Yes
IGW-58	lead	0.204	0.025	0.025	mg/L		Yes	Yes
IGW-59	lead	0.027	0.025	0.025	mg/L		Yes	Yes
IGW-6	lead	0.044	0.025	0.025	mg/L		Yes	Yes
IGW-61	lead	0.22	0.025	0.025	mg/L		Yes	Yes
IGW-8	lead	0.121	0.025	0.025	mg/L		Yes	Yes
IGW-9	lead	0.032	0.025	0.025	mg/L		Yes	Yes
IGW-9	trichloroethene	62	0.018	0.031	mg/L		Yes	Yes
IGW-12	trichloroethene	0.03	0.018	0.031	mg/L		Yes	
IGW-13	trichloroethene	0.018	0.018	0.031	mg/L		Yes	
IGW-14	trichloroethene	0.34	0.018	0.031	mg/L		Yes	Yes

Table C4-5
Summary of Records Exceeding HSRA Type 2 and 4 Risk Reduction Standards
Allied Industrial Park
Macon Naval Ordnance Plant
Rust Project No. 33941.000

Samp ID	Parameter	HSRA Limits			Unit	Flag	Exceed RRS Type 2?	Exceed RRS Type 4?
		Result	Type 2[1]	Type 4[2]				
IGW-17	trichloroethene	6.1	0.018	0.031	mg/L		Yes	Yes
IGW-24	trichloroethene	0.34	0.018	0.031	mg/L		Yes	Yes
IGW-28	trichloroethene	0.3	0.018	0.031	mg/L		Yes	Yes
IGW-29	trichloroethene	0.091	0.018	0.031	mg/L		Yes	Yes
IGW-30	trichloroethene	0.55	0.018	0.031	mg/L		Yes	Yes
IGW-31	trichloroethene	0.02	0.018	0.031	mg/L		Yes	
IGW-33	trichloroethene	0.062	0.018	0.031	mg/L		Yes	Yes
IGW-38	trichloroethene	0.053	0.018	0.031	mg/L	J	Yes	Yes
IGW-52	trichloroethene	0.13	0.018	0.031	mg/L		Yes	Yes
IGW-53	trichloroethene	0.02	0.018	0.031	mg/L		Yes	
IGW-55	trichloroethene	0.11	0.018	0.031	mg/L	J	Yes	Yes
IGW-63	trichloroethene	0.57	0.018	0.031	mg/L	J	Yes	Yes
IGW-8	trichloroethene	12	0.018	0.031	mg/L	J	Yes	Yes
IGW-9	vinyl chloride	0.08	0.001	0.001	mg/L	J	Yes	Yes

[1] = the final Type 2 risk reduction standard calculated on Table C4-4.

[2] = the final Type 4 risk reduction standard calculated on Table C5-1.

Table C4-6
Calculation of Soil Volitilization Factors*
Type 2 and 4 Risk Reduction Standard Development
Allied Industrial Park
Macon Naval Ordnance Plant
Rust Project No. 33941.000

VOCs in Soil	CAS	Diffusivity** (cm^2/s)	Henry's Law Constant** ($atm\text{-}m^3/mol$)	Koc** (ml/g)	VF* (m^3/kg)	1/VF (kg/m^3)
1,1-dichloroethene***	75-35-4	1.01E-01	1.54E-01	6.50E+01	3.87E+02	2.58E-03
tetrachloroethene	127-18-4	7.40E-02	2.30E-02	3.64E+02	3.85E+03	2.60E-04
trichloroethene	79-01-6	8.12E-02	8.90E-03	1.26E+02	3.47E+03	2.88E-04

* Soil volitilization factors estimated from RAGS Part B (EPA, 1991a), Equation 8, using default assumptions.

** Physical constants from EHRAV (1996).

*** Used as a surrogate for cis-1,2-dichloroethene

cm^2/s = square centimeters per second

$atm\text{-}m^3/mol$ = atmospheric cubic meters per mole

ml/g = milliliters per gram

m^3/kg = cubic meters per kilogram

kg/m^3 = kilograms per cubic meter

Table C4-7
Derivation of Protection Standards for Soil Leaching to Groundwater
Type 2 and 4 Risk Reduction Standard Development
Allied Industrial Park
Macon Naval Ordnance Plant
Rust Project No. 33941.000

Chemical Name	Henry's Law (atm-m^3/mol)	Koc (ml/g)	Type 2 Groundwater Standard (mg/L)	Type 2 Soil Standard (mg/kg) from Leaching[1]	Type 4 Groundwater Standard (mg/L)	Type 4 Soil Standard (mg/kg) from Leaching[1]
1,2-dichloroethene (cis)	1.54E-01	6.50E+01	5.21E-01	4.57E-01	1.02E+00	8.95E-01
antimony	ND	ND	NA	NA	NA	NA
cadmium	ND	ND	NA	NA	NA	NA
chromium	ND	ND	NA	NA	NA	NA
tetrachloroethene	2.30E-02	3.64E+02	1.71E-02	1.73E-02	4.37E-02	4.41E-02
trichloroethene	8.90E-03	1.26E+02	1.79E-02	8.66E-03	5.52E-02	2.67E-02
zinc	ND	ND	NA	NA	NA	NA

Note: Metals not included due to uncertainty associated with partition coefficient values.

ND - No data

NA - Not applicable

[1] - Soil standard for protection from leaching is calculated using Equation 8 of EPA (1994) as:

$C_{soil} = C_{groundwater} \times [(Koc \times 0.002) + ((0.3 + (5.33 \times \text{Henry's Law Const.})) / 1.5)]$

atm-m^3/mol = atmospheric cubic meters per mole

ml/g = milliliters per gram

mg/L = milligrams per liter

mg/kg = milligrams per kilogram

Table C5-1
Type 4 Risk Reduction Standards
Allied Industrial Park
Macon Naval Ordnance Plant
Rust Project No. 33941.000

Compounds of Potential Concern (COPC)	Risk Based Concentrations[1] (mg/L)		Soil-to-Groundwater Leaching[6] Standard (mg/kg)	Other possible standards [2]			Final Risk[4] Reduction Standard (mg/L)
	Carcinogenic	Noncarcinogenic		Appendix III[3] (mg/L)	Background (mg/L)	Detection Limit[5] (mg/L)	
Groundwater							
1,2,4-trimethylbenzene	ND	5.11E+00	NA	NA	NA	1.00E-03	5.11E+00
1,2-dichloroethene (cis)	ND	1.02E+00	NA	NA	NA	1.00E-03	1.02E+00
2,6-dinitrotoluene	4.21E-03	1.02E-01	NA	NA	NA	1.00E-02	1.00E-02
bis(2-ethylhexyl)phthalate	2.05E-01	2.04E+00	NA	NA	NA	1.00E-02	2.05E-01
cadmium	ND	5.11E-02	NA	NA	2.90E-03	4.00E-03	5.11E-02
chromium	ND	5.11E-01	NA	NA	4.55E-01	1.00E-03	5.11E-01
dimethylphenethylamine	ND	ND	NA	ND	NA	1.00E-03	1.00E-03
lead	ND	ND	NA	1.50E-02	2.50E-02	1.00E-03	2.50E-02
mercury	ND	3.07E-02	NA	NA	4.00E-04	2.00E-04	3.07E-02
nickel	ND	2.04E+00	NA	NA	1.45E-02	4.00E-02	2.04E+00
trichloroethene	3.09E-02	ND	NA	NA	NA	1.00E-03	3.09E-02
vinyl chloride	4.79E-04	ND	NA	NA	NA	1.00E-03	1.00E-03
Soil	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2-dichloroethene (cis)	ND	2.04E+04	8.95E-01	NA	NA	6.25E-01	8.95E-01
antimony	ND	8.18E+02	NA	NA	ND	2.56E+00	8.18E+02
cadmium	2.27E+04	1.02E+03	NA	NA	2.80E-01	2.08E-01	1.02E+03
chromium	3.49E+03	1.02E+04	NA	NA	1.25E+01	5.00E-01	3.49E+03
tetrachloroethene	2.96E+02	2.04E+04	4.71E-02	NA	NA	6.25E-01	6.25E-01
trichloroethene	1.19E+02	ND	2.69E-02	NA	NA	6.25E-01	6.25E-01
zinc	ND	6.13E+05	NA	NA	1.00E+01	5.90E-01	6.13E+05

ND - No data available.

NA - Not applicable

[1] - Based on ingestion and inhalation of volatiles (see text Section 2.1.3).

[2] - Dictated by the Hazardous Site Response Act (HSRA) guidance (Chapter 391-3-19; Type II Risk Reduction Standards).

[3] - Regulatory groundwater criteria, as stated in HSRA guidance (Chapter 391-3-19; Appendix III).

[4] - Final Risk Reduction Standard is lesser of carcinogenic and noncarcinogenic risk-based concentrations.
If risk-based concentration is not calculable, final standard is greater of Appendix III, background, or detection limit value.
If the detection limit and/or background is greater than the determined risk reduction standard, then the greater of the background or detection limit becomes the final Type II standard.

[5] - Estimated quantitation limit (organics) or detection limit (inorganics) from EPA (1990b). Detection limits for metals in soil are the average constituent detection limit reported in data package.

[6] - See Table C4-6 for derivation.

mg/L = milligrams per liter

mg/kg = milligrams per kilogram

ENGINEERING REPORT

CONFIRMATION STUDY OF THE FORMER MACON NAVAL ORDNANCE PLANT

Macon, Bibb County, Georgia

Prepared for:

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
U.S. ARMY CORPS OF ENGINEERS
Mobile, Alabama

Prepared by:

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

CONTRACT No. DACA01-88-D-0027
Delivery Order No. 8

ESE No. 3900025-0100

SEPTEMBER 1990

DEPARTMENT OF THE ARMY
SAVANNAH DISTRICT, CORPS OF ENGINEERS
P.O. BOX 889
SAVANNAH, GEORGIA 31402-0889

REPLY TO ATTENTION OF:

November 28, 1990

Planning Division

Project # IO4GA081300
Current Status RIFS

Mr. James Barksdale
Federal Facilities Unit
U.S. Environmental Protection Agency
345 Courtland Street, NE.
Atlanta, Georgia 30365

Dear Mr. Barksdale:

Over the past year, the Savannah and Mobile Districts have been investigating a site in Macon, Bibb County, Georgia, under the purview of the Defense Environmental Restoration Program (DERP). This site was formerly a U.S. Navy Ordnance Facility, but is now being used as an industrial park.

As part of this investigation, five monitoring wells were installed at three suspected source areas: a landfill, an explosive demolition area, and a suspected buried cyanide contaminated tank. Soil samples were also collected from the explosive demolition area and a ponded area which contained several unlabeled drums. Analysis of the data collected during the investigation revealed that groundwater and soil contamination was encountered at concentrations that may require regulatory review. The results of the investigation are provided in the enclosed report titled "Engineering Report - Confirmation Study of the Former Macon Naval Ordnance Plant, Macon, Bibb County, Georgia."

I request that you review the report and provide any comments you may have to Mr. Robin Blackman, Environmental Resources Branch, U.S. Army Engineer District, Mobile, Post Office Box 2288, Mobile, Alabama 36628-0001.

Should you have any questions, please contact Mr. Blackman at (205) 690-2720 or Mr. David Crosby at (912) 944-5781.

SISB/SAS
DEC 11 1991
EPA - REGION IV

Sincerely,

Paul S. Metz, Jr.
Chief, Environmental Resources Branch

Enclosure

11/30/90
41022

FINAL
ENGINEERING REPORT

CONFIRMATION STUDY OF FORMER MACON NAVAL ORDNANCE PLANT MACON, GEORGIA

Prepared for:

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT
Mobile, Alabama

Prepared by:

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
Gainesville, Florida

Contract No. DACA010-88-D-0027

Delivery Order No. 5

ESE No. 3905025-0100

September 1990

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LIST OF ACRONYMS

Allied	Allied Chemical Corporation
1,3-DNB	1,3-dinitrobenzene
2,4-DNT	2,4-dinitrotoluene
DOD	U.S. Department of Defense
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science & Engineering, Inc.
ft	foot
ft-bls	feet below land surface
ft-msl	feet above mean sea level
gal	gallon
gal/day/ft^2	gallons per day per square foot
GSA	Government Services Administration
Maxson	Maxson Electronics Corporation
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
MNOP	Macon Naval Ordnance Plant
MRDL	Missouri River Division Laboratory
m/sec	meters per second
OVA	organic vapor analyzer
OVM	organic vapor meter
PAH	polycyclic aromatic hydrocarbon
PETN	pentaerythritol tetranitrate
ppm	parts per million
PVC	polyvinyl chloride
QA	quality assurance
QC/QA	quality control/quality assurance
TCE	trichloroethene
TOC	top of casing

LIST OF ACRONYMS

(Continued, Page 2 of 2)

µg/g	micrograms per gram
µg/L	micrograms per liter
µmho/cm	micromhos per centimeter
USACE	U.S. Army Corps of Engineers
USCS	Unified Soil Classification System
UST	underground storage tank
VOA	volatile organic analysis

1.0 EXECUTIVE SUMMARY

A confirmation study at the former Macon Naval Ordnance Plant (MNOP) was performed by Environmental Science & Engineering, Inc. (ESE) for the U.S. Army Corps of Engineers (USACE), Mobile District under contract number DACA01-88-D-0027. This investigation included a records review of available information related to the facility.

USACE installed five monitor wells at three suspected source areas: a landfill, an explosive demolition and testing area, and a suspected buried cyanide contaminated tank. During the USACE investigation, the tank was excavated and found to be a box, not an underground storage tank (UST). USACE also identified an area where a pond containing reddish-orange water was found, as well as approximately 500 unlabeled drums. This area is west and southwest of the landfill and is off the former MNOP property.

ESE completed two field efforts at MNOP. During the first effort (November 28 and 29, 1989), groundwater samples were collected from five monitor wells. Five composite soil samples were also collected. Three of the soil samples were from the explosive demolition area, and one each from the pond sediments and the drum area. The second field effort (July 25 and 26, 1990) involved the collection of soil and sediment samples. Confirmatory soil samples were collected from the explosive demolition area, and a soil sample from a representative background area was collected. A sample of sediments from the small creek flowing through an onsite drainage easement was collected. Also, a new area was investigated with shallow soil samples during the second field effort. This area was a drainage from a former oil recovery operation.

The most significant groundwater contamination found is the result of trichloroethene (TCE). TCE was identified with concentrations of

7,000 micrograms per liter (µg/L) and 3,800 µg/L in wells MW-2 and MW-3, respectively. MW-2 is located at the northeast corner of the landfill adjacent to the suspected buried cyanide tank. MW-3 is located on the east side of the explosive demolition area. Low concentrations of the explosive compounds 1,3-dinitrobenzene (1,3-DNB) and 2,4-dinitrotoluene (2,4-DNT) were detected in the groundwater from MW-3 at the explosive demolition area with concentrations slightly above suggested criteria levels. The background well, MW-1, showed the presence of low concentrations of pentaerythritol tetranitrate (PETN). This explosive is a component of primers and fuses, devices that were manufactured at the former MNOP. The only metals concentrations in the groundwater exceeding criteria were iron and manganese. Higher metals concentrations were generally found in the wells that showed the presence of other contaminants. Cyanide was detected in the groundwater from MW-2 and MW-3. The concentration of 0.133 milligrams per liter (mg/L) in MW-2 and 0.005 mg/L in MW-3 exceeds the state of Georgia's suggested criteria for cyanide of 0.0035 mg/L.

Soil samples showing evidence of contamination were those collected from the pond and drum area and from below the former oil recovery operation. The contamination in the pond and drum area appears to be associated with polycyclic aromatic hydrocarbons (PAHs) and other heavy or long chain hydrocarbons. Below the former oil recovery operation, elevated levels of petroleum hydrocarbons were detected, as well as PETN. The presence of PETN in this area's soil may suggest a source of PETN observed in the groundwater. Higher levels of the metal barium in the pond and drum area may be associated with a different type of product than that below the former oil recovery operation, also suggesting a different source for the product.

2.0 GENERAL INFORMATION

2.1 INTRODUCTION

ESE is contracted by the USACE Mobile District, under Contract No. DACA01-88-D-0027, to conduct a confirmation study at the former MNOP, Macon, Georgia. Figure 2-1 indicates the ground location of the study area at the former plant site.

2.2 OBJECTIVES

The objectives of the investigative activities described in this report were designed to evaluate whether or not specific chemical contaminants are detectable in groundwater, soils, and sediments at the selected sampling locations. This confirmation study was completed to assess whether contaminants have resulted from U.S. Department of Defense (DOD) activities on the site. The investigative activities include:

1. Review of readily available records pertaining to site activities during the period of DOD ownership;
2. Sampling and analysis of groundwater monitor wells installed by USACE Savannah District;
3. Collection and analysis of soil and sediment samples; and
4. Completion of Hazardous Ranking System Evaluation.

2.3 SITE LOCATION, DESCRIPTION, AND PHYSIOGRAPHY

2.3.1 SITE LOCATION AND DESCRIPTION

The former MNOP is located on the south side of Macon, Georgia, north of Rocky Creek and east of U.S. Highway 129 (Bus) on Guy Paine Road (Figure 2-1). The plant encompassed a total of 433.25 acres.

The major portion of former MNOP is currently known as the Macon-Bibb County Allied Industrial Park. It is located in an industrialized area of the City of Macon. The southern border of the property is in the floodplain of Rocky Creek. The northeast corner of the site has been

FMNOP 29-89P

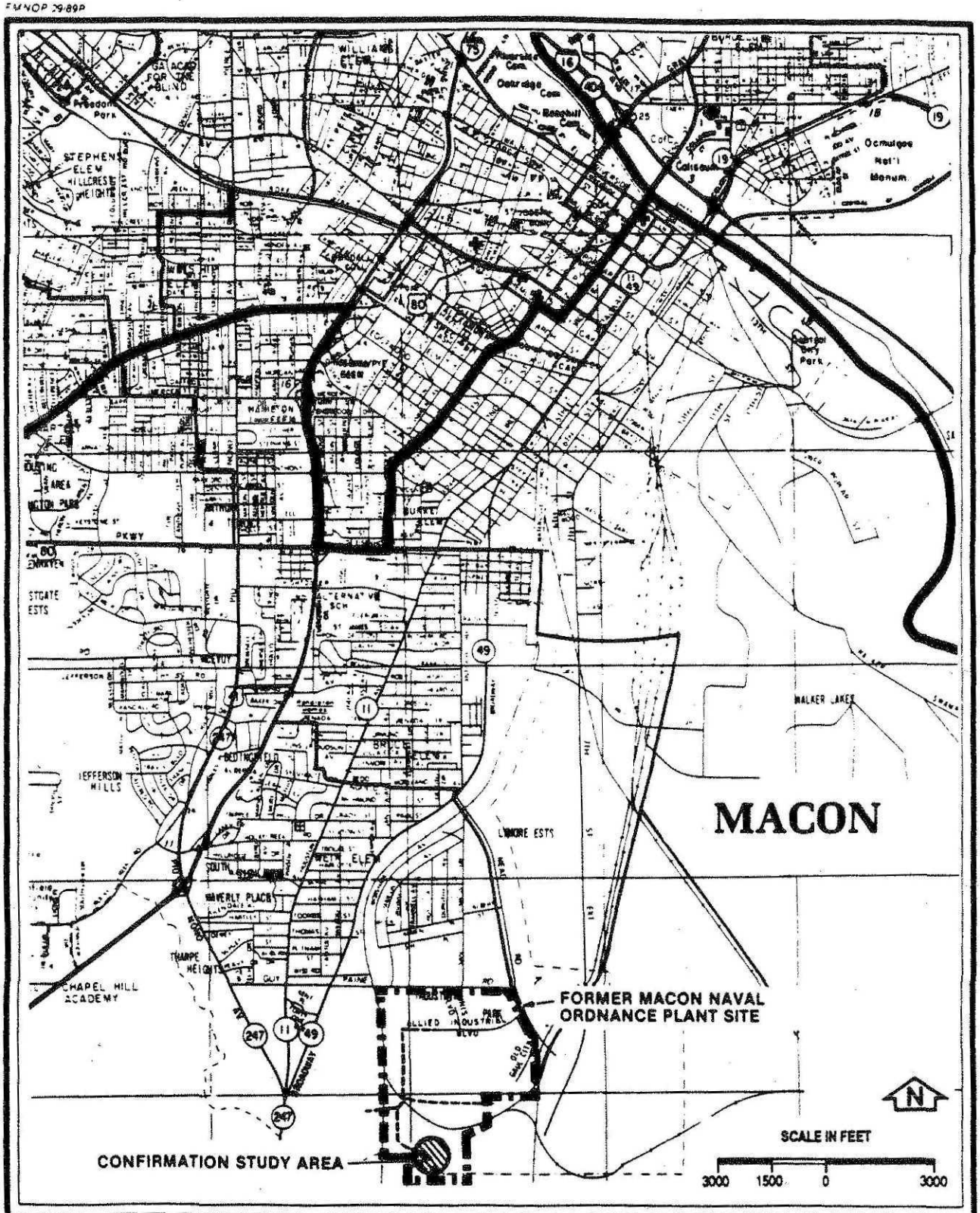

Figure 2-1
LOCATION OF STUDY AREA OF FORMER MACON NAVAL ORDNANCE PLANT

SOURCES: CHAMPION MAP CORPORATION, 1985; ESE, 1989.

CORPS OF ENGINEERS MOBILE DISTRICT

Former Macon Naval Ordnance Plant

obtained by the city and is being used as a recreation area, containing two ball fields and a swimming pool (built by the Navy). The western side of the property is bordered by a railroad track, which separates the site from Armstrong Cork Company's plant site. The brick buildings in the northern part of the site are being used as office buildings, maintenance shops, or are leased or proposed for lease for industrial purposes. The original explosive storage buildings (bunkers) have been removed, except for one on the northeast side of the property. Access to the entire site through the main gate is unrestricted. The property is partially fenced.

The Navy constructed and operated the facility between 1941 and 1965. The installation had numerous buildings, several miles of roads, and a sewage treatment plant. During DOD occupancy, wastes were disposed of in a 12- to 15-acre landfill area, located on the southwest corner of the property (see Figures 2-1 and 2-2). The southwest corner also contains a 1-acre fenced area that was utilized for explosive testing and burning of flammable waste materials. In addition, records indicate a buried cyanide contaminated tank is located adjacent to the north side of the landfill.

The property was declared surplus in 1965 and was sold to Maxson Electronics Corporation (Maxson) (New York) on December 1, 1965. Maxson subsequently sold the property to Allied Chemical Corporation (Allied). Allied then sold the property to the present owners, the City of Macon and Bibb County Industrial Authority. Currently, the property is used as an industrial park. According to the present owner, Maxson and Allied used essentially all of the facilities constructed by the Navy for beneficial purposes.

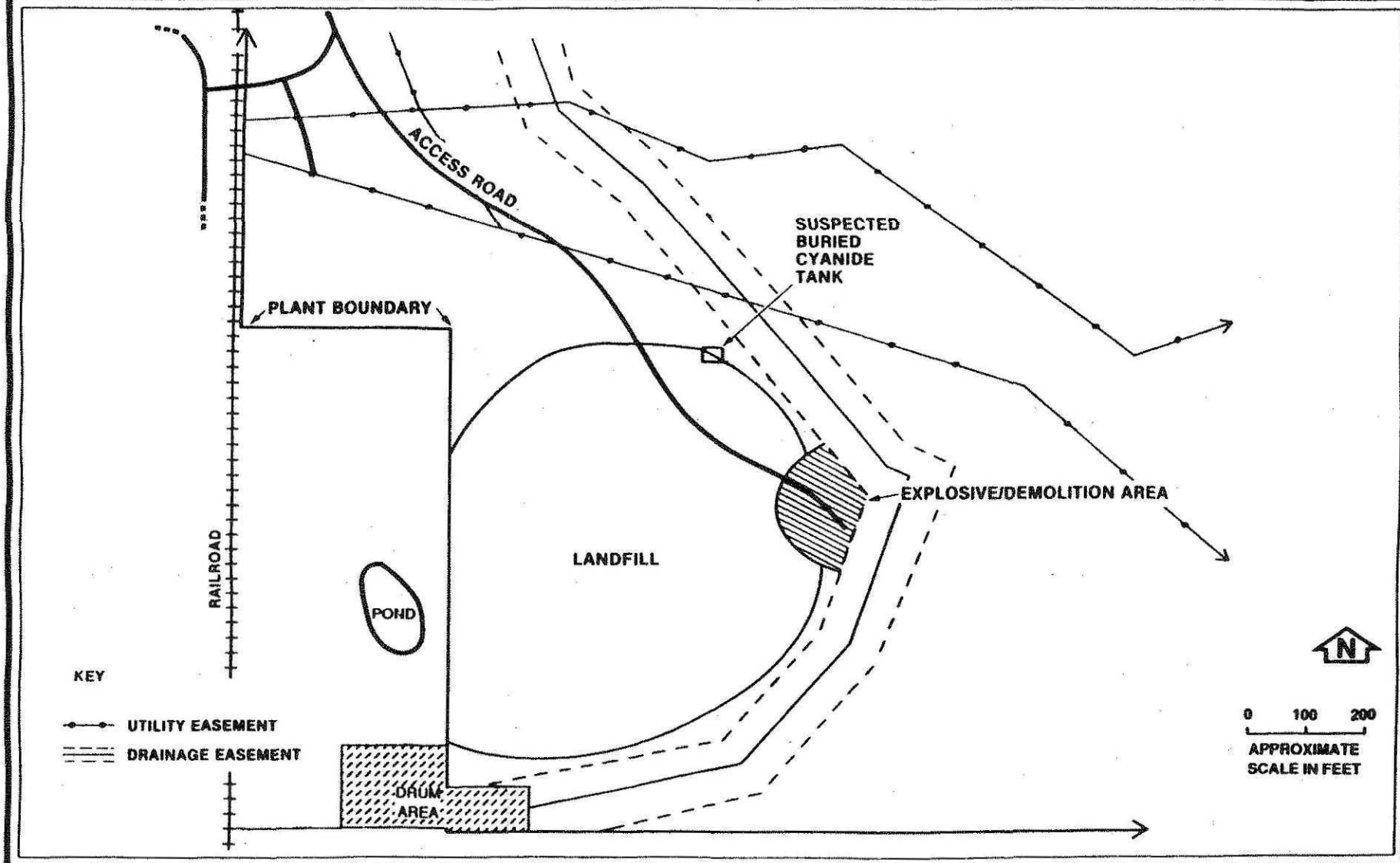

Figure 2-2
DETAIL OF CONFIRMATION STUDY AREA AT FORMER MACON NAVAL ORDNANCE PLANT

SOURCE: ESE, 1990.

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2.3.2 PHYSIOGRAPHY

There are four major physiographic provinces in Georgia: the Valley and Ridge, the Blue Ridge, the Piedmont, and the Coastal Plain Provinces (Sondregger et al., 1978). The Valley and Ridge Province and the Blue Ridge are outside the study area. The Piedmont Province and the Coastal Plain Province comprise the majority of the land area in Georgia, particularly in the Macon vicinity. The two provinces are separated by the physiographic feature known as the fall line. The fall line represents the contact between the Paleozoic/Precambrian Formations of the Piedmont, from the Cretaceous and younger sediments of the Coastal Plain Province. The fall line passes through Bibb County, approximately 10 miles north of the study area. The site is located in the southern portion of Bibb County, which is within the Southern Coastal Plain Major Land Resource Area (Woods, 1979). The area is characterized by broad, gently sloping ridges and relatively wide floodplains along numerous small drainage paths.

2.4 SITE PHYSICAL CHARACTERISTICS

2.4.1 SITE HYDROLOGY

Drainage from the site is generally to the east, southeast, and south through a small drainage easement as shown in Figure 2-2. This drainage easement empties into Rocky Creek, directly south of the site (see Figure 2-3), which is a tributary of the Ocmulgee River. The confluence of Rocky Creek and the Ocmulgee River is approximately 4 miles to the southeast of the site. The Ocmulgee River is the major drainage in southeastern Bibb County, and it drains to the south from Bibb County. The average rainfall for Bibb County is approximately 45 inches per year.

2.4.2 SITE GEOLOGY AND HYDROGEOLOGY

The study area lies within a 20- to 50-mile wide zone of Cretaceous sands and gravels that trend northeast-southwest (Sondregger et al.,

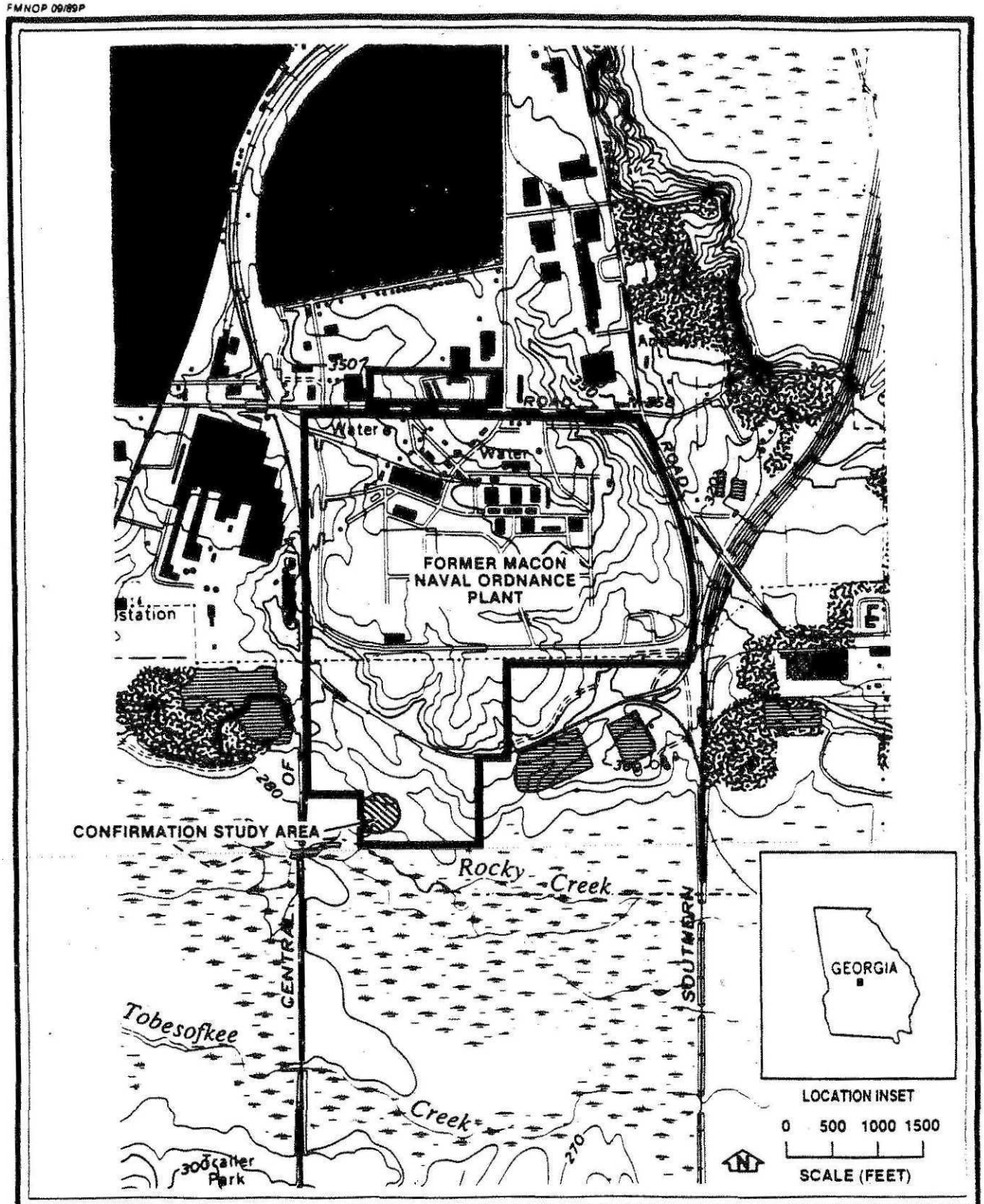

Figure 2-3
TOPOGRAPHIC MAP OF AREA SURROUNDING THE FORMER MACON NAVAL ORDNANCE PLANT

SOURCES: USGS, 1985; ESE, 1989.

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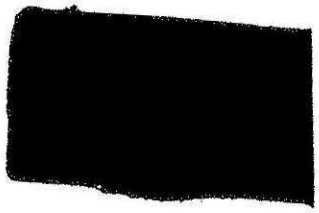
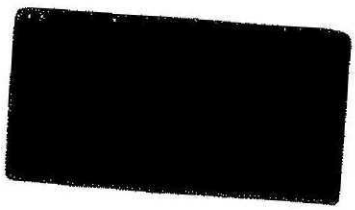


1978). These Cretaceous sands occupy the s
County, forming a southward-thickening wedg
known as the Tuscaloosa Formation. The Tus
light-colored sand, sandy clay, and lentic
not well bedded and individual beds have n
extensive (LeGrand, 1962). The base of th
south-southeast at approximately 30 feet (
the Tuscaloosa Formation with the underlyi
crystalline rocks is approximately 500 fe
in the southern part of Bibb County. In
Cretaceous deposits form the principle gr
adequate water supplies to present users

The groundwater quality from the aquifer
significantly better than the water qual
site. Specific parameters describing th
aquifer in the area include the pH withi
specific conductance of 0 to 50 micromh
hardness of 0 to 100 mg/L (expressed as
0 to 100 mg/L (Sondregger *et al.*, 1978)



The aquifer being investigated as part
shallow, surficial aquifer within the
to the water table in the vicinity of
from 5 to 22 ft-bls. Shallower depths
adjacent to the drainage easement. Th
relationships with deeper-producing z
Formation were not determined as part

2.5 RECORDS REVIEW AND EVALUATION

A records review has been performed
MNOP, archived at the Government Ser

Atlanta, Georgia. These records were kept at the National Archives in East Point, Georgia. The information can be obtained for review by contacting Ms. Rhonda West at GSA, Real Estate Division in Atlanta, Georgia [(404) 331-5133]. Records pertaining to the former MNOP should be requested, Accession Number 68A1717, boxes 14,15,16, N-GA-533. The information reviewed had previously been reviewed by USACE. No new information was discovered by ESE at GSA. In an effort to locate additional information, inquiries were made to the South Division Naval Facilities Engineering Command in Charleston, South Carolina, concerning records for MNOP. This agency indicated all records were at GSA. The information that was reviewed pertained to the exchange of property and inventories of facilities at the plant.

Other sources of historical information include interviews with former employees of MNOP. Three gentlemen who were former employees of MNOP and are familiar with activities that occurred at the site were available for questioning. Mr. Ralph Ennis is presently the director of the Allied Industrial Park; he was a former employee of MNOP, Maxson, and Allied. Mr. Robert Hamlin is also presently an Allied Industrial Park employee and was also an employee of MNOP, Maxson, and Allied. These two men were contacted by ESE and provided useful information for this review. Maps of the facility located at Mr. Ennis' office were reviewed but were found to relate only to the location of utilities at the site. Neither of these gentlemen were aware of the existence of the drums discovered by USACE.

One other area that was discovered during conversations with Mr. Hamlin was a former oil recovery operation. This operation was conducted at a building on the top of a small hill or slope on the northwest side of the site. Discharge from the operation was to a concrete sump, which then drained to the base of the slope onto a broad, flat-lying area. This area was investigated during the second field effort at which time

Mr. Hamlin indicated contaminated soil had been removed from this area in the past. The quantity of soil removed, or where it was disposed of, cannot be determined.

Mr. John Garland, a former employee of the Navy and participant in the design of the facility, is another source of information. Although ESE personnel have not spoken with Mr. Garland, USACE has contacted him for information concerning former MNOP.

2.5.1 OWNERSHIP AND PRIOR USE

The site was acquired by the Navy in three land transactions occurring in 1941, 1948, and 1960. The Navy facility consisted of 432.44 acres owned in fee by DOD and 0.81 acres over which a perpetual easement was obtained. After purchase of the property, the Navy constructed over 200 buildings, a sewage treatment plant, roads, explosive demolition and testing areas, a dumping ground, and a swimming area. MNOP was constructed and operated as an ordnance manufacturing plant from 1941 to 1965. Utility easements that have been granted during DOD ownership include sewerline, roadway, and railroad tracks.

The plant and 432.44 acres of land were sold to Maxson on December 1, 1965. In two letters dated October 14 and November 17, 1965, addressed to the Chief of the Real Property Division of GSA, Maxson assumed all responsibility for the plant and associated lands and any contamination which may result. Maxson continued to manufacture ordnance at the facility under contract to the Navy. Maxson sold the property to Allied in August 1973. Allied manufactured seat belt components. Allied in turn sold the property to the City of Macon and Bibb County Industrial Authority during January 1981. The property is presently being used as an industrial park. Operations concerned with the manufacture of ordnance have ceased at the site.

2.5.2 FACILITIES AND POTENTIALLY CONTAMINATED AREAS

Information concerning inventories of the plant and facilities was available in the records. A facilities map obtained from the records is included in Appendix A. An index of structures attached to this map is also included in Appendix A. The structures inventoried include buildings where ordnance was manufactured. Functions that could potentially produce byproduct contaminants such as oils, solvents, and explosives include manufacturing, electrical workings, oil recovery, metal plating, drum storage, explosive loading, and powder pouring. The finished products were stored in magazines or bunkers, which have since been disassembled.

Another general inventory report, which describes the magnitude of machinery at MNOP during DOD operations, was discovered during the records review. This report appears to have been prepared prior to the sale to Maxson. Two pages from this report, included in Appendix A, describe in general detail the types of machinery and the manufacturing and industrial operations that were performed at the plant. Among other operations, this report mentions degreasing, which could be a potential source of solvents.

Other structures or facilities, which could be potential sources of contamination, were discovered during the records review. These include the Sewage Treatment Plant. This plant may be of concern as it accepted wastes from a metal plating operation. Treated wastewaters were discharged directly to a swampy area behind the plant. This area is in the floodplain of Rocky Creek.

Five USTs were described in the records:

1. 4,000-gallon (gal) Mineral Spirits Tank (Structure 157),
2. 12,000-gal Cutting Oil Tank (Structure 158),
3. 250-gal Kerosene Tank (Structure 183),

4. 560-gal Diesel Fuel Tank (Structure 184), and
5. 2,000-gal Gasoline Tank and Pump (Structure 185).

Aboveground fuel oil tanks were noted at Buildings 202, 115, and 189, ranging from 55-gal to 2,000-gal capacity. Oil storage tanks were also present at each of the Heating Plant Facilities, Buildings 4 and 104. Two tanks with 15,000-gal capacity each were present at each facility. Unfortunately, some of these structures were not referenced on any of the maps found.

Another potential source of contamination apparent from the records review is the dumping ground, or landfill, and the adjacent explosive demolition area. These two areas have been the focus of the present investigation. These areas are located at the southwest corner of the site. The landfill was used mainly for the disposal of used parts and construction debris. Currently, the area is covered with small trees and grasses but is still used for the surface disposal of construction and miscellaneous debris.

The explosive demolition area is a fenced area at the eastern side of the landfill. This area was used for the testing and demolition of explosives manufactured at MNOP, primarily detonators, flares and primers, and the burning of flammable materials. This area is presently covered with small trees and grasses and several bare ground areas with piles of concrete and other debris. Previous employees of the MNOP have indicated that some explosives were tested south of the intersection of Vinson and Perimeter Roads.

Records indicated a buried cyanide contaminated tank to be present on the northern side of the landfill. The existence and magnitude of contamination associated with this tank was also included in this investigation. Cyanide was most likely used in a metal plating

operation, which is reported to have taken place in Building 7-B. Building 7-B is in a state of disrepair and is slated for demolition. The reviewed records also mentioned metal plating operations in Buildings 5-A and 5-B.

Additional structures, which may also pose some contamination potential, were discovered during the records review. These structures were disclosed in an inventory list attached to a "Report of Excess Real Property." Several significant pages from this inventory are included in Appendix A. This inventory indicated several solvent storage buildings were present, including Buildings 99, 190, 192, and 193. All of these building are reported to have concrete floors, which may have prevented uncontrolled releases to the environment in the case of an accidental spill. Also, an incinerator is mentioned in the report as being located at Building 115, and an explosives disposal furnace is located at Building 189. Both of these structures may be associated with explosive compounds.

The existence of a deep well, Structure 156, was discovered during the records review. This well is located in front of Building 6, west of the tunnel vent in a pump house. The records indicate the well is 265 ft deep with 8-inch steel casing. The well was used to supply nonpotable industrial water to plating operations in Buildings 5-A and 5-B. The well and pumping apparatus are still in place but not operational. Although the well itself may not be causing contamination, it could potentially provide for a direct avenue for contaminants to enter the aquifer.

3.0 SITE INVESTIGATION

3.1 INTRODUCTION

The site investigation at MNOP consisted of an initial site visit by USACE and the ESE project team, monitor well installation by USACE, a first field effort involving sampling of the monitor wells and collection of composite soil samples by ESE, a second field effort involving collection of additional composite soil and sediment samples by ESE, and an investigation of the buried cyanide contaminated tank by USACE. A summary of these activities is provided in the following sections.

3.2 SITE VISIT

The site visit was performed on August 14, 1989. The ESE project team in attendance included Ms. Jane Bral, ESE Project Manager, Dr. John Bonds, Corporate Safety Officer, and Mr. Paul Locascio, Field Team Leader. The project team met with Mr. Robbin Blackman, USACE Project Manager; Mr. Ralph Ennis, Director of the Allied Industrial Park; and the City of Macon Police Captain, who provided information concerning locations for emergency procedures.

The project team visited the landfill and demolition areas. The only evidence of munitions on the landfill surface were recently discharged .38 and .22 caliber shell cases, most likely from unauthorized target practice. Mr. Blackman pointed out potential areas for soil borings and monitor wells. The location of the buried cyanide contaminated tank was observed. Some concern regarding access to the UST was expressed by the ESE project team. The project team observed the drainage creek north and northeast of the landfill. Old ammunition storage boxes, which are buried near the creek and are protruding from the ground, were observed. The floodplain area of the creek was coated with a light covering of corky material, which Mr. Blackman indicated may have resulted from

discharge from the Armstrong Cork facility to the west of the site. When leaving the landfill area, the location where the drainage ditch flows under the railroad north of the landfill was observed.

The project team then returned to Mr. Ennis' office and made copies of some useful records information Mr. Blackman had obtained. Other maps and aerial photographs of the site in Mr. Ennis' office were examined. Additional records search efforts were recommended with Mr. Ennis to determine if any more useful information could be found.

3.3 USACE SITE INVESTIGATION

The USACE site investigation took place during September 12 through 21, 1989. Five monitor wells were installed by USACE at selected locations to address the possibility of contamination in suspected areas. Due to safety concerns and difficulties with the location and condition of the buried cyanide tank, USACE excavated the tank during the site investigation effort. The object thought to have been a tank was discovered to be a large steel box, not an underground storage tank as expected. The box was found to have a corrugated steel roof or lid, and was filled with a sandy soil of different texture and consistency than the native soils. Apparently, the box, or tank as it was called, was cleaned prior to disposal. A soil sample from the tank was collected by USACE. The tank was filled and covered with the existing excavated materials following inspection.

Inspections of the site during the USACE site investigation also revealed the presence of approximately 500 unlabeled drums to the west and southwest of the landfill. This area and a low-lying area with a pond containing reddish-orange water are considered to be additional, potential areas of concern. Following the USACE site investigation, the cyanide tank sampling was deleted from ESE's original scope of work, and

the collection of composite soil samples from the drum area and pond were added.

3.4 MONITOR WELL INSTALLATION

USACE installed and developed five monitor wells surrounding the landfill and explosive demolition area. The locations of these monitor wells are shown in Figure 3-1. MW-1 was installed as an upgradient well, MW-2 was placed downgradient of the suspected source of cyanide, MW-3 downgradient of the explosive demolition area, and MW-4 and MW-5 downgradient of the landfill.

The material encountered by the USACE drilling team during monitor well installation was generally sand with clay and silt. Soils were classified by the USACE site geologist according to the Unified Soil Classification System (USCS). The borings were made by hollow stem auger with the collection of split spoon samples every 5 ft. The depth of the borings ranged from 34.2 ft in MW-1 to 20.5 ft in MW-4. The wells were completed by installing 10 ft of 2-inch polyvinyl chloride (PVC) screen, with a slot size of 0.010 inches, and solid 2-inch PVC riser to the surface. Each well has a 2.5 ft length of stick-up. A filter sand pack was placed in the annular space adjacent to and slightly above the screen. A bentonite seal was placed above the filter sand, and grout was added to fill the annular space to the surface. Drilling logs from the monitor wells are provided in Appendix B. Sieve analyses of samples collected from the screened interval of each well are also provided in Appendix B.

Air quality was monitored during the monitor well installation by the site geologist. All borings, with the exception of MW-2, were begun with the crew using Level D protective equipment. Level B protection was used from the outset for MW-2 due to the potential for cyanide contamination at this location. MW-3, MW-4, and MW-5 installation began

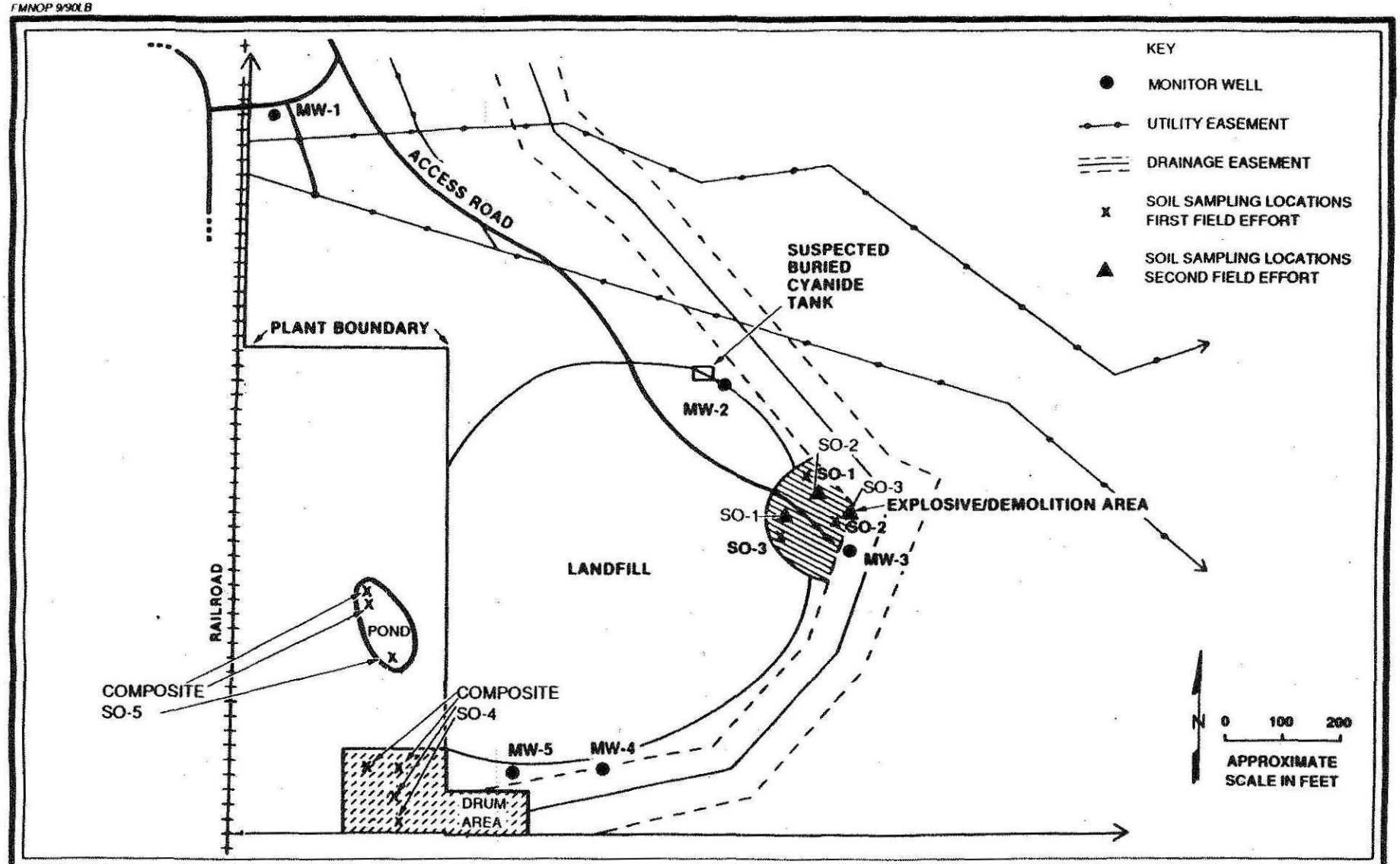


Figure 3-1
SAMPLING LOCATIONS AT FORMER MACON NAVAL ORDNANCE PLANT

SOURCE: ESE, 1990.

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with Level D protection, but had to be completed with Level C protection when "action levels" described in the USACE's Site Safety Plan were exceeded. Organic vapor analyzer (OVA) readings of 400 parts per million (ppm) were recorded in MW-3, and values of 1,000 ppm in MW-4 and MW-5. Specific air monitoring readings for all borings are described in Hazardous Toxic Waste Logs contained in Appendix B.

Water levels were measured by the USACE site geologist during drilling and following well completion. Water levels encountered during drilling ranged from depths of 6 ft in MW-4 to 21 ft in MW-1. Water levels following well completion ranged from 1.8 ft in MW-5 to 16.5 ft in MW-1. With the exception of MW-5, all of the water levels following development were higher that those encountered during drilling. These water level characteristics suggest that clays and sandy clays overlying the silty sands may be creating localized confined conditions within the shallow aquifer. These observations also indicate increasing heads with depth, which is not unexpected as the site is located in a low-lying area. Low-lying areas generally represent groundwater discharge areas in which the groundwater flows towards rivers, streams, and/or marshes. Additional wells, screened at different intervals from the existing wells, may be necessary to fully characterize vertical gradients at the site.

Following monitor well completion, wells were developed by the site geologist using a hand pump. Following development, a recovery test was conducted on each well. The recovery data was analyzed by USACE to determine the hydraulic conductivity of the shallow aquifer. Hydraulic conductivities ranged from 1.83×10^{-7} meters per second (m/sec) in MW-1 to 6.89×10^{-7} m/sec in MW-4 [0.39 gallons per day per square foot (gal/day/ft^2) to 1.46 gal/day/ft^2, respectively]. These values are in the lower range of hydraulic conductivity values for silty sands (Freeze

and Cherry, 1979). The results of the recovery tests and analysis performed by USACE are provided in Appendix B.

USACE also prepared a water-level contour map from the static water level data. This map is provided in Appendix B. The hydraulic gradient calculated based on this map is 0.010. Groundwater flow is from the northwest to southeast with localized control by surface drainage features.

3.5 SAMPLING PROGRAMS AND LOCATIONS

3.5.1 SAMPLING PROGRAMS

All samples (groundwater, soil, and sediment) were collected by ESE in a manner consistent with U.S. Environmental Protection Agency (EPA) guidelines and USACE's Sample Handling Protocol for Low, Medium, and High Concentration Samples of Hazardous Waste. Samples were analyzed by both ESE and U.S. Army Missouri River Division Laboratory in Omaha, Nebraska. The number of samples for each location, control samples, and analytical parameters are summarized in Tables 3-1 and 3-2.

During the first field effort, groundwater samples were collected from five monitor wells installed by the USACE Mobile District during September 1989. All soil samples for chemical analysis were collected by ESE from the burning ground/demolition area as well as from an area west and southwest of the landfill, where a pond and unlabeled drums have been located. Soil samples were collected from shallow borings (with depths between the surface and 3 ft-bls).

During the second field effort, five additional soil samples and one sediment sample were collected. Three of these samples were collected from the explosive demolition area to confirm the results from the first field effort. A background soil location was sampled, as well as an area downgradient of a former oil recovery operation. A sediment sample

Table 3-1. Sampling and Analytical Requirements - First Field Effort.

Analyte	Method Reference	Analyzed By ESE Laboratory: Number of Environmental Samples	Number of Trip Blank Samples	Number of Field Replicate Samples	Number of Equipment Rinseate Samples	Total Number of Samples	Analyzed By USACE QA ESE Laboratory: Number of Trip Blank Samples	Number of Field Replicate Samples	Number of Equipment Rinseate Samples	Total Number of Samples
SOILS										
Volatile Organic Compounds	SW8240	5	1	1	1	8	1	1	1	3
Semi-volatile Organic Compounds	SW3540/SW8270	5	0	1	1	7	0	1	1	2
ICAP Metals (Ba,Cd,Cr,Pb,Ag)	SW3050/SW6010	5	0	1	1	7	0	1	1	2
Arsenic	SW3050/SW7060	5	0	1	1	7	0	1	1	2
Selenium	SW3050/SW7740	5	0	1	1	7	0	1	1	2
Mercury	SW7471	5	0	1	1	7	0	1	1	2
Nitroaromatics & PETN	USATHAMA LW12	5	0	1	1	7	0	1	1	2
Petroleum Hydrocarbons	SW9071/EPA418.1	5	0	1	1	7	0	1	1	2
Nitrate + Nitrite	USATHAMA KF10	5	0	1	1	7	0	1	1	2
% Moisture	ASTM D2216	5	0	1	1	7	0	1	1	2
WATERS										
Volatile Organic Compounds	SW8240	5	2	1	1	9	1	1	1	3
Semi-volatile Organic Compounds	SW3510/SW8270	5	0	1	1	7	0	1	1	2
ICAP Metals (Ba,Cd,Cr,Fe,Pb,Mn,Na,Ag)	SW3005/SW6010	5	0	1	1	7	0	1	1	2
Arsenic	SW3005/SW7060	5	0	1	1	7	0	1	1	2
Selenium	SW3005/SW7740	5	0	1	1	7	0	1	1	2
Mercury	SW7470	5	0	1	1	7	0	1	1	2
Nitroaromatics	USATHAMA UW14	5	0	1	1	7	0	1	1	2
PETN	USATHAMA UW19	5	0	1	1	7	0	1	1	2
Petroleum Hydrocarbons	EPA 418.1	5	0	1	1	7	0	1	1	2
Nitrate + Nitrite	EPA 353.2	5	0	1	1	7	0	1	1	2
Cyanide	EPA 335.3	5	0	1	1	7	0	1	1	2

Source: ESE, 1989.

Table 3-2. Sampling and Analytical Requirements - Second Field Effort.

Analyte	Method Reference	Analyzed By ESE Laboratory					Analyzed By USACE QA ESE Laboratory			
		Number of Environmental Samples	Number of Trip Blank Samples	Number of Field Replicate Samples	Number of Equipment Rinseate Samples	Total Number of Samples	Number of Trip Blank Samples	Number of Field Replicate Samples	Number of Equipment Rinseate Samples	Total Number of Samples
SOILS										
Volatile Organic Compounds	SW8240	6	1	2	0	9	1	2	0	3
Semi-volatile Organic Compounds	SW3540/SW8270	3	0	1	0	4	0	1	0	1
ICAP Metals (Ba,Cd,Cr,Pb,Ag)	SW3050/SW6010	3	0	1	0	4	0	1	0	1
Arsenic	SW3050/SW7060	3	0	1	0	4	0	1	0	1
Selenium	SW3050/SW7740	3	0	1	0	4	0	1	0	1
Mercury	SW7471	3	0	1	0	4	0	1	0	1
Nitroaromatics & PETN	USATHAMA LW12	3	0	1	0	4	0	1	0	1
Petroleum Hydrocarbons	SW9071/EPA418.1	3	0	1	0	4	0	1	0	1
Nitrate + Nitrite	USATHAMA KF10	3	0	1	0	4	0	1	0	1
% Moisture	ASTM D2216	6	0	2	0	8	0	1	0	1

Source: ESE, 1990.

was also collected from a small stream flowing through the drainage easement where the stream first enters the former MNOP property. This additional effort was requested based on the results of the initial effort and as other areas of concern were located.

As described in Tables 3-1 and 3-2, soil samples were analyzed for explosive compounds, nitrate/nitrite, volatile and semi-volatile organics, petroleum hydrocarbons, and metals. The second set of soil samples from the explosive demolition area were analyzed for volatile organics only. Groundwater samples from all five monitor wells were analyzed for the same compounds, including cyanide.

3.5.2 SAMPLING LOCATIONS

The areas investigated during the first field effort are located in the southwest corner of the former MNOP property and include the landfill, the explosive demolition area, and the previously suspected location of a buried cyanide tank (see Figure 3-1). During the field effort of September 1989, USACE identified a pond containing reddish-orange water and approximately 500 deteriorated, unlabeled drums adjacent to the western and southwestern boundary of the landfill. This area is located to the west and southwest of MW-5. Based on topographic observations, it does not appear the access to this area was from the former DOD property.

Figure 3-1 indicates the approximate location of the five groundwater monitoring wells surrounding the landfill. One groundwater sample was collected from each of these wells for a total of five groundwater samples. Monitor well locations MW-3, MW-4, and MW-5 were selected downgradient of the landfill and explosive/demolition area. Monitor well MW-2 was selected to investigate possible groundwater contamination associated with the suspected UST. Background groundwater data was provided by MW-1.

The activities performed during the first field effort included the collection of three soil samples within the explosive/demolition area. These samples, SO-1, SO-2, and SO-3, were collected as composite samples from three different locations within the area as shown in Figure 3-1.

Because the existence of the pond and drums was discovered during the well installation effort, collection of samples from this location was not included in the original scope of work. USACE requested the collection of two additional soil samples from these locations. These samples were collected as composite samples: one of pond sediments (SO-5), and one of soil adjacent to the drums (SO-4). The locations of the sampling points, which created each composite sample, are shown in Figure 3-1.

During the second field effort, samples were again collected from the explosive demolition area. These samples were labeled SO-1, SO-2, and SO-3 as shown in Figure 3-1. The background soil location, selected by USACE and ESE, is in a grass covered upland area on the north side of the southern paved access road at MNOP. The background soil sampling location is shown in Figure 3-2. The location of the former oil recovery operation is also shown on Figure 3-2. This operation was located at the top of a slope. Discharge from the operation was at the base of the slope onto a flat drainage area. The sample, designated as SD-2, was collected within the drainage area, downgradient of the operation. The location of the stream sediment sample, SD-1, is also shown in Figure 3-2. This location was chosen to investigate contaminants that may have entered the former MNOP property from upstream.

A total of 16 samples were collected for this confirmation study. These samples include 5 groundwater samples and 11 soil samples, 2 of which

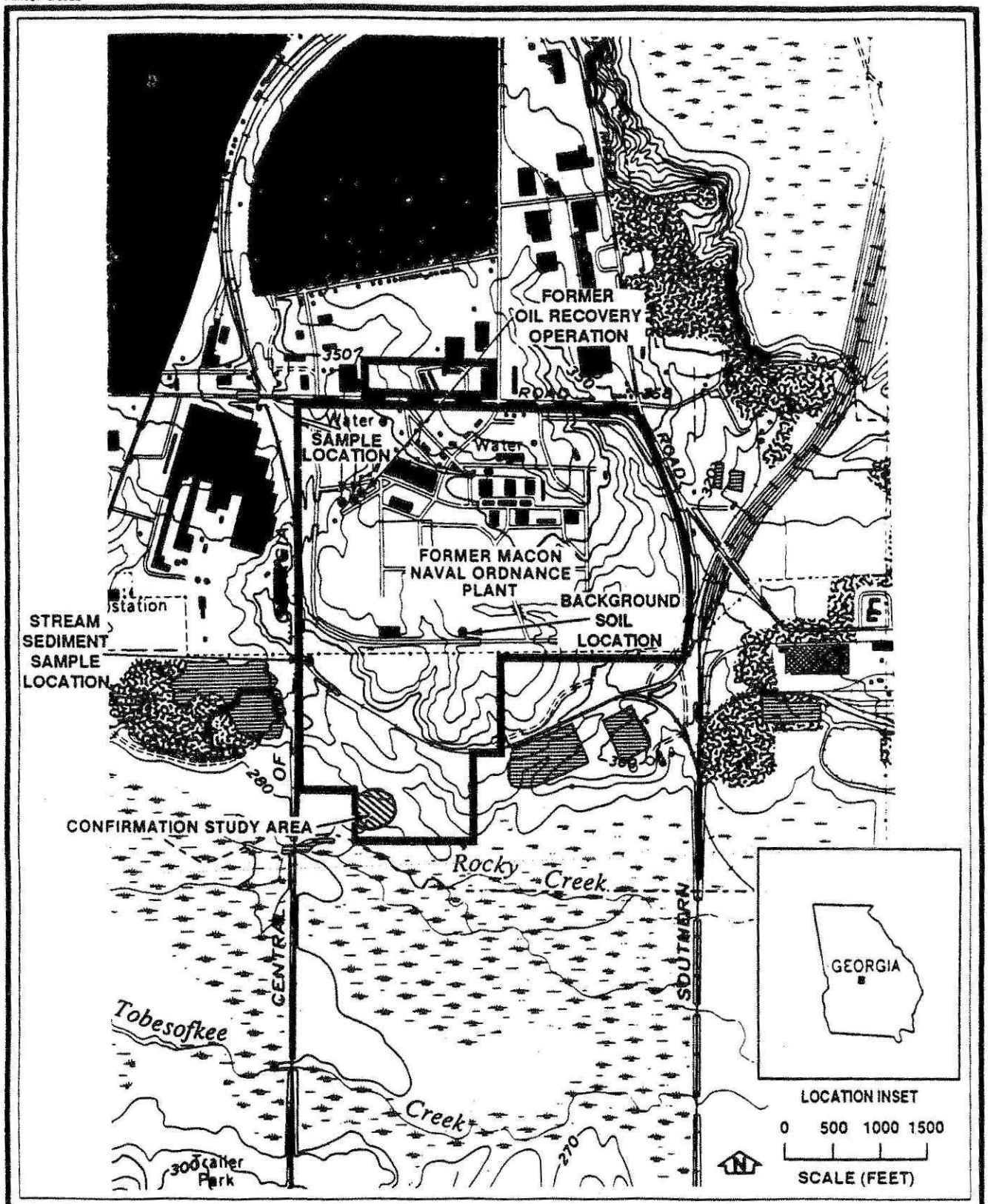

Figure 3-2
ADDITIONAL SAMPLE LOCATIONS INVESTIGATED
DURING SECOND FIELD EFFORT

SOURCES: USGS, 1985; ESE, 1989.

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Ordnance Plant

were sediment samples, as discussed previously. Control samples were also collected as described in Tables 3-1 and 3-2. Control samples included the collection of duplicate samples, equipment blanks, and travel blanks.

Duplicate samples were collected from all media sampled. Duplicate sample requirements associated with the groundwater samples include the collection of two duplicate groundwater samples from one monitor well. The well used to obtain the duplicate groundwater samples was MW-3. Three duplicate soil samples were collected from three of the soil sample locations. Soil sample SO-3 was chosen for the duplicate during the first field effort. Two duplicate samples from the second field effort were collected, the first at the explosive demolition area sample location SO-3 and the second below the former oil recovery operation. The sample from below the oil recovery operation was originally intended to be a second sediment sample; thus, the designation in data tables of SD-2. A decision was made in the field by USACE to forgo the second sediment sample and instead investigate the soil below the recovery operation. One of each of the duplicate samples was sent to the USACE Quality Assurance (QA) laboratory. The other was analyzed at the ESE laboratory in Gainesville. The samples collected for the USACE QA laboratory analysis was collected in containers supplied by Missouri River Division Laboratory (MRDL).

Quality control/quality assurance (QC/QA) required sampling blanks include the collection of equipment blanks. One equipment blank was collected from a precleaned Teflon® bailer, used to obtain the groundwater samples. A soil sampling equipment blank was not collected.

Travel blanks were also analyzed. The travel blanks, for VOA only, were prepared by the ESE laboratory. One travel blank was placed in one cooler with each sample shipment to the ESE or USACE laboratories. Data

associated with the QA requirements for sample analysis are provided in Appendix E. The MRDL QA/QC Final Report is included in Appendix F.

3.6 SAMPLING PROCEDURES

3.6.1 MONITOR WELL SAMPLING PROCEDURES

Each of the five groundwater monitoring wells were sampled once. Prior to groundwater sample collection, water levels in all monitor wells were measured relative to the top of the well casing. Measurement consisted of a precleaned, steel tape lowered into the well, with water level measured from the top of the casing. Water levels were recorded again after sampling.

A plastic ground cloth was placed beneath all sampling equipment during well purging and sampling to prevent contamination by surficial soils. MW-1 and MW-2 were purged using Teflon® bailers due to very slow recovery rates. MW-3 and MW-4 were purged with a peristaltic pump, and MW-5 was purged with a centrifugal pump with drop pipe. The discharge water during purging was continuously monitored for pH, temperature, and specific conductivity. Pumping continued until at least five times the submerged volume of the casing was removed. The pH, temperature, and conductivity had for the most part stabilized in each well (i.e., until three successive measurements are within 5 percent of one another) at the completion of purging. Purge water from monitor wells was discharged to the ground surface at the well locations.

After satisfactory pumping of the well, the sampling team changed to new rubber gloves for sample collection. Each well was sampled with a Teflon® bailer, which was not used to sample any other well onsite. Bailers were precleaned and wrapped in aluminum foil for transportation to the site. Bailers were rinsed with deionized water prior to use in the first well. Nylon cord from a new spool was attached to the bailer, and the cord was kept from touching the ground during the sampling

period. Bailers were rinsed with one volume of well water before sampling. Groundwater samples were collected in a manner which minimized aeration to prevent loss of volatile compounds. The appropriate sample containers were filled without trapping air bubbles and then tightly capped.

Samples were preserved and packed in ice for shipment to the laboratory. Field duplicate and field blank samples were included in the laboratory sample shipment. Field logs were maintained, including sample chain-of-custody records and onsite measurements of water quality (pH, specific conductance, and temperature) for each monitor well. Field instruments were calibrated and checked at the start, middle, and end of each field day using fresh calibration standards. This information is included in the daily field logs from November 29, 1989 in Appendix C.

The plastic ground cloth, sampling gloves, bailer cord, and other disposables were bagged and properly disposed of in accordance with the site safety plan. Final decontamination rinses with isopropanol were performed over a 5-gal bucket, in which they were collected and allowed to evaporate.

3.6.2 RESULTS OF WATER-LEVEL MEASUREMENTS BY ESE

Water-level measurements from each monitor well were measured by ESE prior to sample collection. Depth-to-water measurements were converted to elevations (ft-msl), based on top of casing (TOC) elevations provided by USACE. The results of these calculations are shown in Table 3-3. Water-level data were plotted on the site map (see Figure 3-3). The groundwater flow direction at the site, based on these measurements, is to the southeast, controlled by the creek flowing in the drainage easement. The gradient shown on this map is 0.011, which is similar to the gradient of 0.010 measured by USACE.

Table 3-3. Water-Level Elevations Measured by ESE*

Reference Point	MW-1	MW-2	MW-3	MW-4	MW-5
TOC	308.87	286.06	283.04	281.12	280.69
Water Level (TOC) (11/28/89)	18.54	5.73	4.53	3.47	2.71
Water-Level Elevation	290.33	280.33	278.51	277.65	277.98

Note: TOC = top of casing.

*All elevations in feet above mean sea level (ft-msl).

Source: ESE, 1990.

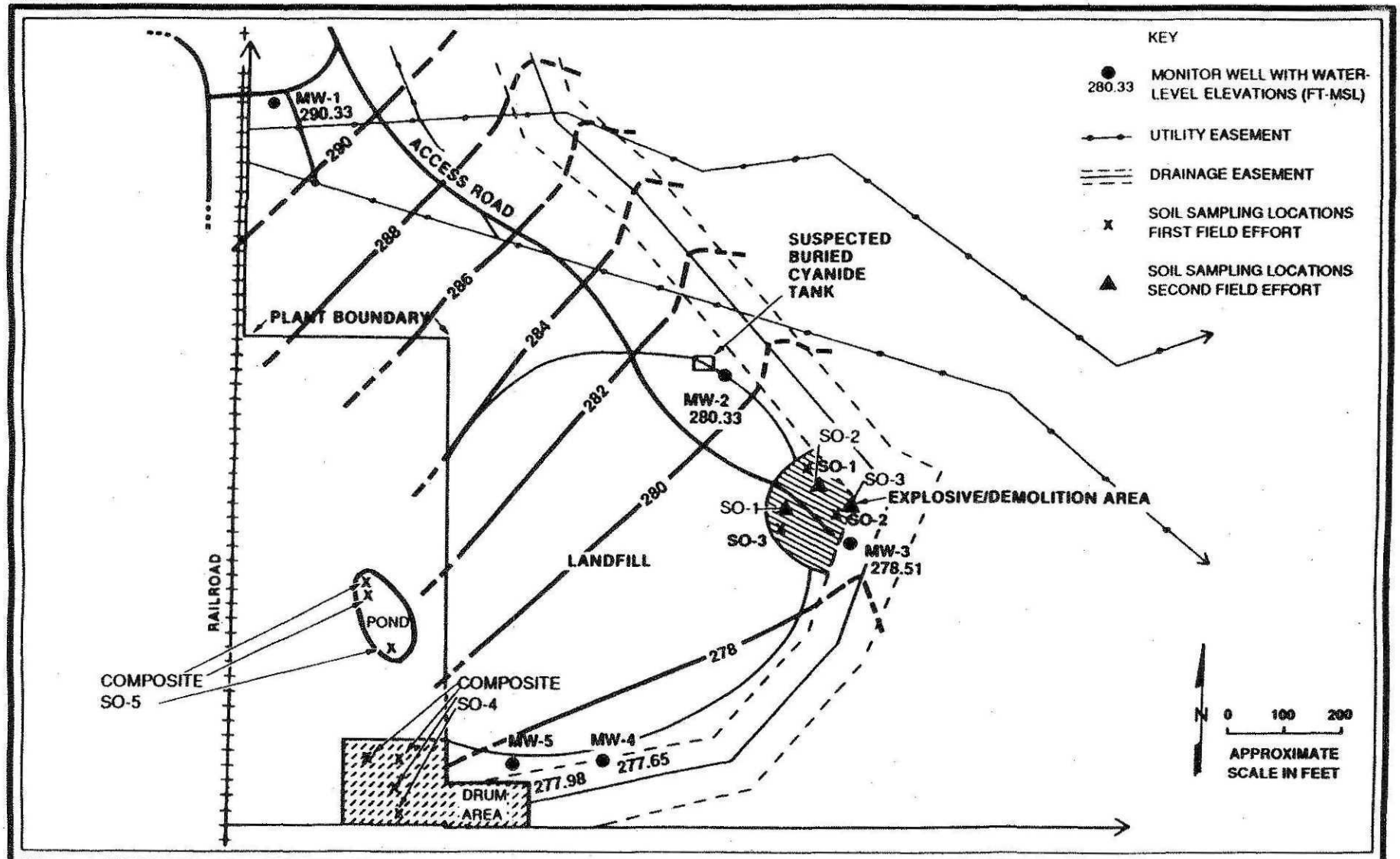

Figure 3-3
WATER LEVEL CONTOUR MAP OF STUDY AREA AT FORMER MACON NAVAL ORDNANCE PLANT

SOURCE: ESE, 1990.

CORPS OF ENGINEERS
MOBILE DISTRICT

Former Macon Naval Ordnance Plant

3.6.3 SOIL SAMPLING PROCEDURES

During the first field effort, three soil samples were collected from the explosive/demolition area, one from the pond sediments, and one from the soil surrounding the drums. The samples from the explosive/demolition area were collected as composites of the soil from 0 to 3 ft of depth at each location as shown in Figure 3-1. The sample of the pond sediments was obtained by compositing material from three soil borings approximately 1 ft deep around the edges of the pond. The soil sample from the drum area was obtained by compositing material from four boreholes of 0 to 3 ft depth adjacent to the drums. The location for each of these boreholes was chosen by the USACE site representative. The soil boring was completed by hand-augering to the appropriate depth with a bucket auger. The soil brought to the surface was retained in a stainless-steel bowl. Upon completion of the boring, the soil in the bowl was gently composited using a stainless-steel spoon. Due to the nature of the sampling method, some compositing of the soil was necessary to ensure a homogeneous and replicable sample. The compositing activity was kept to a minimum to avoid the loss of volatiles from the soil. The samples were collected by filling the sampling containers with the composited soil.

During the second field effort, three soil samples were collected from the explosive demolition area, one from the background location, one from below the former oil recovery operation, and one stream sediment sample. The samples collected during the second field effort from the explosive demolition area were not composited. Results of analyses of soil samples from this area collected during the first field effort were suspected due to compositing.

To collect samples in the explosive demolition area, each borehole was advanced to 3 ft deep with a bucket auger. Each sample bottle was filled with a portion of the material from each lift of the auger as it

was brought to the surface. The sample bottles were capped between fillings.

The background sample was collected from one borehole approximately 3 ft deep. The soil from the length of the borehole was collected in a stainless steel pan, and the sample bottles were filled from the collected material in the pan.

The soil sample from below the oil recovery operation was collected as composites from two boreholes, each approximately 1 ft deep. The boreholes were both located in the flat drainage area below the former recovery area. The boreholes were approximately 30 ft apart in areas void of vegetation with obvious surface staining.

The stream sediment sample was collected in a similar manner. The sample was collected as a composite from 2 boreholes augered into the sediments to approximately 1 ft deep. The boreholes were only 1 ft apart. Sample packaging and shipping for all soil and sediment samples was the same as for groundwater samples. Soil sampling documentation is provided in Appendix C.

3.7 HAZARDOUS RANKING SYSTEM EVALUATION

A Hazardous Ranking System Evaluation was also completed as part of this investigation. The information required to complete the evaluation is based on the findings and results of the present investigation. The completed form is provided in Appendix D.

4.0 ANALYTICAL RESULTS

4.1 INTRODUCTION

The following sections include information obtained from samplir analyses of the monitor wells and soil at the former MNOP. Anal results of the groundwater samples analyzed by ESE are presented compared to applicable water-quality criteria where appropriate. Presently, no quality criteria exist for comparison of soil anal data. Soil samples have been compared to the background soil sa

4.2 GROUNDWATER

Groundwater samples obtained from the five monitor wells were an for volatile and semivolatile organic compounds, explosive compo nitrate/nitrite, petroleum hydrocarbons, metals, and cyanide. T of the analyses and methods of analysis are presented in Table 3 results of the analyses are summarized in Table 4-1, which shows those compounds that were present above detection limits. Compl results of the analytical results are provided in Appendix E.

4.2.1 ORGANIC COMPOUNDS

The organic compound detected with the highest concentration was All the monitor wells exceed the drinking water criteria with th exception of the background well MW-1. This volatile organic wa detected in MW-2 with a concentration of 7,000 µg/L and in MW-3 concentration of 3,800 µg/L. Lower concentrations (110 µg/L and µg/L) were detected in MW-4 and MW-5, respectively. The drinkin criterion associated with TCE is 5 µg/L.

TCE is commonly used as a degreasing compound for metal parts an machinery. Other applications of TCE include use in paints, drycleaning, dye, textiles,. solvents, refrigerants and heat exch liquids, fumigants and aerospace operations (EPA, 1985). The re

Table 4-1. Summary of Results of Groundwater Sample Analyses

Compound	Sample Identification									Water Quality Criterion	Regulation
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-3-DP	MW-EB	MW-TB	SO-TB		
Cyanide (mg/L)	--	0.133	0.005	--	--	--	--	NRQ	NRQ	0.0035	GA
Nitrogen NO_2+NO_3 (mg/L as N)	5.45	0.151	0.040	--	--	0.073	0.021	NRQ	NRQ	10	MCL
Arsenic, Total (mg/L)	--	0.0032	0.0029	--	--	--	--	NRQ	NRQ	0.05	MCL
Barium, Total (mg/L)	0.0507	0.120	0.0556	0.0418	0.109	0.0569	0.0015	NRQ	NRQ	1.0	MCL
Chromium, Total (mg/L)	0.0140	0.0259	0.0181	0.0091	--	0.0118	--	NRQ	NRQ	0.05	MCL
Iron, Total (mg/L)	4.42	19.0	5.91	19.2	17.3	6.04	0.0124	NRQ	NRQ	0.3	MCL
Manganese, Total (mg/L)	0.428	0.590	0.0970	0.248	0.530	0.100	--	NRQ	NRQ	0.05	MCL
Selenium, Total (mg/L)	--	--	0.0023	--	--	--	--	NRQ	NRQ	0.01	MCL
Sodium, Total (mg/L)	20.6	28.7	13.6	8.12	9.30	14.3	0.169	NRQ	NRQ	20	GA Recom
PETN (µg/L)	68.8	--	--	--	--	33.3	--	NRQ	NRQ	NC	--
1,3-Dinitrobenzene (µg/L)	--	--	1.18	--	--	1.23	--	NRQ	NRQ	NC	--
2,4-Dinitrotoluene (µg/L)	--	--	1.83	--	--	1.68	--	NRQ	NRQ	1.1	Rosenblatt

Table 4-1. Summary of Results of Groundwater Sample Analyses (Continued, Page 2 of 2)

Compound	Sample Identification									Water Quality Criterion	Regulation
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-3-DP	MW-EB	MW-TB	SO-TB		
Trichloroethene (µg/L)	--	7,000	3,800	110	19	3,900	--	--	--	5	MCL
Vinyl Chloride (µg/L)	--	--	--	170	--	--	--	--	--	2	MCL
Bis(2-Ethylhexyl) Phthalate (µg/L)	1.6	1.7	6.4	2.4	1.2	3.0	1.2	NRQ	NRQ	10,000	WQC

Note:
- GA - Georgia state standard described in EPA (1988).
- GA Recom - recommended Georgia standard--nonenforceable (Personal Communication, Fred Lehman).
- MCL - maximum contaminant level specified in the National Primary Drinking Water Regulations, 40 CFR 141.11 (July 1, 1986) and the National Secondary Drinking Water Regulations, 40 CFR 143.3 (July 1, 1986).
- mg/L - milligrams per liter.
- NRQ - not required.
- PETN - pentaerythritol tetranitrate.
- Rosenblatt - criteria suggested by Rosenblatt (1981) for the permissible concentration level for the contaminant in drinking water.
- µg/L - micrograms per liter.
- WQC - suggested ambient water quality criteria for the protection of human health from the toxic properties or carcinogenic effects of the compound; criteria associated with cancer risk levels (CRLs) of 1×10^{-6} are reported where available; these criteria are summarized in the document Quality Criteria for Water 1986, EPA, May 1, 1986, Washington, DC; criteria were previously announced in 45 FR 79318 (November 28, 1984), 49 FR 5831 (February 15, 1984), and 50 FR 30784 (July 29, 1984).
- -- - not detected at method detection limit.

Source: ESE, 1990.

review indicated degreasing was part of the operations at the former MNOP. Wastes from this operation is expected in the landfill that serviced the facility. Based on the monitor well data, the strongest source of TCE appeared on the southeast side of the landfill.

Another organic compound of significance, vinyl chloride, was detected in MW-4 with a concentration of 170 µg/L. The criterion for vinyl chloride is 2 µg/L. This compound is used in organic synthesis, PVC plastic, and adhesives (EPA, 1985). It is suspected that this compound is a result of the landfill wastes, and not the PVC well casing, as it was not detected in any other well except MW-4.

The plasticizer bis(2-ethylhexyl)phthalate was detected in all samples including the equipment blank. The concentrations were low, ranging from 1.2 µg/L to 6.4 µg/L. The criterion for bis(2-ethylhexyl)phthalate is 10,000 µg/L. This plasticizer is a common contaminant when plastics are used for well construction and sampling, which is the case at former MNOP. The presence of this compound is of little significance.

4.2.2 EXPLOSIVE COMPOUNDS

Explosive compounds were detected only in MW-3 adjacent to the explosive demolition area. The compounds 2,4-DNT and 1,3-DNB were detected with concentrations of 1.83 µg/L and 1.18 µg/L, respectively. The source of these compounds is most likely residual explosive compounds within the soils of the explosive demolition area. A recommended permissible concentration in drinking water for 2,4-DNT of 1.1 µg/L was proposed by Rosenblatt (1981) for an Army munitions site in northern Illinois. The concentration of 2,4-DNT in MW-3 exceeds this criterion. No criteria are available for 1,3-DNB.

The only other explosive compound detected in the samples was PETN. This compound was analyzed because it was reported as being a component

of fuses and primers (Department of the Army, 1969). These parts were manufactured at the former MNOP. PETN was detected at MW-1, the background well, with a concentration of 68.8 µg/L. PETN was also detected in the duplicate sample obtained from MW-3 (33.3 µg/L), but was not detected in the sample from MW-3. These concentrations are near the detection limit of the analysis method of 20 µg/L. There are no criteria associated with PETN. The results tend to indicate that trace amounts of PETN are present at the background location and possibly at the explosive demolition area. This type of explosive is expected at the explosive demolition area, but it is unexpected in the area thought to be upgradient. This result precludes the use of MW-1 as a reliable background location and may indicate another source area of explosives disposal near the upgradient well location. As the concentrations that were detected in the samples are near the detection limits, another round of sample collection and analysis is recommended prior to formulation of any conclusions regarding additional source areas.

4.2.3 NITROGEN

The highest level of nitrogen was also detected in MW-1 at 5.45 mg/L. Although this concentration does not exceed the criteria of 10 mg/L, it is higher than other concentrations, which ranged from below the detection limit of 0.010 mg/L to 0.151 mg/L. Although high levels of nitrogen are associated with explosive compounds, other sources of nitrogen include fertilizers, sewage, and animal wastes (Sonderegger et al., 1978). Higher nitrogen levels at the background location also casts doubt on the reliability of the sampling location for providing background water quality and provide a second indication that there may be an additional source area of explosives disposal near the upgradient location.

4.2.4 PETROLEUM HYDROCARBONS

Petroleum hydrocarbons were not detected in any of the groundwater samples.

4.2.5 METALS

4.2.5.1 Arsenic

Arsenic was detected in MW-2 and MW-3 at concentrations of 0.0032 mg/L and 0.0029 mg/L, respectively. These concentrations are below the criteria of 0.05 mg/L. As arsenic was only detected in these two wells, which were shown to be contaminated with other compounds discussed previously, low levels of arsenic may be associated with contamination from the landfill and explosive demolition area. Arsenic compounds are used in insecticides, fungicides, rodenticides, herbicides, fireworks, paints, wood preservatives, bronze and other alloys, glass, enamels, ceramics, linoleum, semiconductors, and photoconductors (Walton, 1985).

4.2.5.2 Barium

Barium was detected in all the wells and in the equipment blank. Wells containing the highest concentrations of barium include MW-2 and MW-5 with concentrations of 0.120 mg/L and 0.109 mg/L, respectively. MW-3 and MW-4 had barium concentrations of 0.0556 mg/L and 0.0418 mg/L, respectively, and MW-1 had a similar concentration of 0.0507 mg/L.. The equipment blank sample had a much lower a concentration of 0.0015 mg/L. All samples were below the criteria level for barium, which is 1 mg/L. Barium has uses in metal alloys and in lubricants (Walton, 1985) and is a common component in groundwater with concentrations of 0.001 to 0.1 mg/L (Fenn et al., 1980). Although barium is not necessarily an indicator of contamination, the higher concentrations found in MW-2 and MW-5 may suggest influence from contamination. As the background sample from MW-1 is suspected due to the presence of explosive compounds and nitrogen, a judgement concerning the presence of contamination at all

locations based on the low concentrations of barium that were observed is not possible.

4.2.5.3 Chromium

Chromium was detected in MW-1, MW-2, MW-3, and MW-4 with concentrations ranging from 0.0091 mg/L in MW-4 to 0.0259 mg/L in MW-2. No chromium was detected in MW-5. The detection limit for the method of analysis is 0.0071 mg/L. The concentrations detected are all below the criteria of 0.05 mg/L. Chromium is used in steel and metal alloys, dying and tanning, paints, inks, varnishes, glazes, fireworks, batteries, and rust inhibitors (Walton, 1985) and is also a component in soil and typically occurs in groundwater with concentrations ranging from 0.001 mg/L to 0.1 mg/L (Fenn et al., 1980). Although chromium may be associated with contamination, the low levels of chromium detected at concentrations slightly over the detection limit are not considered to be indicative of contamination.

4.2.5.4 Selenium

Selenium was detected in only one well, MW-3, with a concentration of 0.0023 mg/L. This concentration was slightly higher than the detection limit of 0.0018 mg/L and below the criteria level of 0.01 mg/L. The principal uses of selenium are in electric and electronic components (Walton, 1985). Because selenium was only detected in one monitor well, which has shown other contaminants, it may represent contamination from the suspected sources.

4.2.5.5 Sodium

Sodium was detected in all the monitor wells and equipment blank. Concentrations ranged from 28.7 mg/L in MW-2 to 8.12 mg/L in MW-4. The equipment blank concentration, 0.169 mg/L, was lower than the monitor well concentrations. The State of Georgia recommended level for sodium in drinking water is 20 mg/L, although this is not an enforceable

standard (Lehman, 1990). Sodium typically occurs in groundwater with concentrations of 1 to 1,000 mg/L (Fenn et al., 1980). At the observed oncentrations, sodium does not appear to be related to the contamination.

4.2.5.6 Iron

Iron was also detected in all the monitor well samples and the equipment blank. Iron is another constituent which would not necessarily be indicative of contamination as it is often present in groundwater at concentrations of 0.01 mg/L to 10 mg/L (Fenn et al., 1980), but may suggest contamination if concentrations are well over background. Sources of iron may be decomposition of metal parts within the landfill, but iron is also a component of the soil. The highest concentrations were detected in MW-2 (19.0 mg/L), MW-4 (19.2 mg/L), and MW-5 (17.3 mg/L) Similar concentrations were detected in MW-1 (4.42 mg/L and MW-3 (5.91 mg/L). All of these concentrations exceed the drinking water criterion for iron of 0.3 mg/L, which is based primarily on aesthetics (Saywer and McCarty, 1978). The concentration in the equipment blank was 0.0124 mg/L, much lower than the other concentrations and below the criteria level. As the background concentration of iron in the aquifer is not certain due to the unreliability of the sample from MW-1, it is uncertain if the wells actually show contamination. Potentially, the higher concentrations observed at MW-2, MW-4, and MW-5 are indicative of contamination.

4.2.5.7 Manganese

Manganese was detected in all the wells sampled. Concentrations in the other monitor wells ranged from 0.097 mg/L in MW-3 to 0.59 mg/L in MW-2. The criterion associated with manganese is 0.05 mg/L, generally based on aesthetics (Sawyer and McCarty, 1978). This criterion is exceeded in all of the monitor wells. Although manganese is often a component of metal alloys (EPA, 1988), it also a component of the soil and is

typically found in groundwater with concentrations ranging from 0.001 mg/L to 0.1 mg/L (Fenn et al., 1980). Due to its occurrence in all the wells at generally similar concentrations, this metal is not considered indicative of site contaminants.

4.2.5.8 Cyanide

Cyanide was detected in two wells, MW-2 and MW-3. The highest concentration of 0.133 mg/L was detected in MW-2, adjacent to the location of the buried cyanide contaminated tank. Cyanide was also detected in MW-3 with a concentration of 0.005 mg/L, which is slightly over the detection limit of 0.003 mg/L. A recommended upper value criteria for cyanide in all classes of Georgia waters is 0.0035 mg/L (EPA, 1988). The concentration of cyanide in MW-2 exceeds this criteria.

Cyanide sources include various electroplating baths and fumigants (Walton, 1985). Plating operations occurred at the former MNOP, during which the buried tank supposedly became contaminated. The condition of the tank when excavated by USACE indicated that the tank was cleaned prior to disposal. The analyses results indicate some residual contamination, which has since dissolved in the groundwater, may have been present in the tank. The presence of trace levels of cyanide in MW-3 is expected as this well is located downgradient of the known suspected source of cyanide and also could represent other minor sources within the landfill or explosive demolition area.

4.3 SOILS

Five composite soil samples from the first field effort and three composite soil samples from the second field effort were analyzed for volatile and semivolatile organic compounds, explosive compounds, nitrate/nitrate, petroleum hydrocarbons, and metals. Three soil samples collected from the explosive demolition area during the second field

effort were analyzed for volatile organics only. The scope of the analyses and methods of analysis are presented in Tables 3-1 and 3-2. The results of soil analyses are summarized in Tables 4-2 and 4-3, showing only those compounds that were present above detection limits. Complete results of the analytical results for soils are provided in Appendix E.

4.3.1 ORGANIC COMPOUNDS

The majority of organic compounds was detected in the soil sample SO-5 from the first sampling event. This sample was collected as a composite from the edges of a pond located west of the site, off the former MNOP property boundary. All the compounds detected are semivolatile organics of a class of compounds known as polycyclic aromatic hydrocarbons (PAHs). These compounds are long chain hydrocarbons and are most often found associated with tar and heavy hydrocarbon fuels, such as diesel or kerosene.

Only one other organic compound was detected in soil sample SO-4, which was obtained during the first field effort from an area containing drums southwest of the landfill. The PAH compound benzo(G,H,I)perylene was detected in the composite soil sample SO-4. This area is also off the former MNOP property. The source of this compound is suspected to be material contained in the drums. The drums are not labeled but may potentially contain diesel fuel or kerosene.

The second round of soil samples collected from the explosive demolition area were specifically obtained to confirm the absence of volatile compounds in this area. There was concern by USACE that compositing of soil samples from this area collected during the first field effort had resulted in the loss of volatiles. Extra care was taken during the second effort not to composite these samples, as described in Section 3.6.3. The results of this second set of analyses

Table 4-2. Summary of Results of Soil Sample Analyses--First Field Effort

Compound*	Sample Identification					
	SO-1	SO-2	SO-3	SO-4	SO-5	SO-3-DP
Moisture (% wet wt.)	9.3	14.2	11.6	44.3	52.6	13.4
Arsenic	0.650	1.55	0.574	0.781	4.83	0.502
Barium	6.92	11.4	8.71	196	70.5	7.26
Chromium	7.02	8.87	5.82	22.1	29.6	3.99
Lead	--	5.00	--	41.8	39.3	--
Anthracene	--	--	--	--	0.32	--
Benzo(a)Anthracene	--	--	--	--	1.4	--
Benzo(b)Fluoranthene	--	--	--	--	0.92	--
Benzo(k)Fluoranthene	--	--	--	--	0.67	--
Benzo(a)Pyrene	--	--	--	--	0.69	--
Benzo(g,h,i)Perylene	--	--	--	1.9	0.72	--
Chrysene	--	--	--	--	0.95	--
Fluoranthene	--	--	--	--	2.1	--
Indeno(1,2,3-cd)Pyrene	--	--	--	--	0.75	--
Phenanthrene	--	--	--	--	1.0	--
Pyrene	--	--	--	--	1.8	--
Nitrogen, NO_2+NO_3, Sediment (µg/g-dry)	4.3	--	--	196	--	0.71
Hydrocarbons, Petroleum (µg/g-dry)	--	--	--	1,020	207	--

Note: µg/g-dry = micrograms per gram, dry weight.
-- = not selected at method detection limit.

* Units are in milligrams per kilogram, dry weight (mg/kg-dry) unless otherwise noted.

Source: ESE, 1990.

Table 4-3. Sumary of Results of Soil Sample Analyses--Second Field Effort

Compound*	Sample Identification			
	SD-1	SD-2	SD-DUP#2	BKGSOIL
Moisture (% wet wt.)	18.0	9.4	13.1	13.1
Arsenic	0.318	1.87	1.84	1.98
Barium	11.2	30.4	27.0	26.4
Cadmium	0.564	0.657	0.766	--
Chromium	4.40	12.9	13.6	21.0
Lead	5.76	22.6	26.9	5.32
PETN	--	4.92	6.10	--
Nitrogen, NO_2 and NO_3 (μg/g-dry)	4.18	--	--	1.78
Hydrocarbons, Petroleum (μg/g-dry)	--	12600	12200	--

Note: μg/g-dry = micrograms per gram, dry weight.
-- = not selected at method detection limit.

* Units are in milligrams per kilogram, dry weight (mg/kg-dry) unless otherwise noted.

Source: ESE, 1990.

(samples SO-1, SO-2, and SO-3) confirmed the absence of volatile organic compounds. No volatile compounds were detected in the laboratory analyses. Readings of organic vapors monitored during sample collection in this area with an organic vapor meter (OVM), ranged from approximately 20 ppm to 230 ppm. These readings are attributed to decay of natural organic material in the shallow, marshy soil in this area.

4.3.2 EXPLOSIVE COMPOUNDS

During the first round of sample analyses, no explosive compounds were detected in any of the soil samples. The second round of analyses reveals the presence of only one of the explosive compounds, PETN, in the soil sample collected from below the oil recovery operation, SD-2. PETN was also detected in the duplicate sample from this location. PETN was detected in the groundwater in MW-1, the upgradient monitor well, and also in the duplicate sample from MW-3. As discussed in Section 4.2.2, PETN may be expected as it is used as a component of primers and fuses, which were manufactured at the former MNOP. These results suggest residual amounts of PETN may be present in the soil. Depending on the concentration, PETN may be the source of the concentrations observed in the groundwater.

4.3.3 NITRATE/NITRITE

Nitrogen was detected in soil sample SO-1 and in the duplicate sample of SO-3, both collected during the first field effort from the explosive demolition area with concentrations of 4.3 $\mu g/g$ and 0.71 $\mu g/g$, respectively. The concentration in the duplicate sample is very close to the detection limit for the method. The presence of nitrates in this area would not be unexpected as nitrates are often associated with the explosive compounds which also contain nitrogen. The highest concentration of nitrogen (196 $\mu g/g$) was found in soil sample SO-4 from the drum area. As this area is not suspected of containing explosive

wastes nor were any detected, this result may be associated with decomposing organic material present in the soil around the drums.

During the second sample analyses, the sediment sample SD-1 was found to have a nitrate concentration of 4.18 µg/g, similar to SO-1 from the explosive demolition area. The background concentration of nitrate in soil is 1.78 µg/g. The observed concentrations of nitrate in the explosive demolition area and the stream sediments are relatively low with comparison to the background value. Although nitrate may indicate the presence of explosive compounds, no other explosive compounds were detected. These values are most likely the result of decaying organic matter.

4.3.4 PETROLEUM HYDROCARBONS

Petroleum hydrocarbons were detected in soil sample SO-4, collected adjacent to the drums and SO-5, consisting of pond sediments. The concentration of petroleum hydrocarbons was 1,020 µg/g in SO-4 and 207 µg/g in SO-5. The analysis of petroleum hydrocarbons detects a wide range of compounds which includes the PAH compounds, as well as other straight chain and cyclic hydrocarbons. The petroleum hydrocarbons detected in SO-5 may include the PAH compounds detected in the organic analysis and also others that were not target compounds of the analysis. The results from SO-4 indicate this is the case as the specific compounds which produced the petroleum hydrocarbon concentrations were not detected as any of the target compounds of the organic analysis [with the exception of benzo(G,H,I)perylene]. Based on these results from the pond and drum area, the contamination in these areas appears to be related to some type of hydrocarbon fuels or possibly lubricating oils. These types of materials were used at the former MNOP.

Petroleum hydrocarbons were detected in the soil below the former oil recovery operation. The concentrations were higher than observed in the

other areas, with concentrations of 12,600 µg/g in the sample and 12,200 µg/g in the duplicate. During sample collection, the soil was noted to be discolored and had a hydrocarbon odor. Organic vapor readings with the OVM were recorded as 4 ppm in the loose soil and up to 40 ppm in the shallow borehole from which the sample was obtained. Discussions with a former MNOP employee, Mr. Hamlin, revealed soil had been removed from this area in the past. Soil remaining most likely contains residual petroleum hydrocarbons from the former operation.

4.3.5 METALS

The metal analysis of the background soil sample provides a basis for comparison with the other samples. Soils often contain detectable concentrations of metals; therefore, the presence of any specific metal does not necessarily represent contamination. Based on this comparison, three samples detected concentrations of certain metals exceeding the background concentrations. These samples include SO-4 from the drum area, SO-5 from the pond sediments, and SD-2 from below the oil recovery operation. These three samples were each found to contain other contamination, and elevated levels of certain metals is not unexpected.

Elevated levels of lead were found in each of the three samples SO-4, SO-5, and SD-2. The contamination in each of these samples was primarily attributed to some type of hydrocarbon product, a component of which may be lead. The lead concentrations ranged from 2.6 mg/kg in SD-2 to 41.8 mg/kg in SO-4, generally 4 to 8 times greater than the background concentration of 5.32 mg/kg.

The other metal that exceeded background concentrations was barium. Barium concentrations exceeded background concentrations in samples SO-4 and SO-5 by an order of magnitude. Barium only slightly exceeded background concentrations in sample SD-2 and is not considered significant. The presence of elevated concentrations of barium may be

related to the other contaminants in the pond and drum area. The presence of barium in this area appears to be unique to the specific type of hydrocarbon product producing the other contamination. This would suggest a different type of product than that associated with the former oil recovery operation and perhaps a different source.

5.0 CONCLUSIONS

The conclusions of this confirmation study are the following:

1. Records Review--No new information was obtained by ESE that USACE did not already know. The available information can be obtained by contacting GSA and is kept at the National Archives. This information relates to exchange of property and inventories of facilities at the former MNOP.

   Some of the structures at former MNOP, which could be potential sources of contamination, were involved in operations related to the manufacture of munitions. These operations involved the use of compounds such as oils, solvents, and explosives. Structures that may be associated with contamination include a sewage treatment plant; plating operations; USTs; aboveground fuel tanks; the landfill; the explosive demolition areas; a buried cyanide-contaminated tank; solvent storage buildings; and an abandoned, deep industrial water supply well.

2. USACE Site Investigation--The investigation performed by USACE identified additional areas that may be of concern with regard to contamination at the site. These offsite areas include a pond containing reddish-orange water and an area containing approximately 500 unlabeled drums.

   Monitor wells installed during the USACE investigation identified a shallow aquifer composed of silty sand. Observations made during well installation indicate the aquifer may exhibit localized confined conditions. Volatile organic vapors were detected during the installation of three of the monitor wells. Hydraulic testing of the aquifer by means of recovery tests provided values of hydraulic conductivity of the

aquifer in the lower range of silty sand formation. A water-level contour map prepared by USACE indicated flow generally to the southeast across the investigated area. This flow direction was confirmed by measurements obtained by the ESE project team.

3. Sampling and Analysis by ESE--Samples were collected during two different field efforts. The first effort involved the sampling of both groundwater monitor wells and soil. The second effort focused on soil sampling. The results of the sampling and analysis, which included 5 monitor wells and 16 soil samples total, revealed the presence of contamination at the site. The most significant groundwater contamination at the site is due to the organic compound TCE. Detected concentrations exceed drinking water standards in all the downgradient monitor wells. Concentrations significantly over the standard (by 760 to 1,400 times) were detected in MW-2 and MW-3 on the northeast portion of the landfill and near the explosive demolition area. Explosive contamination was detected in the groundwater from MW-3, adjacent to the explosive demolition area. The explosive compound PETN was detected in the upgradient well MW-1. This result, in combination with a relatively high concentration of nitrogen in comparison with other values on the site, suggests an additional source of explosive disposal near MW-1. PETN was also detected in the duplicate sample from MW-3 in the explosive demolition area. This result is expected. Iron and manganese were the only metals to exceed criteria. Due to an unreliable background sample particularly for the comparison of low-level metal concentrations in the aquifer, no definitive statements can be made regarding metals contamination. Some of the metals detected suggest contamination as the higher

concentrations occur in wells in which other contaminants were found. Cyanide was detected in two wells, MW-2 directly adjacent to the buried cyanide contaminated tank and MW-3, which is in a downgradient direction from the tank. The detected concentrations exceed the state criteria but are close to the detection limit for the analysis method. Petroleum hydrocarbons were not detected in any of the groundwater samples.

Evidence of soil contamination was found in soil samples SO-4, SO-5, and SD-2. Samples SO-4 and SO-5 were collected during the first field effort from an area west and southwest of the former MNOP property where a pond and drums were located by USACE. Sample SD-2 was collected during the second field effort from an area below a former oil recovery operation. The contamination in all three areas appears to be related to heavy hydrocarbon fuels or other hydrocarbon compounds, such as oils. These types of fuels and oils were present at the former MNOP as evidenced by the report of kerosene, diesel fuel, and heating oil tanks in the records. They were used for heating and operation of various machinery, and various oils were also used as cutting oils and lubricants. The presence of higher concentrations of barium in the samples from the pond and drum area, SO-4 and SO-5, may indicate a type of product different from that associated with the former oil recovery operation and perhaps a different source of the product. PETN was detected in the soil below the oil recovery operation and may suggest a source for the presence of PETN in the groundwater.

The resampling effort in the explosive demolition area was performed without compositing of the samples. This effort confirmed the results of the initial effort where the soil was

composited. No volatile organic compounds were detected from soil in this area during both efforts.

Groundwater and soil contamination has been encountered at concentrations that may require regulatory review for this location. The contamination found onsite is reasonably suspected to have resulted from activities that took place during the period of Department of Defense (DOD) control. Investigated areas adjacent to the site but outside the site boundary showed evidence of soil contamination. These areas, including a pond and abandoned drums, were investigated prior to verification that their location was not on former MNOP property. The initial assessment of the pond and drum area contamination is that it is not the result of DOD activities. The former MNOP site, and the adjacent site, should be referred to the appropriate office or agency for determination of a future course of action.

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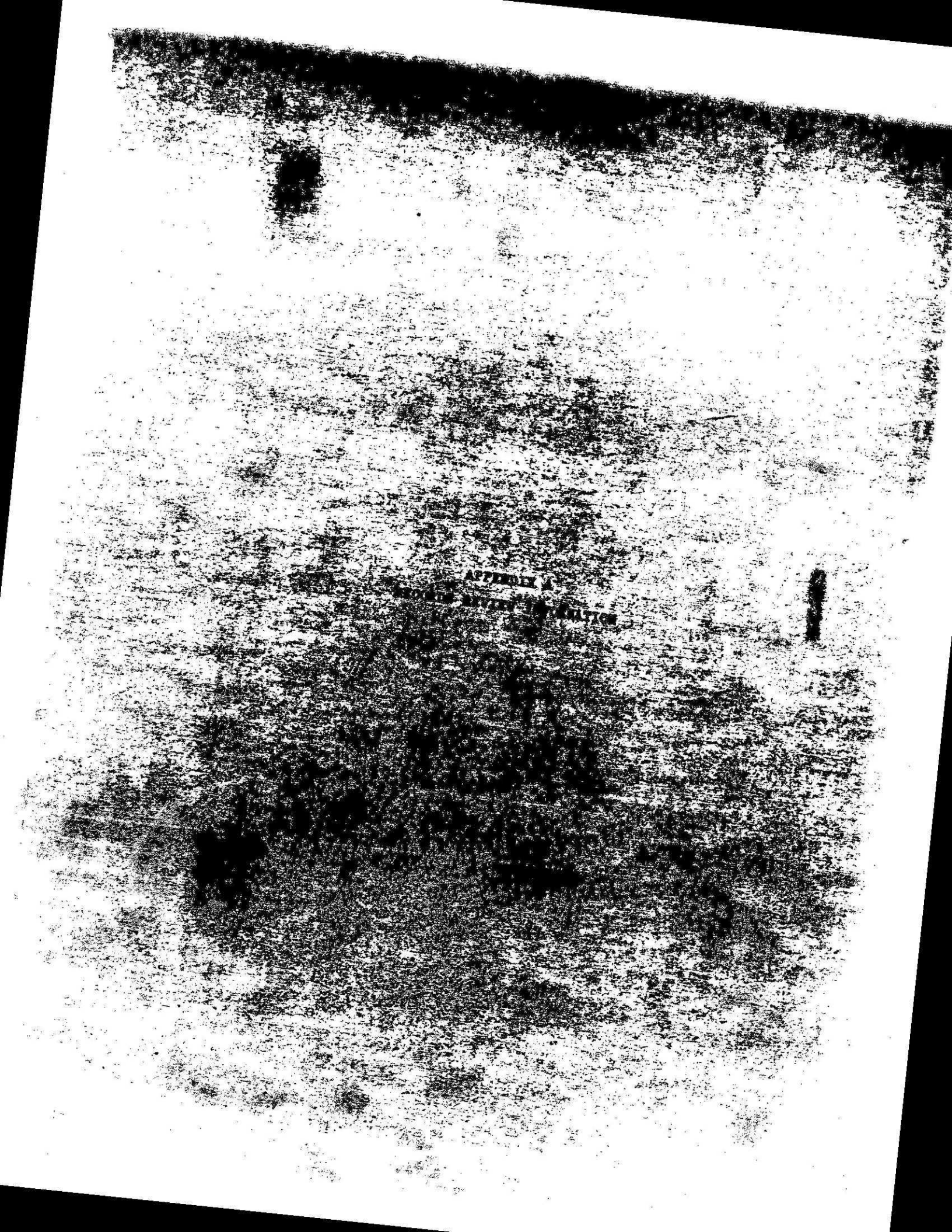

(Pages 10 & 11 - Continued)

(new paragraph)

Other equipment include many temperature chambers and cabinets, heat-treating ovens and furnaces, meters for almost every purpose, conveyors, chain hoists, oscillographs, oscilloscopes, oscillators, stroboscope, amplifiers, sterilizer, mowers, jacks, projectors, water coolers, industrial refrigerators, analyses, gages, magnet, cameras, microscopes, resistors, transit, incubator, scales, vises, resuscitators, chlorinators, closed-circuit television, safes, tanks, and many more items which are too numerous to set out in this brochure, are all in this sale.

The machinery and equipment, which represents an original cost of over eight million dollars, provides a flexibility that can produce items the size of a second hand on a watch...or a billet weighing 40 pounds or more. A large quality testing laboratory, x-ray inspection facility, and chemical analysis laboratory are all fully equipped. The pictures on these pages are typical of the machines and equipment at the Naval Ordnance Plant, Macon.

Due to the large number of structures and the vast amount of machinery, equipment, parts, tools, etc., a detailed listing is not available for distribution; however, ~~duplicate~~ a copy ~~copies~~ of this entire listing ~~are~~ is available for review either at the plant ~~and~~ or at the office of the Real Property Division of General Services Administration in Atlanta, Georgia.

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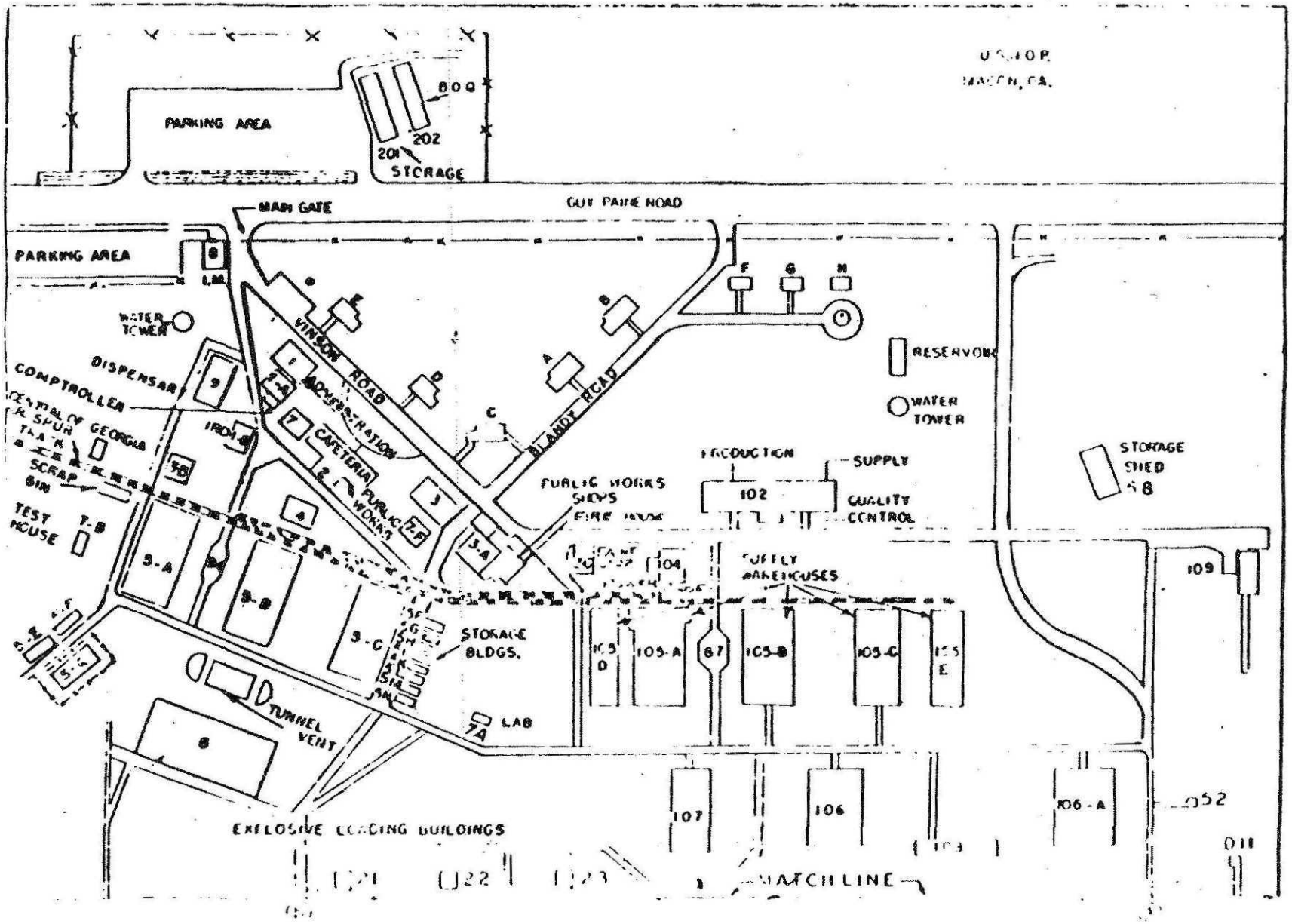
(Photographs 10, 11, 12 &13 in the center area of both pages)

MANUFACTURING
MACHINES AND
EQUIPMENT...
In top operating
condition.

In order to produce components and explosive devices for increasingly complex modern weapons systems, the Naval Ordnance Plant, Macon, has acquired and maintained considerable machinery. There are more than 2000 pieces of machinery in operation which include a Hughes' Machining Center, MT-3, Tape Controlled, Hydraulic Power Supply; many other machines used for grinding, lathes of almost all kinds, screw (including Swiss screwing machines), milling, boring, tapping, threading, sawing, drilling, cutting, shaping, bending, welding, plating, all sorts of presses, grinding, engraving, lapping, honing, jig-borers, variety of testers, pumps, drills, saws, x-ray, plating, centrifuge, sand blasting, blending, riveting, splicing, soldering, sanding, dictating, ~~dicating~~, duplicating, degreasing, calculators, punching, generators, sanding, etc.


PARKING AREA
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201
STORAGE
MAIN GATE
GUY PAINE ROAD
PARKING AREA
WATER TOWER
DISPENSARY
COMPTROLLER
CENTRAL OF GEORGIA R.R. SPUR TRACK
SCRAP BIN
TEST HOUSE
VINSON ROAD
ADMINISTRATION
CAFETERIA
PUBLIC WORKS
BLANDY ROAD
PUBLIC WORKS SHOPS
FIRE HOUSE
PRODUCTION
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QUALITY CONTROL
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STORAGE BLDGS.
TUNNEL VENT
LAB
EXPLOSIVE LOADING BUILDINGS
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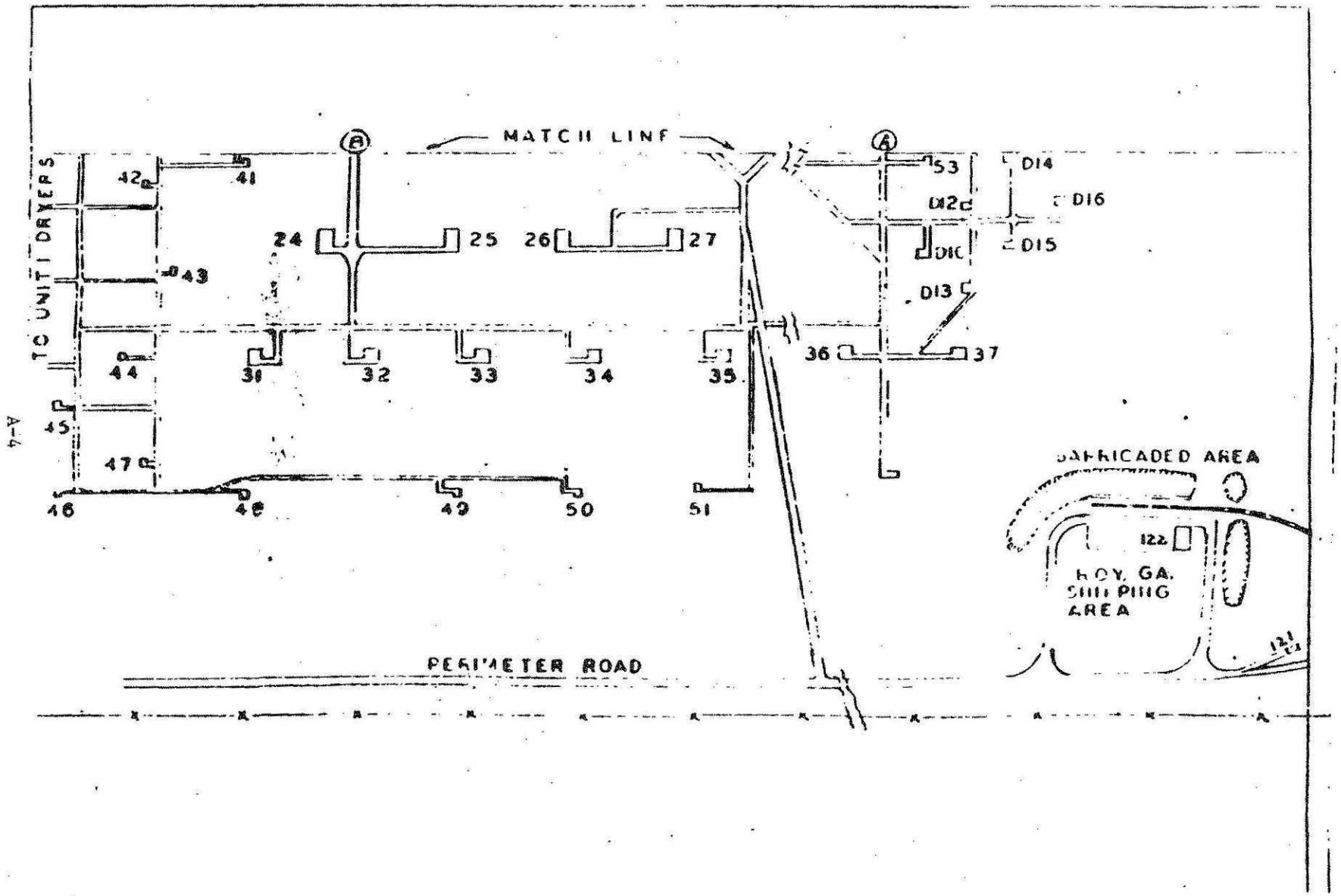
106-A
MATCH LINE


MATCH LINE
TO UNIT I DRYERS
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D14
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121
PERIMETER ROAD
A-4

INDEX OF STRUCTURES

BLDG. NR.	USE
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	Commanding Officer's Office
	Comptroller Office
	Disbursing Office
1A	Data Processing
1B	Industrial Relations Office'
2	Cafeteria
	Public Works Office
3	Manufacturing, Precision Parts
3A	Garage; Electric Shop; Fire Station
3B	Carpenter Shop
4	Power House #1; Pipe Shop
5A	Machine Shop; Heat Treating; Oil Recovery
5B	Manufacturing; Metal Plating
5C	Manufacturing
5E-5P	Storage
5Q	Drum Storage
6	Explosive Loading; Inert Assembly; Development Engrg.
7-7A	Chemical Laboratory; Material Testing
7B	Development Engineering Lab.
7F	Electronics Lab.
8	Guard Office
9	Dispensary
41	Powder Pouring House
68	Storage
87	Storage
94	Production Tool Storage
102	Production Office
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	Supply Office
	Electronic Tape Machinery (basement)
104	Power House #2
105A-105E	Supply Department Warehouses
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107	Explosive Loading
108	Explosive Powder Processing
109	Quality Assurance Testing
121	Axle Load Weighing Scales
122	Dunnage Storage
201	Furniture Storage
202	Bachelor Officer Quarters
A-H	Married Officers Quarters

MAGAZINES:

105A	Ordnance Officer
21	Primer, Fuze and Detonator
22	Small Arms
23-24	Primer, Fuze and Detonator
25	Small Arms
26	Primer, Fuze and Detonator
27	Small Arms
31	Primer, Fuze and Detonator
32-37	High Explosive
34-35	Primer, Fuze and Detonator
36-37	High Explosive
42	High Explosive
43	Smokeless Powder
44-45	High Explosive
46	Smokeless Powder
47	High Explosive
48	Smokeless Powder
49	Pyrotechnics
50-51	Smokeless Powder
52	Pyrotechnics
53	High Explosive

DRYERS:

D10-D16	Powder Drying

BUILDINGS, STRUCTURES, UTILITIES AND MISCELLANEOUS FACILITIES

SCHEDULE A - SUPPLEMENT TO REPORT OF EXCESS REAL PROPERTY

(Instructions on Reverse Side)

4. HOLDING AGENCY NO. 6-60

PAGE 38 OF 52 PAGES OF THIS SCHEDULE

USA CONTROL NO. (GSA use only)

5. ANNUAL RENTAL

LINE NO. (a)	HOLDING AGENCY BUILDING NO. (b)	DESCRIPTION (c)	COST (d)	OUTSIDE DIMENSIONS (e)	FLOOR AREA (Sq. Ft.) (f)*	NO. OF FLOORS (g)*	CLEAR HEADROOM (h)*	FLOOR LOAD RANGE (i)*	CURRENT ESTIMATED VALUE (j)	PROPERTY RECORD CARD NUMBER (k)
34	90	Tunnel Vent and Access. Same as #32. Constructed 1942.	900	7'x5'x6'						2-00154
35	92	Tunnel Vent and Access. Same as #82. Constructed 1942.	900	7'x5'x6'						2-00155
36	96	Entrance Shelter. Corrugated aluminum roofing on aluminum angle trusses. Supported on center line by steel posts set in concrete. Constructed 1954.	540	22'x12' x9'						2-00139
37	99	Solvent Building. Frame, roll roofing, concrete floor. Wet pipe sprinkler. Constructed 1944.	350	8'x7'x8'	(b) 61	1	8'	200		2-00147
38	115	Incinerator. All metal construction. Oil burning. 55-gal. oil tank, above ground. Electric 110v, 1 Ph. 60Cy. Constructed 1947.	2,000	6'x6'x7'						2-00213
39	118	Elevated Water Tank. All steel tank, 100' steel tower and riser, on concrete foundation, and steel ladder. 110v, 1 ph. 60c to obstruction lights. 100,000 gal. capacity. Float indicator, altitude control. Constructed 1949.	37,832							2-00190
40	121	Truck Axle Scales. Heavy duty axle load scales, Howe Scale Co. 20 ton capacity. Frame shelter over beam.	3,634							2-00199
		TOTAL	46,156		(b) 61					

*Prefix figures with symbols to denote type of space, as follows: (a) for office, (b) for storage, (c) for other.

BUILDINGS, STRUCTURES, UTILITIES AND MISCELLANEOUS FACILITIES

SCHEDULE A - SUPPLEMENT TO REPORT OF EXCESS REAL PROPERTY

(Instructions on Reverse Side)

1. HOLDING AGENCY NO. 6-60

2. PAGE 44 OF 52 PAGES OF THIS SCHEDULE

GSA CONTROL NO. (GSA use only)

3. ANNUAL RENTAL

LINE NO. (a)	HOLDING AGENCY BUILDING NO. (b)	DESCRIPTION (c)	COST (d)	OUTSIDE DIMENSIONS (e)	FLOOR AREA (Sq. Ft.) (f)*	NO. OF FLOORS (g)*	CLEAR HEADROOM (h)*	FLOOR LOAD RANGE (i)*	CURRENT ESTIMATED VALUE (j)	PROPERTY RECORD CARD NUMBER (k)
70	189	(Continued) vertical reinforcing rods 16" OC through block cells, cells filled with 3000# conc. Furnace consists of one standard 1½" thick retort section with 10' high, 1" thick internal spindle, end cover weldments, mounting frame and air drive assembly, mounted on reinforced concrete piers. Other equipment: oil burner, 275-gal. above ground fuel oil tank, two air motor driven conveyors. Access drive and work area covered with crushed stone. L.P. Gas piping for gas pilot light for burner. Const. 1963.								
71	190	Solvent Building, Galvanized metal on concrete foundation, concrete floor. Vented and grounded. No utilities. Constructed 1963.	1,074	11'x10' x10'	(b)110	1	8'	200		2-00272
72	191	Solvent Building. Same as #190. Constructed 1963.	1,074	11'x10' x10'	(b)110	1	8'	200		2-00273
73	192	Solvent Building. Same as #190. Constructed 1963.	1,074	11'x10' x10'	(b)110	1	8'	200		2-00270
74	193	Solvent Building. Same as #190. Constructed 1963.	1,074	11'x10' x10'	(b)110	1	8'	200		2-00271
		TOTAL	4,296		(b)440					

*Prefix figures with symbols to denote type of space, as follows: (a) for office; (b) for storage; (c) for other.

APPENDIX A

SPACE SITE INVESTIGATION DATA

Hole No. MW-1

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Allied Industrial Complex	SHEET 1 OF 2 SHEETS

1. PROJECT: Macon Naval Ordnance Plant
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: Savannah District
4. HOLE NO. (As shown on drawing title and file number): MW-1
5. NAME OF DRILLER: P. Rountree
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 34.2'
8. DEPTH DRILLED INTO ROCK: 0.0'
9. TOTAL DEPTH OF HOLE: 34.2'
10. SIZE AND TYPE OF BIT: 1 3/8" splitspoon & 7 3/4" hollow stem auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME-550
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 6; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 12 Sept 89; COMPLETED 12 Sept 89
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING:
19. SIGNATURE OF INSPECTOR: James E. Bolen, P.G. James E. Bolen

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. JARS	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) f	BLOWS
						2.5' Stick-up	
	0		(CL) Orange-brown, silty-sandy lean CLAY. Pavement subcourse.		1		23 33 38
	5				2		37 14
	10				3	Grout	22 15 20
	15		(SC) Orange-white, clayey coarse-med. SAND. Very high clay content.		4	Bent.	22 15 18
	20		(SM) Orange, slightly clayey coarse-med. SAND.		5	Filter Sand	10 8 18
	25		Orange-white.		6	2" Screen	12 15 22
	30		Boring advanced between drives by use of 7 3/4" dia. hollow stem auger.			2" PVC Triloc Riser Pipe; Seal 17.5'; 21.0'; 24.2'	

Continued on sheet #2

NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.

BLOWS PER 0.5 FOOT: Number required to drive 1 3/8" ID splitspoon 140 lb. hammer falling 30"

Enclosure

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | Hole No. MW-1

PROJECT: Macon Naval Ordnance Plant | INSTALLATION: Allied Industrial Complex | SHEET 2 OF 2 SHEETS

ELEVATION a	DEPTH 30b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) R	BLOWS
			(SM)Orange-white, slightly clayey, coarse-med. SAND.			Filter Sand	
	35		Bottom of Boring 34.2'			2" slotted PVC wellscreen .010"slot size NOTE:Water level 21.0' depth to water during drilling. Water level 16.5' 48 hours after completion of boring.	

Hole No. MW-2

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Allied Industrial Complex
	SHEET 1 OF 1 SHEETS
1. PROJECT: Macon Naval Ordnance Plant	10. SIZE AND TYPE OF BIT: 1 3/8"splitspoon & 7 3/4" hollow stem auger
2. LOCATION (Coordinates or Station)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
3. DRILLING AGENCY: Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL: CME-550
4. HOLE NO. (As shown on drawing title and file number): MW-2	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 6, UNDISTURBED 0
5. NAME OF DRILLER: P. Rountree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
7. THICKNESS OF OVERBURDEN: 25.0'	16. DATE HOLE: STARTED 13 Sept 89, COMPLETED 13 Sept 89
8. DEPTH DRILLED INTO ROCK: 0.0'	17. ELEVATION TOP OF HOLE
9. TOTAL DEPTH OF HOLE: 25.0'	18. TOTAL CORE RECOVERY FOR BORING: %
	19. SIGNATURE OF INSPECTOR: James E. Bolen, P.G. James E. Bolen

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
						2.5' Stick-up	
	0		(CL)Red-brown,silty & sandy lean CLAY.		1	Grout 0.0' to 2.0'	3 4 5
					2	Bent. 2.0' to 4.0'; Seal 4.0' to 5.0'	
	5				3		6 5 4
					4	2" PVC Riser Pipe	
	10		(ML)Grey-orange,clayey SILT. With 10% fine sand(stiff).		5		2 4 6
			(SM)Grey-green,slightly clayey, ~~coarse med.~~ SAND.		6	12.1'	
	15					Filter Sand	
			Water level 11.0' Depth to water during drilling.			2"Slotted PVC Screen Slot Size 0.010"	
	20		Water level 4.5' depth to water 72 hrs.after completion of boring.			22.1'	
			Boring advanced between drives by use of 7 3/4"dia. hollow stem auger.				
	25		Bottom of Boring 25.0' NOTE:Soils visually field classified in accordance with the Unified Soil Classification System.			BLOWS PER 0.5 FOOT: Number required to drive 1 3/8"ID splitspoon w/ 140 lb. hammer falling 30".	

Hole No. MW-3

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Allied Industrial Complex	SHEET 1 OF 1 SHEETS
1. PROJECT: Macon Naval Ordnance Plant		10. SIZE AND TYPE OF BIT: 3/8" splitspoon & 7 3/4" hollow stem auger	
2. LOCATION (Coordinates or Station):		11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL	
3. DRILLING AGENCY: Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL: CME-550	
4. HOLE NO. (As shown on drawing title and file number): MW-3		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4 / UNDISTURBED 0	
5. NAME OF DRILLER: P. Rountree		14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN: 25.0'		16. DATE HOLE: STARTED 13 Sept 89 / COMPLETED 14 Sept 89	
8. DEPTH DRILLED INTO ROCK: 0.0'		17. ELEVATION TOP OF HOLE	
9. TOTAL DEPTH OF HOLE: 25.0'		18. TOTAL CORE RECOVERY FOR BORING: %	
		19. SIGNATURE OF INSPECTOR: James E. Bolen, P.G. James E. Bolen	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) f	BLOWS g
						2.5' Stick-up	
	0		(SC) Orange-brown, clayey med. SAND. Mod. clay content.		1	Grout	7 12 11
	5				2	2" PVC Riser Pipe; 0; 8.1'; Bent. Seal	6 9 3
	10		Clayey med.-fine sand.		3	10.8'; 13.4'	14 7 11
	15		~~Water level 14.0'~~ Depth to water during drilling. Water level 3.0' 48 hours after completion of boring. Boring advanced between drives by use of 7 3/4" dia. hollow stem auger.		4	Filter Sand; 2" Slotted RVC Screen Slot size 0.010"; 23.4'	2 7 11
	20						
	25		Bottom of Boring 25.0' NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			BLOWS PER 0.5 FOOT: Number required to drive 1 3/8" ID splitspoon w/ 140 lb. hammer falling 30".	

DRILLING LOG

DIVISION: South Atlantic

INSTALLATION: Allied Industrial Complex

OF 1 SHEETS

1. PROJECT: Macon Naval Ordnance Plant
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: Savannah District
4. HOLE NO. (As shown on drawing title and file number): MW-4
5. NAME OF DRILLER: P. Rountree
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 20.5'
8. DEPTH DRILLED INTO ROCK: 0.0'
9. TOTAL DEPTH OF HOLE: 20.5'
10. SIZE AND TYPE OF BIT: 1 3/8" splitspoon & 7 3/4"
11. DATUM FOR ELEVATION SHOWN (MSL): MSL — hollow stem auger
12. MANUFACTURER'S DESIGNATION OF DRILL: CME-550
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 14 Sept 89; COMPLETED 14 Sept 89
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: James E. Bolen, P.G. James E. Bolen

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
						2.5'Stick-up	
	0		(SC)Red-brown,clayey,med.-fine SAND.		1	Grout 1.4'	3 5 6
	5		(SM)Grey-black,silty,med.-fine SAND. With some clay.		2	Bent. Seal 3.7' 5.4'	2 3 5
	10		Brown-black.		3	Filter Sand	3 1 3
	15		Brown-orange,silty coarse-med.SAND.(High silt content)		4	15.4' 16.4'	3 4 4
	20		Boring advanced between drives by use of 7 3/4"dia.hollow stem auger.				

2"PVC Riser Pipe; 2"Slotted PVC Screen Slot size 0.010"

Bottom of Boring 20.5'

NOTE:Soils visually field classified in accordance with the Unified Soil Classification System.

Water level 6.0' Depth to water during drilling.

Water level 1.9' 24 hrs. after completion of boring.

BLOWS PER 0.5 FOOT: Number required to drive 1 3/8"ID splitspoon w/ 140 lb. hammer falling 30".

Hole No. MW-5

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Allied Industrial Complex	SHEET 1 OF 1 SHEETS

1. PROJECT: Macon Naval Ordnance Plant	10. SIZE AND TYPE OF BIT: 1 3/8"splitspoon & [illegible]
2. LOCATION (Coordinates or Station):	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL hollow stem auger
3. DRILLING AGENCY: Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL: CME-550
4. HOLE NO. (As shown on drawing title and file number): MW-5	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED 0
5. NAME OF DRILLER: P. Rountree	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
7. THICKNESS OF OVERBURDEN: 21.0'	16. DATE HOLE: STARTED 15 Sept 89; COMPLETED 15 Sept 89
8. DEPTH DRILLED INTO ROCK: 0.0'	17. ELEVATION TOP OF HOLE
9. TOTAL DEPTH OF HOLE: 21.0'	18. TOTAL CORE RECOVERY FOR BORING: %
	19. SIGNATURE OF INSPECTOR: James E. Bolen, P.G. James E. Bolen

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) f	BLOWS
						2.5'Stick-up	
	0		(SC)Red-brown,clayey,med.-fine SAND.Mod.clay content.		1	Grout 2.2'	2 3
			Black,clayey coarse med. sand,very soft,loose w/ organic matter.			Bent. Seal	
	5		(MH)Grey-green,fat clayey SILT.Very loose-soft.(Gumbo-like).		2	2"PVC Riser Pipe 4.4' 2"PVC Slotted Screen Slot Size 0.010" 6.0'	1 1
	10		Grey-green-brown with 20% fine-med.sand.		3	Filter Sand 2" 16.0'	4 3
	15		Boring advanced between drives by use of 7 3/4"dia.hollow stem auger. Water level 1.5' Depth to water during drilling. Water level 1.8' 72 hours after completion of boring.		4		
	20		Bottom of Boring 21.0' NOTE:Soils visually field classified in accordance with the Unified Soil Classification System.			BLOWS PER 0.5 FOOT: Number required to drive 1 3/8"ID splitspoon w/ 140 lb. hammer falling 30".	

HAZARDOUS TOXIC WASTE LOG

PROJECT: Former U. S. Navy Ordnance Plant GROUND WATER STUDY

REMARKS: LEVEL D PROTECTION

LOCATION: ALLIED INDUSTRIAL COMPLEX MACON, GA

WEATHER CONDITIONS: HOT-CLEAR

SUPERVISOR OR FOREMAN: R. V. O'KELLEY & JIM BOLEN

TEMPERATURE: 95° F

BOR. NO.	SAMPLE NO.	DEPTH FT. FROM	DEPTH FT. TO	DATE 1989	WATER CONTENT	SYMBOL	COLOR	OVA PPM	HNU PPM	33: LEL %	33: O %
MW-1	1	0.0	1.5	12Sep	Dry	CL	Orange Brown	0	0		
		1.5	5.0								
	2	5.0	6.5			CL	Orange Brown	0.5	0		
		6.5	10.0								
	3	10.0	11.5			CL	Orange Brown	2.0	0		
		11.5	15.0								
	4	15.0	16.5			SC	Orange White	2.5	1		
		16.5	20.0								
	* 5	20.0	21.5		Wet	SM	Orange	5.0	2		
		21.5	25.0								
	6	25.0	26.5		SAT'D	SM	Orange White	5.0	2		
		26.5	30.0								
		30.0	34.2								

NOTE: SAMPLE 5 TESTED WITH COLORIMETRIC TUBES: RESULTS

POLYTEC: GREEN (1 MINUTE) POSSIBLY ETHYLENE, CS2, H2S

PINK/PURPLE (2 MINUTES) POSSIBLY TOLUENE, XYLENE

Enclosure

HAZARDOUS TOXIC WASTE LOG

PROJECT: Former U.S. Navy Ordnance Plant GROUND WATER STUDY

REMARKS: CYANO SUSPECTED DRILLED AT LEVEL B PROTECTION

LOCATION: ALLIED INDUSTRIAL COMPLEX MACON, GA

WEATHER CONDITIONS: HOT, BUT SHADY LOCALE

SUPERVISOR OR FOREMAN: BOLEN/MILES/O'KELLEY

TEMPERATURE: 95° F

BOR. NO.	SAMPLE NO.	DEPTH FT. FROM	DEPTH FT. TO	DATE 1989	WATER CONTENT	SYMBOL	COLOR	OVA PPM	HNU PPM 11.7 ev	33: LEL %	33: O %
MW-2	1	0.0	1.5	13Sep	DRY	CL	RED-BROWN	0	0		
		1.5	2.0								
	2	2.0	5.0			SM	BLACK	0	0		
	3	5.0	6.5			CL	RED BROWN	0	0		
		6.5	7.0								
	4	7.0	10.0			SM-SC					
	5	10.0	11.5		WET	ML	GRAY ORANGE	0	0		
		11.5	12.0								
	6	12.0	14.0		SAT'D	SM	GRAY-GREEN	0	0		
		14.0	25.0					0	0		
	NOTE: TESTED WITH COLORIMETRIC TUBE FOR CYANIDE										
	RESULTS: NEGATIVE										

HAZARDOUS TOXIC WASTE LOG

PROJECT: Former U.S. Navy Ordnance Plant GROUND WATER STUDY

REMARKS: LEVEL C PROTECTION

LOCATION: ALLIED INDUSTRIAL COMPLEX MACON, GA

WEATHER CONDITIONS: VERY HOT - HUMID

SUPERVISOR OR FOREMAN: O'KELLEY/BOLEN

TEMPERATURE: 100° F+

BOR. NO.	SAMPLE NO.	DEPTH FT. FROM	DEPTH FT. TO	DATE 1989	WATER CONTENT	SYMBOL	COLOR	OVA PPM	HNU PPM 11.7ev Lamp	GGI LEL %	GGI O %
MW-3	1	0.0	1.5	13Sep	DRY	SC	ORANGE BROWN				
		1.5	5.0								
	2	5.0	6.5		DRY	SC	BROWN ORANGE	1	1		
		6.5	10.0								
	3	10.0	11.5		DAMP	SC	ORANGE BROWN				
		11.5	12.0								
		*12.0	13.0					400	9.0		
		13.0	13.5			ASBESTOS FUSE FRAGMENT					
		13.5	15.0								
	4	15.0	16.5		SAT'D	SC	ORANGE BROWN				
		16.5	24.4								

NOTE: ENCOUNTERED VAPOR @ 12.0 - 13.0' TESTED WITH COLORIMETRIC TUBES. RESULTS:

HYDROGEN SULFIDE - NEGATIVE

HYDROGEN CYANIDE - NEGATIVE

LOWER HYDRO-CARBONS - NEGATIVE

BENZENE - NEGATIVE (POSITIVE W/PREFILTER)

TOLUENE - NEGATIVE

XYLENE - NEGATIVE

NAPTHALENE - (POSSIBLE)

HAZARDOUS TOXIC WASTE LOG

PROJECT: Former U.S. Navy Ordnance Plant GROUNDWATER STUDY

REMARKS: LEVEL C PROTECTION

LOCATION: ALLIED INDUSTRIAL COMPLEX MACON, GA

WEATHER CONDITIONS: HOT HUMID

SUPERVISOR OR FOREMAN: BOLEN/O'KELLEY

TEMPERATURE: 90° F

BOR. NO.	SAMPLE NO.	DEPTH FT. FROM	DEPTH FT. TO	DATE 1989	WATER CONTENT	SYMBOL	COLOR	OVA PPM	HNU PPM 11.7ev LAMP	GGI LEL %	GGI O %
MW-4	1	0.0	1.5	14Sep	DRY	SC	RED-BROWN	3	0		
		1.5	5.0								
	2	5.0	6.5		DAMP	SM	GRAY-BLACK	50	0		
		6.5	10.0					* 1000			
	3	10.0	11.5		SAT'D	SM	BROWN BLACK	10	0		
		11.5	15.0								
	4	15.0	16.5		SAT'D	SM	BROWN ORANGE	60	0		
		16.5	20.0					*70-100	0		
		20.0	20.5					70-100			

* 70-100 PPM AT TOP OF CASING
15 PPM AT WAIST LEVEL

HAZARDOUS TOXIC WASTE LOG

PROJECT: Former U.S. Navy Ordnance Plant GROUND WATER STUDY

REMARKS: LEVEL C PROTECTION

LOCATION: ALLIED INDUSTRIAL COMPLEX MACON, GA

WEATHER CONDITIONS: VERY HOT

SUPERVISOR OR FOREMAN: BOLEN/O'KELLEY

TEMPERATURE: 100° F

BOR. NO.	SAMPLE NO.	DEPTH FT. FROM	DEPTH FT. TO	DATE 1989	WATER CONTENT	SYMBOL	COLOR	OVA PPM	HNU PPM	GS: LEL %	GS: O %
MW-5	1	0.0	1.5	15Sep	DRY	SC	RED BROWN				
		1.5	2.0								
		2.0	3.0								
		3.0	4.0					10-15			
		4.0	5.0					1000			
	2	5.0	6.5		WET	MH	GRAY GREEN				
		6.5	7.0								
		7.0	8.0								
		8.0	10.0								
	3	10.0	11.5		WET	MH	GRAY GREEN	600			
		11.5	12.0					500*			
		12.0	13.0					500			
		13.0	14.0					500			
		14.0	15.0					500			
	4	15.0	16.5		WET	MH	GRAY GREEN	500			
		16.5	17.0					1.0			
		17.0	18.0					4.0			
		18.0	19.0					7.0			
		19.0	20.0					7.0			
		20.0	21.0					7.0			
COLORIMETRIC @ 15.0' PURPLE/GREEN ON POLYTEC (NEG. ON H2S & ETHYL ACETATE)											
*NOTE: 15 PPM @ CHEST LEVEL 11.0' - 12.0' (OVA)											

PUMPING TEST

PROJECT GROUNDWATER STUDY ALLIED INDUSTRIAL COMPLEX

WELL NO. MW-1 WELL ELEV. MACON, GA

DISTANCE FROM PRODUCING WELL

RECORDED BY J. E. BOLEN

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.
THIS WELL WAS DEVELOPED BY PUMPING 30 GAL. @ 5 GPM			
THIS WELL SHOWED RELATIVELY SLOW RECOVERY			
PUMP INTAKE SET @ 32.0'			
PUMPED 7 GAL. & BEGAN TESTING REBOUND			
9-21-89		16.3	STATIC
9-21-89	0800	29.2	PUMP OFF
	0804	24.2	
	+30	23.9	
	0805	23.1	
	+30	22.5	

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.
9/21/89	0806	22.0	
	+30	21.5	
	0807	21.1	
	+30	20.6	
	0808	20.2	
	0809	19.6	
	+30	19.3	
	0810	19.1	
	0811	18.6	
	0812	18.2	
	0813	17.8	
	0814	17.6	
	0815	17.4	
	0816	17.2	
	0817	17.0	
	0818	16.9	

Enclosure

PUMPING TEST

PROJECT GROUNDWATER STUDY ALLIED INDUSTRIAL COMPLEX

WELL NO. MW-1 WELL ELEV. MACON, GA

DISTANCE FROM PRODUCING WELL

RECORDED BY J. E. BOLEN

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.
21 Sept	0819	16.8	
1989	0820	16.7	
"	0822	16.5	
"	0824	16.5	
"	0826	16.4	
"	0828	16.4	
"	0830	~~16.3~~	
THIS WAS NOT A HIGHLY PRODUCTIVE WELL.			

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.

PUMPING TEST

PROJECT GROUND WATER STUDY ALLIED INDUSTRIAL COMPLEX

WELL NO. MW-2 WELL ELEV. MACON, GA

DISTANCE FROM PRODUCING WELL STATIC W.L. 4.5'

RECORDED BY J.E . BOLEN

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.
21 Sept 1989		(WELL OUTPUT FAIR)	
THIS WELL WAS DEVELOPED OVER A 3 DAY PERIOD BY PUMPING APPROX. 60 GAL. OF WATER - PRIOR TO TESTING REBOUND. 5 GPM WAS PUMPED.			
		4.5 (STATIC)	
	1236	16.8	
	36-30	16.3	
	1237	15.4	
	37-30	13.9	
	1238	12.4	
	38-30	11.2	
	1239	10.1	

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.
	39-30	9.2	
	1240	8.5	
	40-30	7.8	
	1241	7.3	
	41-30	6.8	
	1242	6.5	
	42-30	6.1	
	1243	5.9	
	1244	5.5	
	1245	5.2	
	1246	5.0	
	1247	4.9	
	1248	4.8	
	1249	4.7	
	1250	4.6	
	1300	4.5	

PUMPING TEST

PROJECT GROUND WATER STUDY - ALLIED INDUSTRIAL COMPLEX

WELL NO. MW-3 WELL ELEV. MACON, GA

DISTANCE FROM PRODUCING WELL

RECORDED BY J.E. BOLEN

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.
1989 21 Sept		3.0	(STATIC)
WELL WAS	DEVELOPED	ON 21 SEPT	BY
PUMPING	100 GAL. @	5 GPM WITH	PLUNGER
PUMP			
PUMP INTAKE SET @	22.4	10 GAL	PUMPED OUT
@ 5 GPM - BEGAN TESTING REBOUND PUMPED 1014 - 1016			
	1016	4.5	
	16-30	4.4	
	1017	3.7	
	17-30	3.5	
	1018	3.4	

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.
	18-30	3.4	
	1019	3.4	
	19-30	3.4	
	1020	3.3	
	1100	3.1	
	1130	3.0	

NOTE: THIS WELL IS AN EXCELLENT PRODUCER OF WATER

PUMPING TEST

PROJECT GROUNDWATER STUDY - ALLIED INDUSTRIAL COMPLEX

WELL NO. MW-4 WELL ELEV. MACON, GA

DISTANCE FROM PRODUCING WELL

RECORDED BY J.E. BOLEN

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.
9-20-89			
THIS IS A FAIRLY PRODUCTIVE WELL			
THIS WELL WAS DEVELOPED BY PUMPING APPROX. 40 GAL WITH A HAND PUMP			
6 GALLONS WERE PUMPED & THEN THE RECOVERY WAS TESTED.			
9/20/89	1540	1.9	STATIC

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.
9-20-89	1545	4.3	
	+30 SEC	3.5	
	1546	2.7	
	+30	2.6	
	1547	2.5	
	+30	2.3	
	1548	2.2	
	+30	2.1	
	1549	2.1	
	1550	2.1	
	1551	2.0	

PUMPING TEST

PROJECT GROUNDWATER STUDY - ALLIED INDUSTRIAL COMPLEX

WELL NO. MW-5 WELL ELEV. MACON, GA

DISTANCE FROM PRODUCING WELL

RECORDED BY J.E. BOLEN

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.
9-20-89			
THIS IS A VERY POORLY PRODUCING WELL. IT WAS DEVELOPED BY HANDPUMPING APPROX. 20 GAL USING A HAND PUMP. WELL SHOWED SLOW RECOVERY.			
WELL WAS BAILED 3 GAL AND TESTED FOR REBOUND			
9/20/89		1.8	STATIC
	1606	16.4	
	+30 SEC	16.0	
	1609	15.3	

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.
9-20-89	+30	14.9	
	1610	14.2	
	+30	13.7	
	1611	13.2	
	+30	12.6	
	1612	12.1	
	1613	11.4	
	1614	10.4	
	1615	9.7	
	1616	9.2	
	1617	8.7	
	1618	8.4	
	1619	8.1	
	1620	8.0	
	1625	6.6	
	1630	5.4	

PUMPING TEST

PROJECT GROUNDWATER STUDY - ALLIED INDUSTRIAL COMPLEX

WELL NO. MW-5 WELL ELEV. MACON, GA

DISTANCE FROM PRODUCING WELL

RECORDED BY J.E. BOLEN

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.
9-20-89	1700	2.3	
	1730	1.9	
	1800	1.8	

REBOUND DATA

DATE	TIME	WATER DEPTH	WATER ELEV.

Hydraulic Conductivities

Hydraulic conductivities were calculated using the following formula:

$$K = \frac{r^2}{2L(t_2 - t_1)} \ln(L/R) \ln(H_1/H_2)$$

where:
r = 1" (radius of standpipe)
L = 10' (length of screen)
R = 8" (effective radius of well = diameter of gravel pack)
t = time of head readings
H = head at specific times

Hydraulic conductivities obtained using the above data are as follows:

a. MW-1 - 1.83×10^{-7} m/sec
b. MW-2 - 3.64×10^{-7} m/sec
c. MW-3 - 6.19×10^{-7} m/sec
d. MW-4 - 6.89×10^{-7} m/sec
e. MW-5 - 2.92×10^{-7} m/sec

The levels of magnitude (10^{-7}) for the above hydraulic conductivities are typical of "silty sands".

Hydraulic Gradient

Hydraulic gradients were calculated using the following formula:

$$\frac{dh}{dl}$$

Where:

dh = difference in head between wells
dl = distance between wells

Hydraulic conductivity calculated for the area is: 0.010.

Enclosure

MW-1

MACON NAVAL ORDNANCE PLANT
ALLIED INDUSTRIAL COMPLEX

RECOVERY (FEET)

1 2 3 4 5 6 7 8 9 10 11 12 13 14

1 10 100

WELL No. MW-2

MACON NAVAL ORDNANCE PLANT
ALLIED INDUSTRIAL COMPLEX

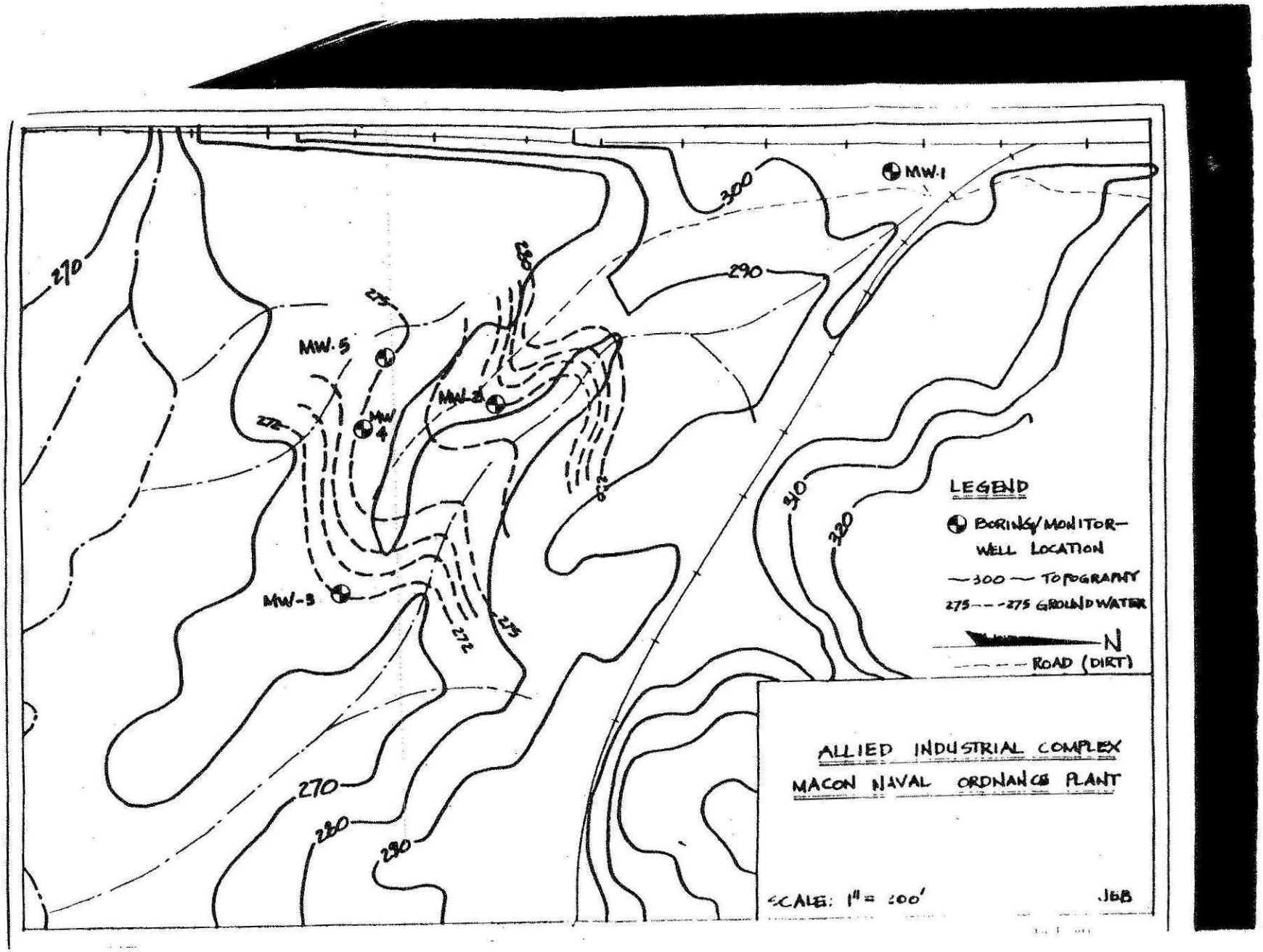
MM-3 MACON NAV. ORD. PL (RAPID RECOVERY)
ALLIED INDUSTRIAL Corp.

NIMCON NAVAL ORDNANCE PL. NW-4
ALLIED INDUSTRIAL COMPLEX

MHCON NAVAL ORDNANCE PL.
ALLIED INDUSTRIAL COMPLEX MW-5

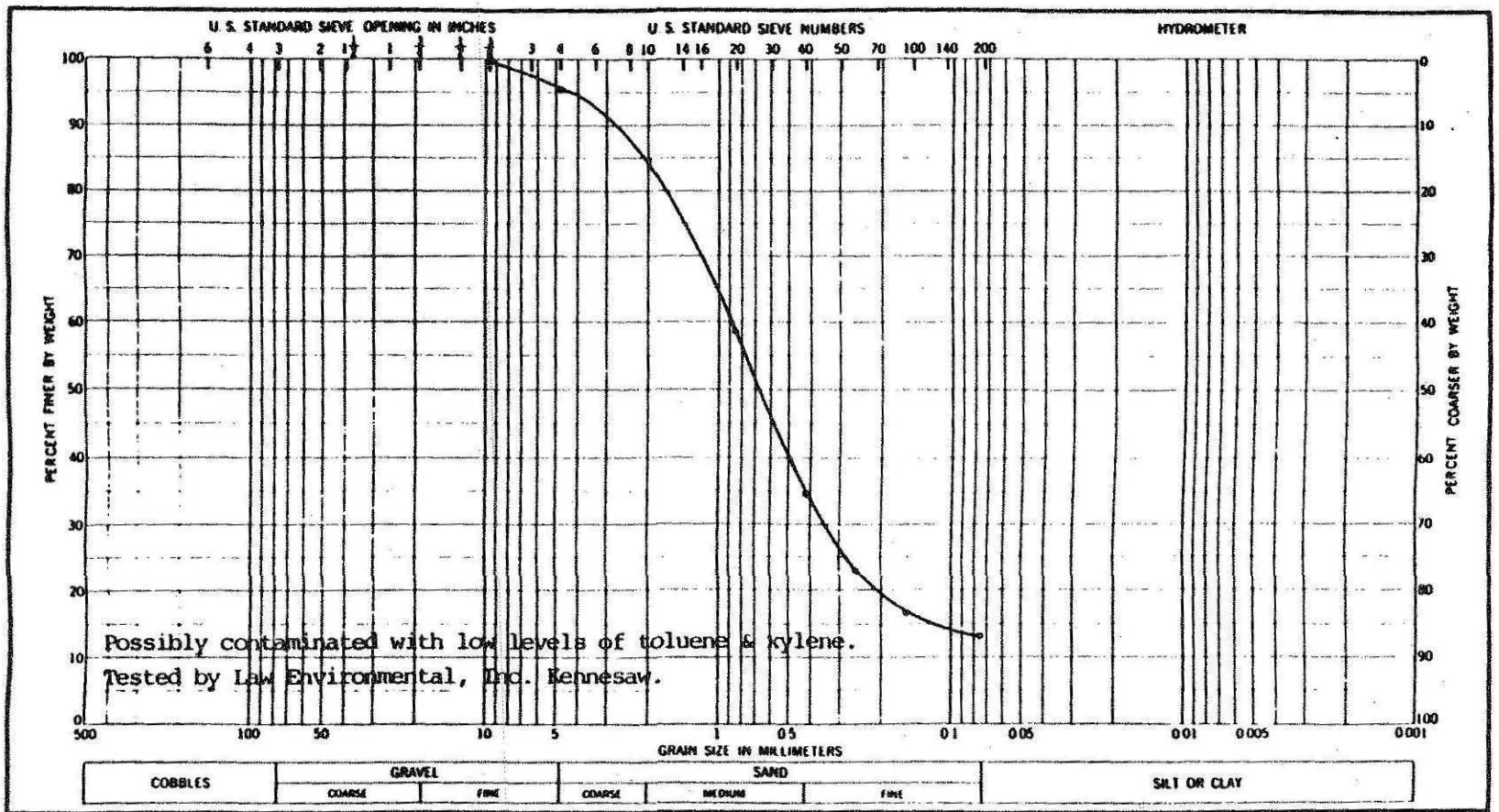
RECOVERY, FEET

TIME (MINUTES)


MW-1
MW-2
MW-3
MW-4
MW-5
300
290
280
270
275
272
310
320
LEGEND
BORING/MONITOR-WELL LOCATION
300 TOPOGRAPHY
275 275 GROUNDWATER
N
ROAD (DIRT)
ALLIED INDUSTRIAL COMPLEX
MACON NAVAL ORDNANCE PLANT
SCALE: 1" = 200'
JBB

Department of the Army, South Atlantic Division Laboratory
Corps of Engineers, 611 South Cobb Drive, Marietta, GA 30060-3112

Work Order No. 5985
Reqn. No. SAS-EN-CGX-613



Possibly contaminated with low levels of toluene & xylene.
Tested by Law Environmental, Inc. Kennesaw.

Sample No	~~XXXX~~ Depth	Classification	Nat w %	LL	PL	PI
6	25.0'-26.5'	Brown, tan & lt. gray clayey sand (SC) w/trace of gravel sizes	16.9	28	18	10

GRADATION CURVES

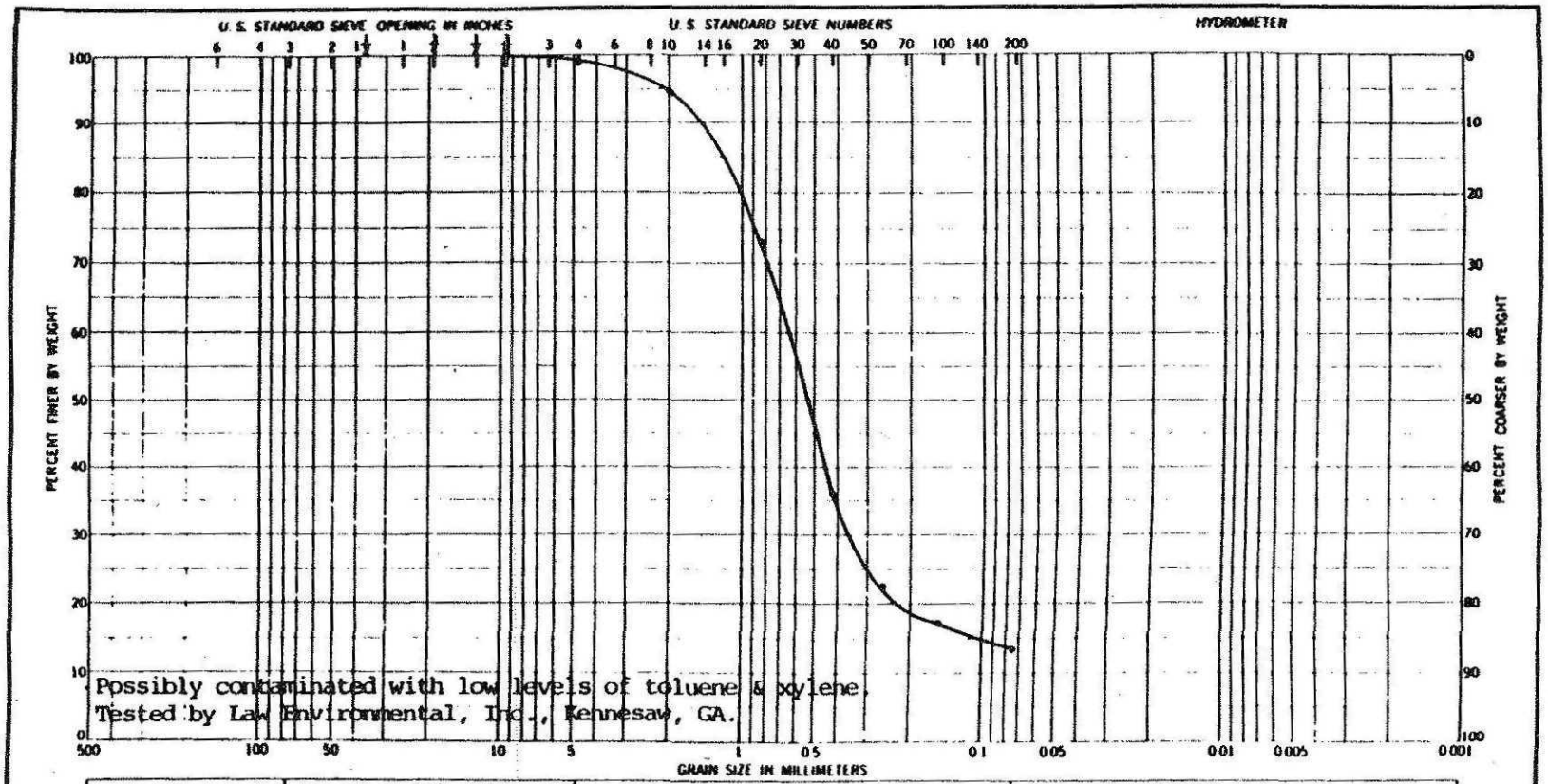
Project: Savannah District, Macon Former Naval Ordnance Plant Lab No. 52/6385
Area: Ground Water Study
Boring No: MW-1 Sample No. 6
Date: 19 October 1989

ENG FORM 1 MAY 83 2087

Law Environmental Lab No. 9543

Department of the Army, South Atlantic Division Laboratory
Corps of Engineers, 611 South Cobb Drive, Marietta, GA 30060-3112

Work Order No. 5985
Reqn. No. SAS-EN-GCX-613



Possibly contaminated with low levels of toluene & xylene.
Tested by Law Environmental, Inc., Kennesaw, GA.

Sample No	Depth	Classification	Nat w %	LL	PL	PI
6	12.0'-14.0'	Tan & gray clayey sand (SC) w/trace of gravel sizes	21.5	32	15	17

GRADATION CURVES

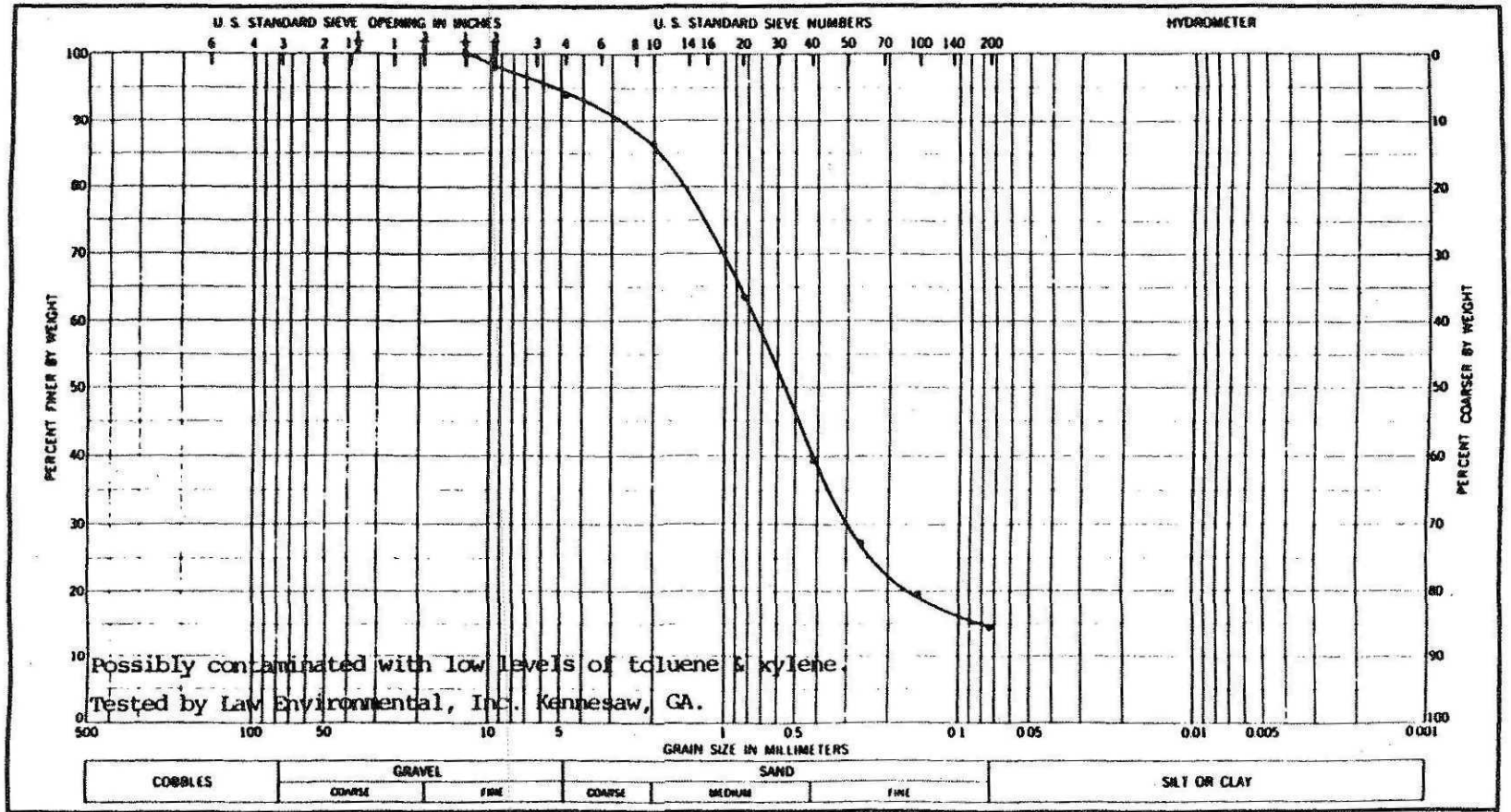
Project Savannah District, Macon Former Naval Ordnance Plant Lab No. 52/6391
Area Ground Water Study
Boring No MW-2 Sample No. 6
Date 19 October 1989

ENG FORM 2087 MAY 83

Law Environmental Lab No. 9544

Department of the Army, South Atlantic Division Laboratory
Corps of Engineers, 611 South Cobb Drive, Marietta, GA 30060-3112

Work Order No. 5985
Reqn. No. SAS-EN-GGX-613



Possibly contaminated with low levels of toluene & xylene.
Tested by Law Environmental, Inc. Kennesaw, GA.

Sample No	Depth	Classification	Nat w %	LL	PL	PI
4	15.0'-16.5'	Tan, gray & white silty sand (SM) w/trace of gravel sizes Near A-line	15.9	30	23	7

GRADATION CURVES

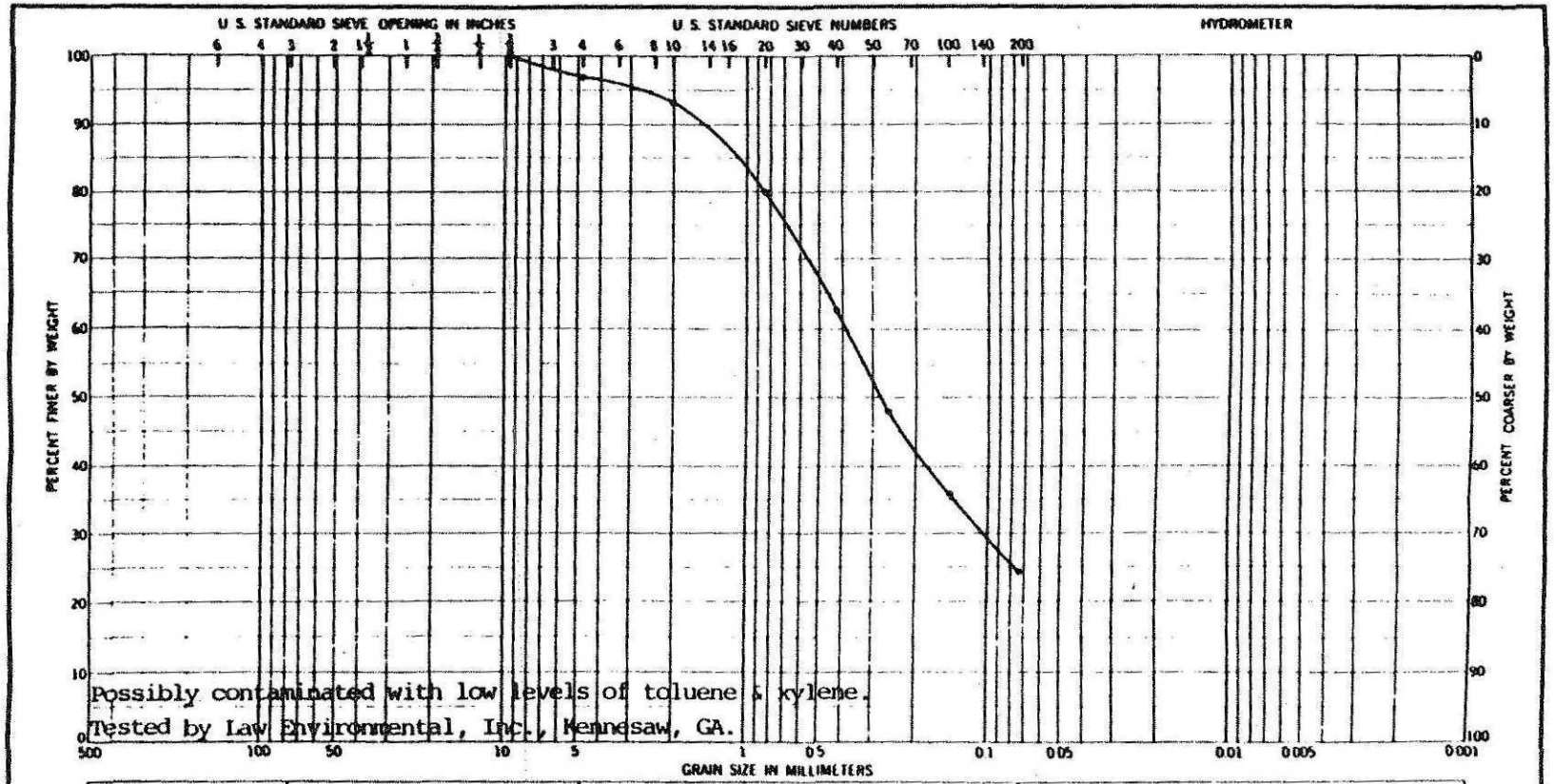
Project: Savannah District, Macon Former Naval Ordnance Plant Lab No. 52/ 6395
Area: Ground Water Study
Boring No: MW-3 Sample No. 4
Date: 19 October 1989

Law Environmental Lab No. 9545

ENG FORM 1 MAY 83 2087

Department of the Army, South Atlantic Division Laboratory
Corps of Engineers, 611 South Cobb Drive, Marietta, GA 30060-3112

Work Order No. 5985
Reqn. No. SAS-EN-GCX-613



Possibly contaminated with low levels of toluene & xylene.
Tested by Law Environmental, Inc., Kennesaw, GA.

Sample No	Depth	Classification	Nat w %	LL	PL	PI
3	10.0'-11.5'	Brown silty clayey sand (SM-SC) w/trace of gravel sizes.	19.0	27	20	7

GRADATION CURVES

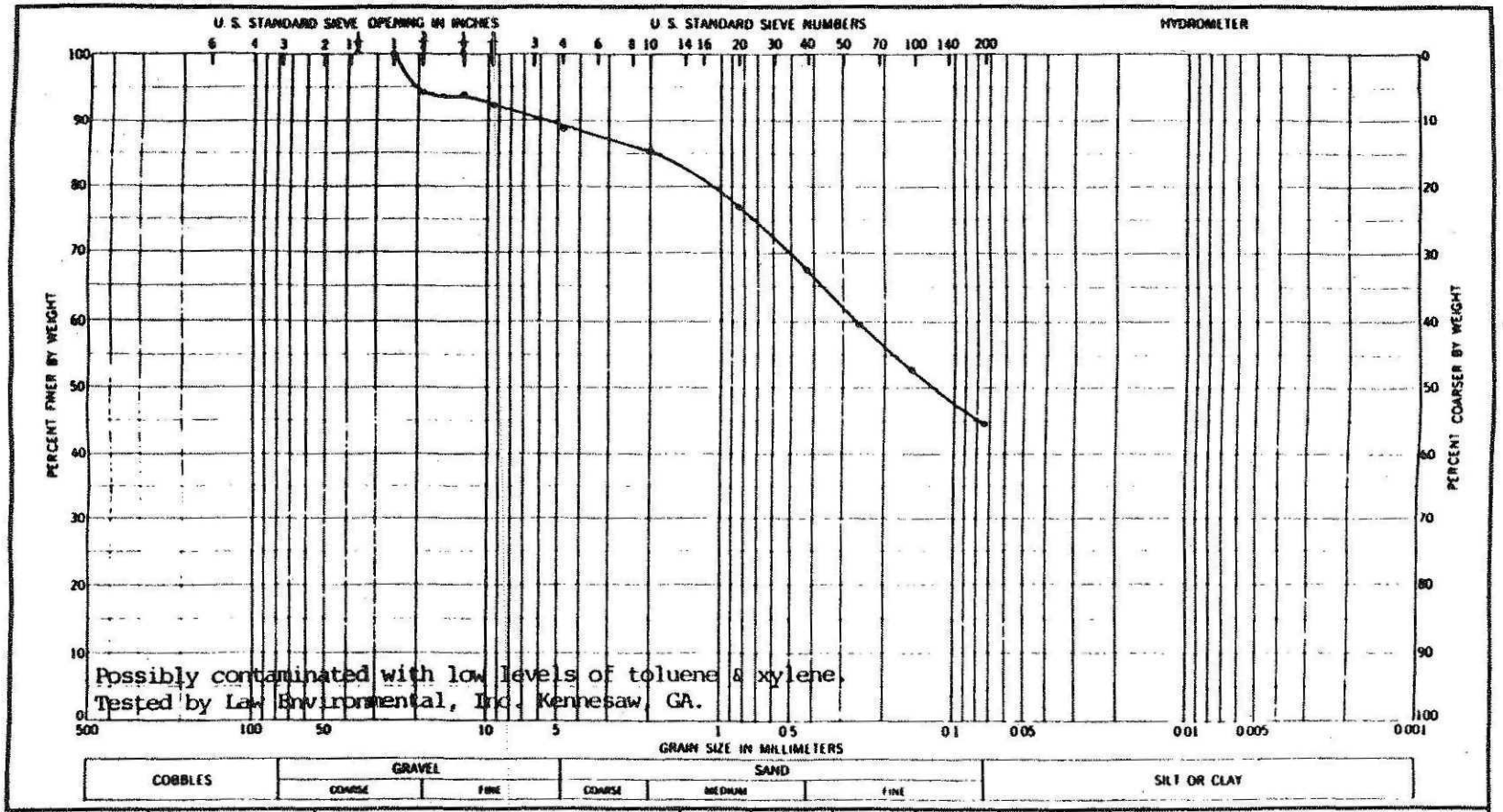
Project: Savannah District, Macon Former Naval Ordnance Plant Lab No. 52/6398
Area: Ground Water Study
Boring No: MW-4 Sample No. 3
Date: 19 October 1989

Law Environmental Lab No. 9546

ENG FORM (MAY 83) 2087

Department of the Army, South Atlantic Division Laboratory
Corps of Engineers, 611 South Cobb Drive, Marietta, GA 30060-3112

Work Order No. 5985
Reqn. No. SAS-EN-GCX-613



Possibly contaminated with low levels of toluene & xylene.
Tested by Law Environmental, Inc. Kennesaw, GA.

Sample No	Boring Depth	Classification	Nat w %	LL	PL	PI
4	15.0'-16.5'	Gray brown silty sand (SM) w/a little gravel sizes and with pieces of wood	52.1	52	36	16

GRADATION CURVES

Project Savannah District, Macon Former Naval Ordnance Plant Lab No. 52/6403
Area Ground Water Study
Boring No MW- 5 Sample No. 4
Date 19 October 1989

ENG FORM 2087

Law Environmental Lab No. 9547

ENGINEERS CG&P SECTION 20 NOV 89

***** NAVD 1929 *****

MACON NAVAL ORDINANCE FACILITY--MACON, GEORGIA
MONITORING WELLS
F.B. #: G10-1
DATE OF SURVEY: NOV 1989

CLOSURE ----------
TOTAL ERROR 0.000000
TOTAL TURNS 3
CORR PER TURN 0.000000000

PT #	DIFF FT	ADJ ELEV FT	DESIGNATION
1		343.18	T-238 (USC&GS BM 1958)
	51.47		
2		291.70	X-240 (USC&GS BM 1958)

MOBILE DISTRICT CORPS OF ENGINEERS CG&P SECTION 20 NOV 89

***** NAVD 1929 *****

PT	F.DIFF	B.DIFF	AV.DIFF	ADJ.ELEV	DESIGNATION
1				343.18	T-238 (USC&GS BM 1958)
	-5.29	5.29	-5.29		
2				337.88	RENNER CO2 (NGS 1935/1954)
	26.82	-26.82	26.82		
3				364.70	RENNER AZ. MK (NGS 1935)

MOBILE DISTRICT CORPS OF ENGINEERS CG&P SECTION 20 NOV 89

***** NAVD 1929 *****

PT	F.DIFF	B.DIFF	AV.DIFF	ADJ.ELEV	DESIGNATION
1				306.37	MW-1 (CE CAP 19??)
	2.50	-2.50	2.50		
2				308.87	TOP OF WELL CASING

FACSIMILE HEADER SHEET
(ER 105-1-8)

FROM (Name)	OFFICE SYMBOL	TELEPHONE NO.	RELEASER'S SIGNATURE		
Robbin Blackman	CESAM-PD-EI	(205) 694-3883	Robbin K. Blackman		
TO (Name)	OFFICE SYMBOL	TELEPHONE NO.	# PAGES	PRECEDENCE	DTG
Jane Brad	ESE	(904) 332-0507	7		

SUBJECT

ENG FORM 4186 1 FEB 73

U.S. Government Printing Office 1986-423-888

				ADJ.ELEV	DESIGNAT ION
1				283.86	MW-2 (CE CAP 19??)
	2.20	-2.20	2.20		
2				286.06	TOP OF WELL CASING

MOBILE DISTRICT CORPS OF ENGINEERS CG&P SECTION 20 NOV 89

***** NAVD 1929 *****

PT	F.DIFF	B.DIFF	AV.DIFF	ADJ.ELEV	DESIGNAT ION
1				280.83	MW-3 (CE CAP 19??)
	2.21	-2.21	2.21		
2				283.04	TOP OF WELL CASING

MOBILE DISTRICT CORPS OF ENGINEERS CG&P SECTION 20 NOV 89

***** NAVD 1929 *****

PT	F.DIFF	B.DIFF	AV.DIFF	ADJ.ELEV	DESIGNAT ION
1				278.86	MW-4 (CE CAP 19??)
	2.26	-2.26	2.26		
2				281.12	TOP OF WELL CASING

MOBILE DISTRICT CORPS OF ENGINEERS CG&P SECTION 20 NOV 89

***** NAVD 1929 *****

PT	F.DIFF	B.DIFF	AV.DIFF	ADJ.ELEV	DESIGNAT ION
1				278.54	MW-5 (CE CAP 19??)
	2.15	-2.15	2.15		
2				280.69	TOP OF WELL CASING

COMMENTS:

SURVEY BY WOOLPERT CONSULTANTS
COMPUTED BY ARMOUR

NOTE::
Elevation for wells was determined by total station instrument.
Use for other than monitoring well is NOT recommended.
end

U. S. ARMY ENGINEER DISTRICT, MOBILE
CORPS OF ENGINEERS
MOBILE, ALABAMA

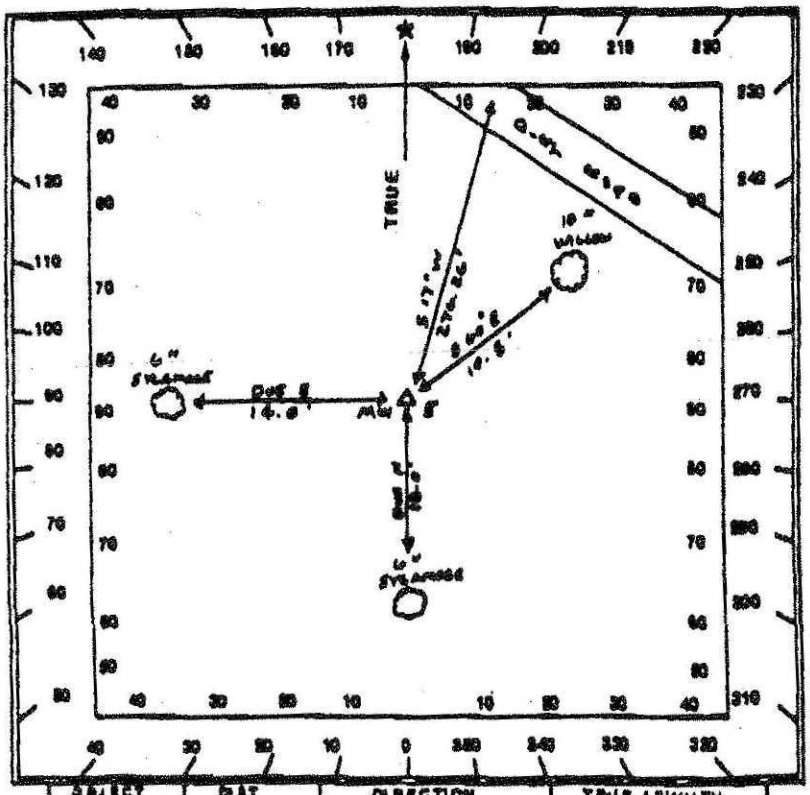
REPORT ON ESTABLISHMENT OF SURVEY MARK

DESIGNATION OF MARK	DATE	QUAD.	STATE	TWP.	STATE
MW-5	11-2-9[illegible]	MACON WEST	GA.	R.	TRAV.
		INDEX.	COUNTY BIBB	SEC.	LSV.
GRID ZONE		ELEVATION 278.54			
LAT.		Y 1007329.30	Position Established by WOOLPERT CONSULTANTS		
LONG.		X 659110.10	Elevation Established by WOOLPERT CONSULTANTS		

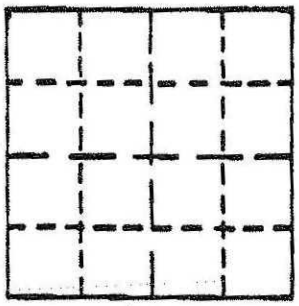
Survey of MACON NAVAL ORDINANCE - FACILITY MONITOR WELLS

Detailed Station Description Start at the South Macon Station Post Office on Houston Avenue and Colquitt Street, thence South on Houston Avenue for approximately 2.3 miles to intersection with Guy Paine Road, proceed due East on Guy Paine Road for 0.7 miles to West entrance of Allied Industrial Park. Go South on Allied Industrial Park Road for approximately 100' to single lane black top road immediately past Team 3 Macon City Police office. Take single lane black top road South 0.2 miles across railroad track, onto a black top road leading to the West Southwest. Take that road 0.1 mile to a "Y" intersection. Proceed due South for 0.2 miles to a "Y" intersection. Take fork to the right, road becomes a dirt road approximately 200' from fork. Proceed South on dirt road 0.2 miles, Mark is on right side of road, Mark is COE brass cap set in 2'x2' concrete slab, Mark is stamped MW-5.

STATION SKETCH



OBJECT	DIST	DIRECTION	TRUE AZIMUTH
16" SYCAMORE	14.0'	DUE EAST	270
10" WILLOW	10.8'	S 69° E	300
6" SYCAMORE	18.0'	DUE NORTH	180
℄ Road	276.26'	S 17° W	17



SEC. _____

PLOT STATION IN SEC.

Field Book No. _____ Page _____

Level Book No. _____ Page _____

SAM FORM 877 1 MAR 78

U. S. ARMY ENGINEER DISTRICT, MOBILE
CORPS OF ENGINEERS
MOBILE, ALABAMA

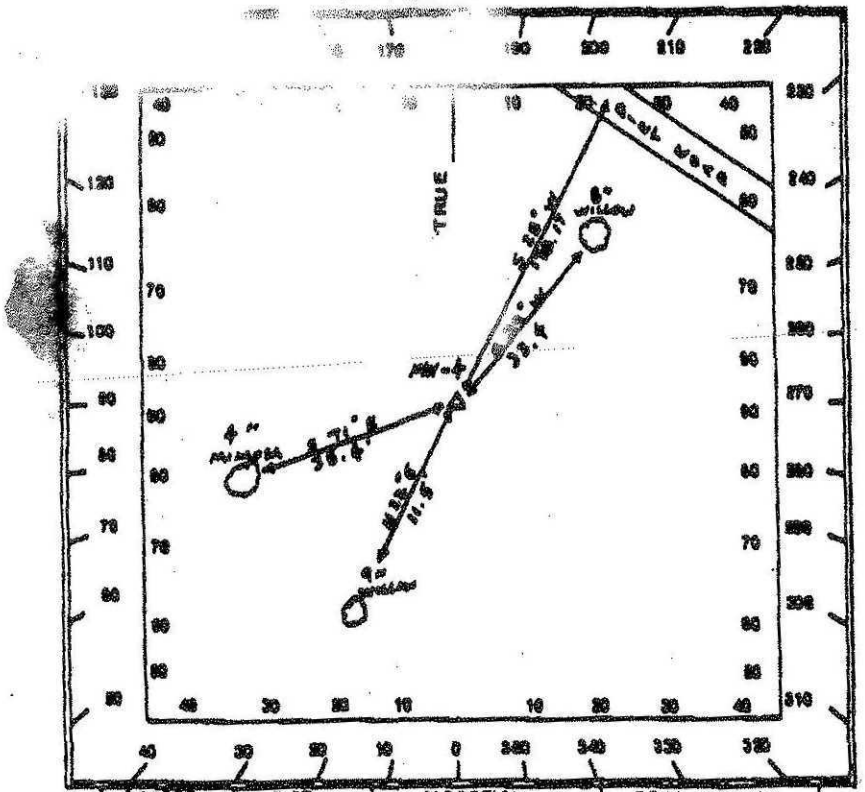
REPORT ON ESTABLISHMENT OF SURVEY MARK

DESIGNATION OF MARK	DATE	QUAD.	STATE	TWP.	STATE
MW-4	11-2-84	MACON WEST	GA.	R.	TRAV.
		IN SEC.	COUNTY BIBB	SEC.	LEV.
GRID ZONE		EL EVATION 278.86			
LAT.		Y 1007276.37	Position Established by WOOLPERT CONSULTANTS		
LONG.		X 659217.75	Elevation Established by WOOLPERT CONSULTANTS		

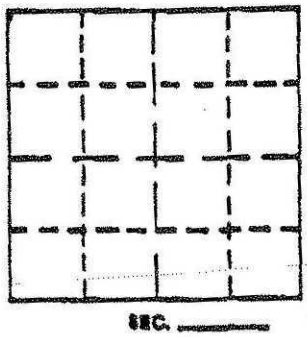
Survey of ORDINANCE - FACILITY MONITOR WELLS

Start at the South Macon Station Post Office on Houston Avenue and [illegible] Street, thence South on Houston Avenue for approximately 2.3 miles to intersection [illegible] on Guy Paine Road, proceed due East on Guy Paine Road for 0.7 miles to West entrance of Allied [illegible] South on Allied Industrial Park Road for approximately 100' to [illegible] immediately past Team 3 Macon City Police office. Take single [illegible] road South 0.2 miles across railroad track, onto a black top road leading to [illegible] southwest. Take that road 0.1 mile to a "Y" intersection. Proceed due South for [illegible] miles to a "Y" intersection. Take fork to the right, road becomes a dirt road approximately 200' [illegible] Park. Proceed South on dirt road 0.2 miles, Mark is on right side [illegible] cap set in 2'x2' concrete slab, Mark is stamped MW-4.

STATION SKETCH



OBJECT	DIST	DIRECTION	TRUE AZIMUTH
4" MAGNOLIA	38.4	S 71° E	289
9" WILLOW	11.5	N 22° E	202
8" WILLOW	33.4	S 39° W	39
℄ ROAD	178.17	S 38° W	38



SEC. _____

PLOT STATION IN SEC.

Field Book No. _____ Page _____

Level Book No. _____ Page _____

EAM FORM 877. 1 MAR 78

U. S. ARMY ENGINEER DISTRICT, MOBILE
CORPS OF ENGINEERS
MOBILE, ALABAMA

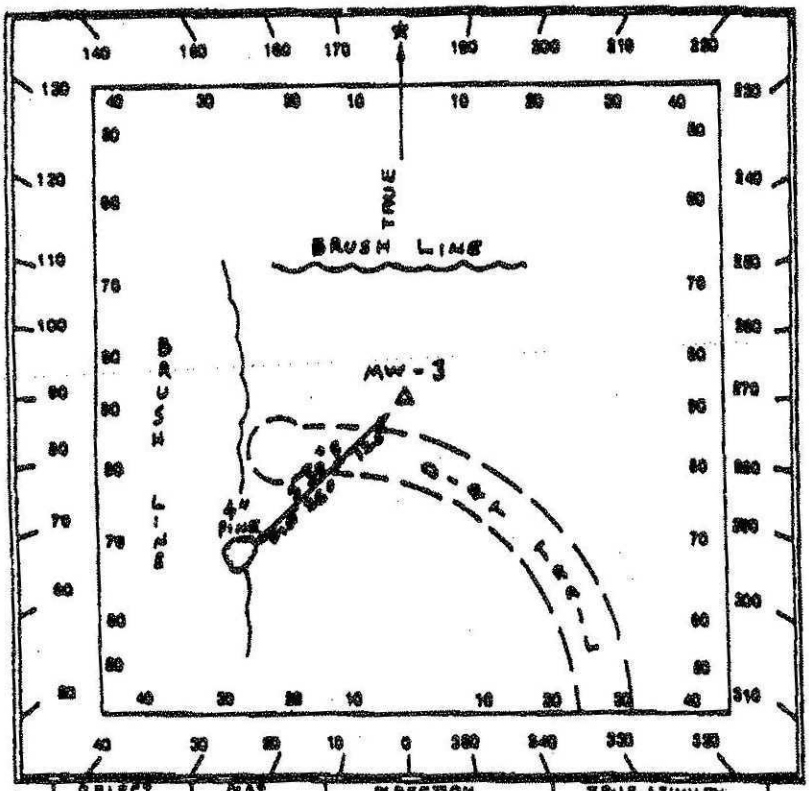
REPORT ON ESTABLISHMENT OF SURVEY MARK

DESIGNATION OF MARK	DATE	QUAD.	STATE	TWP.	STATE
MW-3	11-2-89	MACON WEST	Ga.	R.	YEAR
		INDEX.	COUNTY Bibb	SEC.	LEV.
GRID ZONE		ELEVATION 280.83			
LAT.		Y 1007249.66	Position Established by WOOLPERT CONSULTANTS		
LONG.		X 659675.89	Elevation Established by WOOLPERT CONSULTANTS		

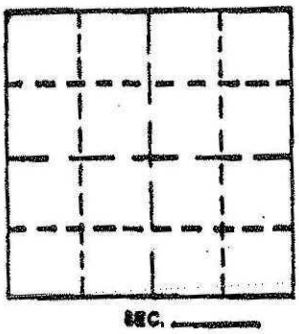
Survey of MACON NAVAL ORDINANCE - FACILITY MONITOR WELLS

Detailed Station Description Start at the South Macon Station Post Office on Houston Avenue and Colquitt Street, thence South on Houston Avenue for approximately 2.3 miles to intersection with Guy Paine Road, proceed due East on Guy Paine Road for 0.7 miles to West entrance of Allied Industrial Park. Go South on Allied Industrial Park Road for approximately 100' to single lane black top road immediately past Team 3 Macon City Police office. Take single lane black top road South 0.2 miles across railroad track, onto a black top road leading to the West Southwest. Take that road 0.1 mile to a "T" intersection. Proceed due South for 0.2 miles to a "Y" intersection. Take fork to the right, road becomes a dirt road approximately 200' from fork. Proceed South on dirt road 0.3 miles, Mark is on right side of dirt road. Mark is COE brass cap set in 2'x2' concrete slab, Mark is stamped MW-3.

STATION SKETCH



OBJECT	DIST	DIRECTION	TRUE AZIMUTH
4" PINE	28.0'	S 50° E	310
℄ ROAD	13.5'	S 50° E	310



PLOT STATION IN SEC.

Field Book No. _____ Page _____

Level Book No. _____ Page _____

SAM FORM 877 1 MAR 78

U. S. ARMY ENGINEER DISTRICT, MOBILE
CORPS OF ENGINEERS
MOBILE, ALABAMA

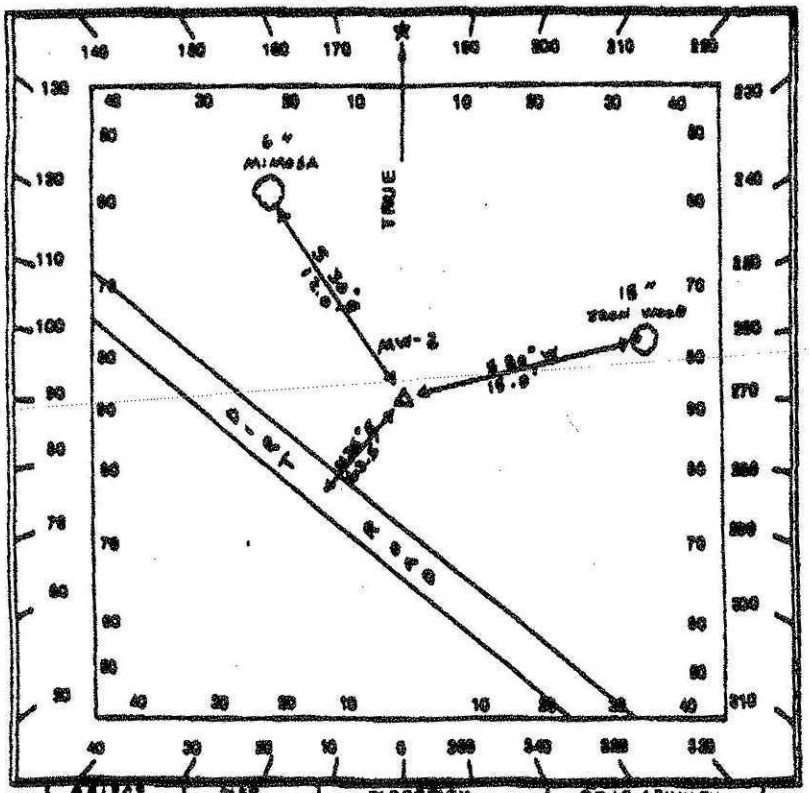
REPORT ON ESTABLISHMENT OF SURVEY MARK

DESIGNATION OF MARK	DATE	QUAD.	STATE	TWP.	STATE
		MACON WEST	GA	R.	TRAV.
MW-2	11-2-89	INDEX.	COUNTY	SEC.	LEV.
			BIBB		
GRID ZONE:		ELEVATION 283.86			
LAT.		Y 1007493.06	Position Established by WOOLPERT CONSULTANTS		
LONG.		X 659335.07	Elevation Established by WOOLPERT CONSULTANTS		

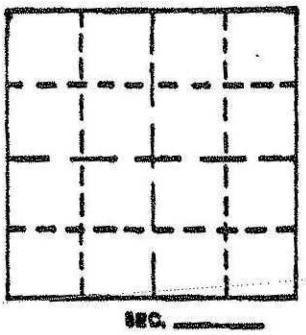
Survey of MACON NAVAL ORDINANCE - FACILITY MONITOR WELLS

Detailed Station Description Start at the South Macon Station Post Office on Houston Avenue and Colquitt Street, thence South on Houston Avenue for approximately 2.3 miles to intersection with Guy Paine Road, proceed due East on Guy Paine Road for 0.7 miles to West entrance of Allied Industrial Park. Go South on Allied Industrial Park Road for approximately 100' to single lane black top road immediately past Team 3 Macon City Police office. Take single lane black top road South 0.2 miles across railroad track, onto a black top road leading to the West Southwest. Take that road 0.1 mile to a "Y" intersection. Proceed due South for 0.2 miles to a "Y" intersection. Take fork to the right, road becomes a dirt road approximately 200' from fork. Proceed South on dirt road 0.2 miles. Mark is on left side of road, Mark is COE brass cap set in 2'x2' concrete slab, Mark is stamped MW-2.

STATION SKETCH



OBJECT	DIST	DIRECTION	TRUE AZIMUTH
6" MIMOSA	13.0'	S 30° E	330
18" Black Wood	15.0'	S 80° W	80
Dirt Road	63.8'	N 38° E	218



PLOT STATION IN SEC.

Field Book No. _____ Page _____

Level Book No. _____ Page _____

SAM FORM 877 1 MAR 78

U. S. ARMY ENGINEER DISTRICT, MOBILE
CORPS OF ENGINEERS
MOBILE, ALABAMA

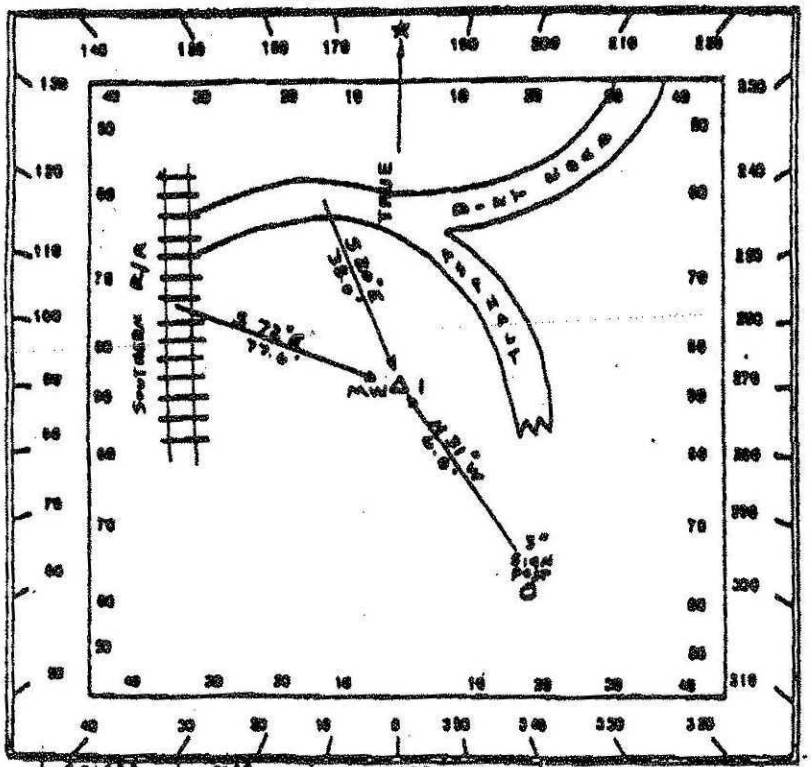
REPORT ON ESTABLISHMENT OF SURVEY MARK

DESIGNATION OF MARK	DATE	QUAD.	STATE	TWP.	STATE
MW-1	11-2-89	MACON WEST	GA.	R.	TRAV.
		INDEX.	COUNTY BIBB	SEC.	ELEV.
STATE ZONE: GA W		ELEVATION 306.37			
LAT.		N 1008453.52	Position Established by WOOLPERT CONSULTANTS		
LONG.		E 658704.01	Elevation Established by WOOLPERT CONSULTANTS		

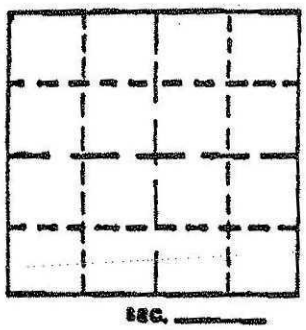
Survey of MACON NAVAL ORDINANCE - FACILITY MONITOR WELLS

Detailed Station Description Start at the South Macon Station Post Office on Houston Avenue an Colquitt Street, thence South on Houston Avenue for approximately 2.3 miles to intersectio with Guy Paine Road, proceed due East on Guy Paine Road for 0.7 miles to West entrance o Allied Industrial Park. Go South on Allied Industrial Park Road for approximately 100' t single lane black top road immediately past Team 3 Macon City Police office. Take singl lane black top road South 0.2 miles across railroad track, onto a black top road leading t the West Southwest. Take that road 0.1 mile to a "Y" intersection. Proceed due South fo 0.2 miles to a "Y" intersection. Take fork to the right, road becomes a dirt roac approximately 200' from fork. Proceed on dirt road past a trans. power line and an abandonec railroad track. Mark is on the left side of dirt road. Mark is COE brass cap set in 2'x2' concrete slab. Mark is stamped MW-1.

STATION SKETCH



SUBJECT	DIST	DIRECTION	TRUE AZIMUTH
C. R/R Track	77.4'	S 73° E	288
C. Dirt Road	38.0'	S 26° E	340
3" Brass Pipe	6.0'	N 31° W	149



PLOT STATION IN SEC.

Field Book No. _____ Page _____

Level Book No. _____ Page _____

APPENDIX C

REK SAMPLE COLLECTION DATA

FIELD TRIP LOGS

AND

SAMPLING LOGS

FIRST FIELD EFFORT

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

WATER RESOURCES DAILY FIELD TRIP LOG

Sub/Project Number and Title: Naval Ordinance Plant

Date: Tues (Day of Wk.) 11 (Mo.) 28 (Day) 89 (Year) Page _____ of _____

Purpose of Trip: Grd. water sampling

Field Team Members: Paul Locascio (PAL)
(Names and Initials) Howard Wegis (
Robin Blackman (

Contacts: _____

Work Completed This Date: _____

0800 On-site after getting ice for samples; prepacing for round of water levels.

0925 W.L's complete; begin purging MW-1.

1040 Discharge hose from pump collapsed; got new one. MW-4 v. slow to recover; begin purging MW-2.

1100 7 gal purged from MW-2; setting up peristaltic pump on MW-3.

1220 MW-3 purged (truck stuck); setting up peristaltic on MW-4.

1250 MW-4 pumping @ 0.95 gpm. (Pulling truck out w/ tractor).

1300 Setting up centrifugal pump on MW-5.

1330 MW-5 purged (@ rate 1 gpm). Going for final purge of MW-1.

1350 PAL performing final calib. of hydrolab.

1355 PAL labeling g.w. sample kit for MW-1

Work Remaining To Be Done: 1440 MW-1 sampled (Sample time = 1430)

1550 MW-2 sampled (Sample Time = 1530). Setting up to sample MW-3 (will dupe this one).

1640 MW-3 sampled (Sample Time = 1630) duped this well ESE/COE.

1650 Taking equip. blank for ESE/COE (see MW-4).

Team Leader Signature: Paul Locascio Date: 11-29-89

Route To (In Order Listed): 1) Group Leader _____, 2) Dept. Manager _____
3) ☐ Other _____, 4) Dept. File

cc: Sub/Project Manager, Author (Team Leader), Project File

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

WATER RESOURCES DAILY FIELD TRIP LOG

Sub/Project Number and Title: Naval Ordinance Plant / 3900525

Date: Tues (Day of Wk.) 11 (Mo.) 28 (Day) 89 (Year) con't. Page _____ of _____

Purpose of Trip: Grd. H₂O sampling

Field Team Members: Paul Locascio
(Names and Initials) Howard Wegle
Robin Blackman

Contacts: _____

Work Completed This Date:

1720 MW-4 sampled (sample Time = 1730). Note: took Equip. Blks MWOPW1 #8 (MW-EB) / MWOPW1 #9 (MW-EB-SP) 1700.

1805 MW-5 sampled (sample time = 1800). Organizing Kits / loading truck.

1900 OFF-site to Motel (stopping along way for additional ice).

Work Remaining To Be Done:

Team Leader Signature: Paul Locascio Date: 11-28-89

Route To (In Order Listed): 1) Group Leader _____, 2) Dept. Manager _____
3) ☐ Other _____, 4) Dept. File

cc: Sub/Project Manager, Author (Team Leader), Project File

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

WATER RESOURCES DAILY FIELD TRIP LOG

Sub/Project Number and Title: Macon Naval Ordinance Plant/3905025

Date: Wed (Day of Wk.) 11 (Mo.) 29 (Day) 89 (Year) Page _____ of _____

Purpose of Trip: Soil sampling

Field Team Members: Paul Locascio (PAL)
(Names and Initials) Howard Wegis
Robin Blackman

Contacts: _____

Work Completed This Date: _____

0750 On-site; securing sample coolers for ESE/COE shipment.
0855 PAL and Robin to Ralph Eaves's office for phone calls.
0945 Preparing to sample soil locations in explosive/demo. area
1020 Using de-coned stainless steel auger to sample 0-3' composite sample (one of three) in explosive/demo area @ SO-1 (see map).
1040 SO-1 completed; preparing for SO-2
1115 SO-2 completed (sample time: 11:00); begin SO-3.
1155 SO-3 completed; Note Dupe taken here
Sample ID MNOPS1#3 = SO-3 (11:30) SS, SS, SV, SV
" MNOPS1#6 = SO- -DP (ESE) SS, SS, SV, SV
(SS#3, SV, SV) → " MNOPS1#7 = SO- -SP(COE) (11:30)
1205 Update SO-1 = MNOPS1#1 (10:30) SS, SS, SV, SV
SO-2 = MNOPS1#2 (11:00) SS, SS, SV, SV
1210 Note: per Robin Blackman (COE): "MRD lab has omited equip b/Ks of soil sample apparatus ie SO-EB (#13) and SO-EB-SP (#14).

Work Remaining To Be Done: _____

Team Leader Signature: Paul Locascio Date: 11-29-89

Route To (In Order Listed): 1) Group Leader _____, 2) Dept. Manager _____
3) ☐ Other _____, 4) Dept. File

cc: Sub Project Manager, Author (Team Leader), Project File

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

WATER RESOURCES DAILY FIELD TRIP LOG

Sub/Project Number and Title: Macon Naval Ordinance Plant / 3905025

Date: Wed (Day of Wk.) 11 (Mo.) 29 (Day) 89 (Year) Page _____ of _____

Purpose of Trip: Soil sampling, cont.

Field Team Members: Paul Locascio
(Names and Initials) Howard Weajs
Robin Blackman

Contacts: _____

Work Completed This Date:

1220 Preparing For SO-4 (drum area).

1250 SO-4 completed. 4 composite samples 0-3'.
MNOPS1*4 / 12:45 (SS, SS, SV, SV)

1300 Trip Blank MNOPW1*15 / SO-TB / 13:00 accompanying ESE soil samples

1305 Trip Blank MNOPW1*16 / SO-TB-SP / 13:05 accompanying C.O.E. soil samples.

1320 Preparing to sample SO-5 (pond sediment)

1340 SO-5 completed 3 composite samples around edge of pond From 0-1'.
~~MNOPS1~~ MNOPS2*5 (13:30) / SS, SS, SV, SV

1350 Finish w/ labels - taping coolers - Breaking camp.

1450 OFF-site to lunch w/ Robin.

1600 Samples have been taken Fed-X @ I-75/247. Three coolers bound for Joe Sosky (USACE-MRD Lab.) Back to G-ville; to place ESE samples in cooler.

Work Remaining To Be Done: _____

Team Leader Signature: Paul Locascio Date: 11-29-89

Route To (In Order Listed): 1) Group Leader _____, 2) Dept. Manager _____
3) ☐ Other _____, 4) Dept. File

cc: Sub/Project Manager, Author (Team Leader), Project File

D-ECSWVOW.2/FIELDFORM.2
01/03/85

MONITOR WELL WATER LEVEL MEASUREMENTS

Sheet ___ of ___

Site Macon Naval Ordinance Plant
Client COE
Project Number 3906025-0100

Measured By P. Locascio, H. Weglis
Reference Mark:
Top of well casing ____
Ground surface ____

Well	Date	Time	Tape Reading Held Length	Tape Reading Wet Length	Depth To Water	Comments
MW-1	11-28-89	0820	21.00	2.46	18.54	measured from high side of casing.
MW-2	"	0840	9.00	3.27	5.73	"
MW-3	"	0904	8.00	3.47	4.53	"
MW-4	"	0910	6.00	2.53	3.47	"
MW-5	"	0914	6.00	3.29	2.71	"

03/15/85

WELL SAMPLING DATA FORM

Well Number: MW-1 Date: 11-28-89 Time: 0925

Boring Diameter: 7 7/8" Well Casing Diameter: 2.0"

Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____

Cut: _____

DTW: _____ Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 34.0'

DTW Top of Casing: 18.54

Column of Water in Well: 15.46

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	_____
Gallons per foot of Casing	=	0.16
Column of Water	X	15.46
Volume of Casing	=	2.47
Total Volume (Volume of A.S. + Volume of Casing)	=	_____
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	12.4 gal

Method of Purging (pump, (bailer) etc.): Teflon

FIELD ANALYSES	Start	Mid	End
Time	1027 (3 gal)	1043 (6 gal)	1344 (12 gal)
pH	5.4	5.4	5.5
Conductivity	249	252	248
Temperature	27.4	28.7	25.4

Total Volume Purged: 14 gal gallons v. slow recovery

Sample Time: 1430 Sample Number: MNOPW1 N 1

FRACTIONS

(B) C CF CL F H M (N) NP (Lcw2 MS=3 VP=4)

(O#3) P R RF MS (S) T UP Z

NOTES

moderate turbid grey w/ Final purge.

Signed/Sampler: Paul Locascio Date: 11-28-89

Signed/Reviewer: _____ Date: _____

Final depth to water (15:00) 19.51' b+oc

(PAC) 11-28-89

03/15/85

WELL SAMPLING DATA FORM

Well Number: MW-2 Date: 11-28-89 Time: 1040

Boring Diameter: 7 7/8" Well Casing Diameter: 2.0"

Annular Space Length: _____ Stickup: 2.5'

WATER LEVEL

Held: _____

Cut: _____

DTW: _____ Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.1' + 2.6' = 24.6'

DTW Top of Casing: 5.73

Column of Water in Well: 18.87

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	_____
Gallons per foot of Casing	=	0.16
Column of Water	X	18.87
Volume of Casing	=	3.02
Total Volume (Volume of A.S. + Volume of Casing)	=	_____
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	15.1 gal

Method of Purging (pump, (bailer) etc.): TeFlon

FIELD ANALYSES	Start	Mid	End
Time	1047 (3 gal)	1235 (8 gal)	1250 (16 gal)
pH	6.1	5.9	5.8
Conductivity	342	628	579
Temperature	20.8	21.2	22.1

Total Volume Purged: 17 gallons

Sample Time: 1530 Sample Number: MNOPW1+2

FRACTIONS

(D) C CF CL F H (M) NF (Lc=2)

(O+G) P B BF MS (S) T UF Z MS=3 VP=4

NOTES

Tan/orange initially.
→ clear w/ Final purge

Signed/Sampler: Paul Locanni Date: 11-28-89

Signed/Reviewer: _____ Date: _____

Final W.L. Held 9.00 - wet 2.21 = DTW 6.79

03/15/85

WELL SAMPLING DATA FORM

Well Number: MW-3 Date: 11-28-89 Time: 1105

Boring Diameter: _____ Well Casing Diameter: 2.0"

Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____

Cut: _____

DTW: 4.53 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 25.9

DTW Top of Casing: 4.53

Column of Water in Well: 21.37

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	_____
Gallons per foot of Casing	=	0.16
Column of Water	X	21.37
Volume of Casing	=	3.42
Total Volume (Volume of A.S. + Volume of Casing)	=	_____
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	17.1 gal

Method of Purging (pump, bailer, etc.): peristaltic @ 0.5 gpm

FIELD ANALYSES	Start	Mid	End
Time	1110 (2gal)	1135 (12gal)	1215 (~32gal)
pH	5.1	4.8	4.7
Conductivity	138	131	128
Temperature	20.0	20.0	20.0

Total Volume Purged: 33 gallons

Sample Time: 1630 – Sample Number: MNOPW1*3

FRACTIONS

(B)	C	CF	CL	F	H	H	(N)	NF	LC*2 MS*3 VP*4
O*5	P	S	SF	MS	(S)	T	UP	Z	

NOTES

Initially orange; clear at end of purging

Signed/Sampler: Paul Lorenzo Date: 11-28-89

Signed/Reviewer: _____ Date: _____

(B, LC*2, MS, H, O, S, VPOV) MW-3-SP : MNOPW1*7 (C.O.E Sample)

(B, LC*2, MS*3, H, O-3, S, VPOV) Dupe Taken : MNOPW1*6 (C.O.E)

16:30 (B VOA) Trip Blank MNOPW1*12 (COE)

Anal WL: Held - wet = DTW

8.00 - 2.47 = 5.53

03/15/85

WELL SAMPLING DATA FORM

Well Number: MW-4 Date: 11-28-89 Time: 1235

Boring Diameter: _____ Well Casing Diameter: _____

Annular Space Length: _____ Stickup: 2.5'

WATER LEVEL

Held: _____

Cut: _____

DTW: _____ Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 15.4 + 2.5 = 17.9'

DTW Top of Casing: 3.47

Column of Water in Well: 14.43

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	_____
Column of Water or Length of A.S. (whichever is less)	X	_____
Volume of Annular Space	=	_____
Gallons per foot of Casing	=	0.16
Column of Water	X	14.43
Volume of Casing	=	~~2.16~~ 2.31
Total Volume (Volume of A.S. + Volume of Casing)	=	~~2.31~~
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	11.5 gal

Method of Purging (pump, (bailer) etc.): peristaltic; rate = 0.75 gpm

FIELD ANALYSES	Start	Mid	End (thicker tubing)
Time	1243 (1gal)	1253 (8 gal)	1320 (27 gal)
pH	11.2	11.4	11.2
Conductivity	5.2	5.5	5.2
Temperature	19.9	19.7	19.9

Total Volume Purged: 27+ gallons

Sample Time: ~1730 Sample Number: MNOPW1*4

FRACTIONS

(T)	C	CF	CL	F	H	N	(N)	NF
(O&G)	P	R	MP	MS	(S)	T	UP	

LC*2 MS=3 PP*4

NOTES

Initially orange; clear at end of purging

Final W.L.* held (6.00) - wet (2.91) = DTW (3.09)

Signed/Sampler: Paul Lacasse Date: 11-28-89

Signed/Reviewer: _____ Date: _____

Equip. BLKS ~~MNOPW1*9~~ MNOPW1*9 (MW-EB-SP) 17:00

MNOPW1*8 (MW-EB) 17:50

Trip Blank (ESE) MNOPW1*10 (MW-TB) 17:30

03/15/85

WELL SAMPLING DATA FORM

Well Number: MW-5 Date: 11-28 Time: 13.05

Boring Diameter: ______ Well Casing Diameter: 2.0"

Annular Space Length: ______ Stickup: 2.5'

WATER LEVEL

Held: ______

Cut: ______

DTW: ______ Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 2.5 + 16 = 18.5'

DTW Top of Casing: 2.71

Column of Water in Well: 15.79

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	
Column of Water or Length of A.S. (whichever is less)	X	
Volume of Annular Space	=	
Gallons per foot of Casing	=	0.16
Column of Water	X	15.79
Volume of Casing	=	2.53
Total Volume (Volume of A.S. + Volume of Casing)	=	
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	12.6 gal

Method of Purging (pump, bailer, etc.): centrifugal (Rate = 1 gpm).

FIELD ANALYSES

	Start	Mid	End
Time	1310 (5 gal)	1318 (8 gal)	1328 (15 gal)
pH	6.0	6.2	6.1
Conductivity	291	279	280
Temperature	21.3	22.1	21.9

Total Volume Purged: 18. gallons

Sample Time: 1800 Sample Number: MWOPW1 * 5

FRACTIONS

B	C	CP	CL	F	H	M	N	NF
O×3	P	R	RP	RS	S	T	UP	Z

LCW 2, RS × 3, VPA × 4

NOTES

Initially milky tan;
Milky tan @ Final purge.

Signed/Sampler: Paul Locascio Date: 11-28-89

Signed/Reviewer: ______ Date: ______

Held (6.00) - wet (2.98) = DTW (3.02)

FIELD TRIP LOGS

AND

SAMPLING LOGS

SECOND FIELD EFFORT

FMNOP 09/89ch

HUNTER ENVIRONMENTAL SERVICES, INC.

DAILY FIELD TRIP LOG

Sub/Project Number and Title: 3905025-0100-3120 Former Macon Naval Ordnance Plant

Date: Thursday (Day of Wk.) 7 (Mo.) 26 (Day) 90 (Year) Page 1 of 1

Purpose of Trip: Soil Sampling + Sediment Sampling

Field Team Members: (Names and Initials) Jane Beal, Geoff Coble

Contacts: Robber Blackmen COE; Mr. Hamlin - Industrial Authority

Work Completed This Date:

820 On-site. Going to prepare to go to ... for final soil samples

1100 Collected 3 samples in ... area
SO-1, SO-2 (SO-3 w/ ... + COE split).
Had ... hits w/ OVM on each sample.
Highest on SO-1.

1200 On way back from sample collection looked at ... drums + pond. Meant Mr. Hamlin. Leaving for Fed-Ex - Robber leaving

1300 Packed up COE Samples + Sent Fed Ex.
Returning to Gainesville

5:20 Arrive Gainesville - unload truck + ... samples.

Work Remaining To Be Done: None

Team Leader Signature: Jane M. Beal Date: 7/26/90

Route To (In Order Listed): 1) Group Leader ________, 2) Dept. Manager ____
3) ☐ Other ________, 4) Dept. File

cc: Sub/Project Manager, Author (Team Leader), Project File

Figure 4-1
DAILY LOG FORM

SOURCE: ESE, 1989.

CORPS OF ENGINEERS
MOBILE DISTRICT

Former Macon Naval Ordnance Plant

FMNOP 09/89ch

HUNTER ENVIRONMENTAL SERVICES, INC.

DAILY FIELD TRIP LOG

Sub/Project Number and Title: 3905025-0100-3120 Former Macon Naval Ordnance Plant

Date: Wednesday 7 25 90 Page 1 of 1
Day of Wk. Mo. Day Year

Purpose of Trip: Sampling of Soil + Sediments

Field Team Members: Jim Bleil
(Names and Initials) Geof Cole

Contacts: Robin Blackmon - COE Mobile

Work Completed This Date:

1310 Arrive at site. Met w/ Robin Blackmon - COE. He found new area w/ what appears to be hydrocarbon (oil) contamination. Switch a sediment sample for a sample in this area.

1415 At Background location. On hill along road on south side of base. Collected background sample BKG-SOIL (+10). Dupe + COE Split Here

1515 Moved to new area of hydrocarbon contamination. Area is a drainage delta downgradient of a discharge pump. In a former oil recovery operation. Top ~2 in of soil hard but dark when broke. Hydrocarbon odor, deeper becomes moist w/ stronger hydrocarbon odor. 40 ppm in cooler field day. Surficial deposits seem to be widespread in drainage. Some bare soil areas.

1645 Moved to creek sediment sample. Collected sample [illegible] downstream side of culvert. 2 readings ~ field day each. Fishy odor. No real indications of contamination here. Red coloration on sides of sand bars appears to be present.

1900 Leaving site.

Work Remaining to Be Done:

- Collect explosive demolition area samples
- See drum area
- See limestone cake discharge?
- Send COE Samples Fed Ex.

Team Leader Signature: Jim M. Bleil Date: 7/25/90

Route To (In Order Listed): 1) Group Leader ________, 2) Dept. Manager ____
3) ☐ Other ________, 4) Dept. File

cc: Sub/Project Manager, Author (Team Leader), Project File

Figure 4-1
DAILY LOG FORM

SOURCE: ESE, 1988.

CORPS OF ENGINEERS
MOBILE DISTRICT

Former Macon Naval
Ordnance Plant

FIELD DATA FORM
Soil Sampling

Station # SO-3, SO-DUP #3, SO-BA #3 Date 7/26/90
Sample # MNOPS243, 44, *5 Project MNOP
Field Personnel Brad, Gabe

STATION DESCRIPTION: East side of explo. area

Sample Method:

Auger

Depth of Sample:

0-3 ft

	Fraction	Preservative/Amount	Container Type
each sample	2 SV	None	Amber glass

Remarks:

0-3" brown fine sand OVM/100
3-6" tan fine sand 100
6-8" clayey sand orange tint 120
1-1.5 clayey sand/sandy clay ~50 white, orange, tan
1.5 Zone orange clayey sand with white sand 50 back to 130
2-2.5 white clay/orange sand 90
2.5-3 White Clay - very plastic 50 113 down to 99 background

Signature Jane M. Beal Date 7/26/90

Figure 4-4
SOIL SAMPLING FORM

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

FIELD DATA FORM
Soil Sampling

Station # SO-2 Date 7/26/90

Sample # MNOPS2*2 Project MNOP

Field Personnel Brad Cobble

STATION DESCRIPTION: Center of burn area

Sample Method:

Auger

Depth of Sample:

0-3 ft

Fraction	Preservative/Amount	Container Type
2 SV	None	Amber 6 to 55

Remarks: Surface 0-24 brown + orange Sand med gr 124 (VOA 0-24)

2-4 24
4-6 55
6" 30
8-10" 10
8"-1' 50
} orange fine to med sand

106 in borehole

Signature Jane M. Beal Date 7/26/90

1-1.5 Sand w/ white + orange clay stringers 79 in borehole
1.5-2 white clay-clay 81
2 ft-2.5 getting more sandy 106 in borehole
140 in borehole
2.5-3 more clayey - white to gray, orange streaks w/ brown streaks 160 in borehole
3 ft more sandy, fine to med almost gravelly orange, white, brown, some grey 93 in borehole
144 in borehole

Figure 4-4
SOIL SAMPLING FORM

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

FIELD DATA FORM
Soil Sampling

Station # SO-1
Sample # MN[illegible]2*1
Date 7/26/90
Project MNCP
Field Personnel Bral, Coble

STATION DESCRIPTION: West side of Cm area off area of debris and fill

Sample Method:

Auger

Depth of Sample:

0-3ft

Fraction	Preservative/Amount	Container Type
2 SV	None	Amber Glass

Remarks:

0-3" Fine to med tan sand OVM 140ppm
3-6' " tan brown OVM 163ppm
6-1' 140ppm
1-1.5 F. to med sand becoming clayey, orange clay streaks 230ppm

1.5-2 becoming more clayey to a sandy clay 115 200 in bore hole
2 sandy Clay, tan w/ orange + gray mottles 135
2-2.5 [illegible] Sandy clay 195 [illegible] 200 in sample [illegible]
2.75 310 in sample
3.0 Yellow Sandy sandy-clay to dk gray slightly moist 200 bore hole

Signature Jodi M. Bral Date 7/26/90

Figure 4-4
SOIL SAMPLING FORM

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

FIELD DATA FORM
Soil Sampling

Station # SD-1 Stream sediment downstream of creek crossing
Sample # MNOPS2X6
Date 7/25/90
Project MNOP
Field Personnel J. Beal, G. Cobb

STATION DESCRIPTION:

Sample Method: Auger

Depth of Sample: 0-1

Fraction	Preservative/Amount	Container Type
SS SV	None	Amber Glass

Remarks:
0-1 pt 2 different locations
Sandy gravel - fishy odor, organic odor
tan, white, light brown

Signature Jane Beal Date 7/25/90

Figure 4-4
SOIL SAMPLING FORM

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

Drainage below former Oil Recovery System

NW Corner of Depot on Dirt Road

FIELD DATA FORM
Soil Sampling

Petroleum contaminant in soil freer

Station # SD-2, SD-DUP#2, SD-QA#2 **Date** 7/25/90

Sample # MMCPS2#7 thru #9 **Project** MMCP

Field Personnel Brad Gibbe

STATION DESCRIPTION:

Sample Method:

Auger

Depth of Sample:

0-3 ft

	Fraction	Preservative/Amount	Container Type
Each Sample	2 SS 2 SV	None	Amber Glass

Remarks: Samples collected from 2 boreholes, each 1 ft deep

0-2" Black discolored soil

2'-1' to tan to orangish tan, grey at bottom - hydrocarbon odor becomes more with depth

OVM ~ 40ppm next to loose soil - up to 40ppm in borehole

Signature Jane M Bird **Date** 7/25/90

Figure 4-4
SOIL SAMPLING FORM

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

FIELD DATA FORM
Soil Sampling

BKG-SOIL

Station # Background Soil
Sample # MNOPS2*10-SS

Date 7/25/90
Project MNOP
Field Personnel J. Bral, E. Coble

STATION DESCRIPTION: Top + Side of hill overlooking creek

Sample Method:

Auger

Depth of Sample:

0-3 ft

Fraction	Preservative/Amount	Container Type
2 SS	None	Amber Glass
2 SV	"	Amber Glass

Remarks:

0-1 Brown Silty Sand
1-1.5 Yellow-brown Sl. clayey sand
1.5-2.5 Orange Sandy clay

Signature Jane M. Bral Date 7/15/90

Figure 4-4
SOIL SAMPLING FORM

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

Reference No. 15
Macon Naval Ordnance Plant
EPA ID No. GAD003302676

PROJECT NOTE

Date: September 9, 2011

Name: Quinn Kelley
Title: Environmental Scientist
Firm: Tetra Tech

Signature: Quinn Kelley

Subject: Allied Industrial Park Property Owners Internet Search

PROJECT NOTE SUMMARY

I conducted an internet search for information concerning companies that currently own properties in the Allied Industrial Park (formerly Macon Naval Ordnance Plant).

A.C. White Transfer & Storage Co.
670 Guy Paine Road

- Transportation, long-distance trucking
- Local and international moving and relocations
- Storage
- Website: http://www.acwhite.com/

Blair Moving & Storage Co.
540 Allied Industrial Blvd.

- Moving and storage of office furniture, electronics, special products, and household goods
- Website: www.blairmoving.com

Damaste Warehousing LLC
657 Allied Industrial Blvd

- Part of the Norfolk Southern railroad distribution network
- Warehouse space
- Website: http://damaste.com/index.html

GBTS LLC
659 Allied Industrial Blvd

- Grey Brothers Tree Service
- Emergency tree removal and cleanup, stump grinding, and pruning
- Website: http://graybrotherstreeservice.com/

Politex U S Inc.
660 Allied Industrial Blvd.

- Textile manufacturing firm
- Products include roofing membranes, clothing and furniture padding, and building materials
- Building materials include reinforcements, waterproofing materials, reflecting products, and thermo-acoustic insulators

RESPONSE REQUIRED

(x) None ( ) Phone Call ( ) Memo ( ) Letter ( ) Report

cc: File (x) Project Manager ( ) Principal Investigator ( ) Other (specify)

TETRA TECH

Reference No.: 16
Macon Naval Ordnance Plant
EPA ID No. GAD003302676

September 29, 2009

Ms. Jennifer Wendel
Remedial Project Manager
U. S. Environmental Protection Agency, Region 4
61 Forsyth Street, SW, 11th Floor
Atlanta, Georgia 30303

Subject: **Final Expanded Site Inspection Report**
Former Macon Naval Ordnance Landfill
Macon, Bibb County, Georgia
EPA Identification No. GAD0000102178
EPA Contract No. EP-W-05-054
TDD No. TTEMI-05-003-0022

Dear Ms. Wendel:

The Tetra Tech Superfund Technical Assessment and Response Team (START) is submitting the enclosed final expanded site inspection (ESI) report for the Former Macon Naval Ordnance Landfill located in Macon, Bibb County, Georgia. Also included with this submittal are supporting reference materials and the preliminary Hazard Ranking System (HRS) score prepared in HRS QuickScore, Version 2.

Please call me (Sandra Harrigan) at (678) 775-3088 or Quinn Kelley at (678) 775-3101 if you have any questions or comments regarding this submittal.

Sincerely,

Sandra Harrigan
START III Project Manager

Andrew F. Johnson
START III Program Manager

Enclosure

cc: Katrina Jones, EPA Project Officer
Angel Reed, START III Document Control Coordinator

1955 Evergreen Blvd., Suite 300, Duluth, GA 30096
Tel 678.775.3080 Fax 678.775.3138
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FINAL
EXPANDED SITE INSPECTION REPORT

FORMER MACON NAVAL ORDNANCE LANDFILL
MACON, BIBB COUNTY, GEORGIA

U.S. EPA ID NO. GAD0000102178

Revision 0

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 4
Atlanta, Georgia 30303

Contract No.	:	EP-W-05-054
TDD No.	:	TTEMI-05-003-0022
Date Prepared	:	September 29, 2009
EPA Task Monitor	:	Jennifer Wendel
Telephone No.	:	(404) 562-8799
Prepared by	:	Tetra Tech EM Inc.
START Project Manager	:	Sandra Harrigan
Telephone No.	:	(678) 775-3088

Prepared by	Reviewed by	Approved by
Quinn Kelley	Shanna Davis	Andrew F. Johnson
START III Site Manager	START III Technical Reviewer	START III Program Manager

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Appendix

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F NON-CLP DATA VALIDATION REPORT AND ANALYTICAL DATA SHEETS

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) tasked the Tetra Tech EM Inc. Superfund Technical Assessment and Response Team (START) to conduct an expanded site inspection (ESI) at the Former Macon Naval Ordnance Landfill (FMNOL) located in Macon, Bibb County, Georgia (EPA Identification Number [No.] GAD0000102178). The Armstrong World Industries (Armstrong) remote landfill is also included in this ESI evaluation because of its proximity to the FMNOL and the reported commingling of wastes during disposal. The ESI was completed under Contract No. EP-W-05-054, Technical Direction Document (TDD) No. TTEMI-05-003-0022.

The primary objective of an ESI is to evaluate whether a site has the potential to be included on the National Priorities List (NPL). The NPL identifies sites where a release, or threatened release, of hazardous substances poses a risk to public health or the environment serious enough to warrant further investigation and possible remediation under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986.

Information gathered during the ESI is used to generate a preliminary Hazard Ranking System (HRS) score. The HRS score is the primary criterion EPA uses to decide whether a site should be placed on the NPL. ESIs are generally conducted at sites where additional environmental sampling or monitoring well installation is necessary to fulfill the HRS documentation requirements. ESIs also are conducted to address site issues that were not adequately resolved in previous investigations.

Specifically, the objectives of the ESI are as follows:

- Obtain and review relevant file material
- Collect samples to attribute hazardous substances to site operations
- Collect samples to establish representative background levels
- Evaluate target populations for the ground water migration, surface water migration, soil exposure, and air migration pathways
- Collect any other missing HRS data
- Document current site conditions
- Develop a site layout map

The remainder of this ESI for the FMNOL is organized as follows:

- Section 2.0 discusses the site background, including the site description, environmental setting, the operational history, and findings of previous investigations.

- Section 3.0 describes the ESI field activities conducted during the week of May 11, 2009.

- Section 4.0 discusses deviations from the final sampling and analysis plan (SAP) dated May 9, 2009.

- Section 5.0 describes source sampling locations and analytical results for samples collected from the source areas.

- Section 6.0 discusses the ground water migration, surface water migration, soil exposure, and air migration pathways, as well as the targets associated with each pathway.

- Section 7.0 provides a summary of and the conclusions for the ESI report.

- Section 8.0 provides a list of references used to support the report.

- Figures are provided in Appendix A, tables are provided in Appendix B, the field logbook notes are contained in Appendix C, and the photographic log is in Appendix D. The EPA Contract Laboratory Program (CLP) analytical data sheets are provided in Appendix E and the non-CLP data validation report and analytical data sheets are provided in Appendix F.

2.0 SITE BACKGROUND

This section discusses the site background, including the site description, environmental setting, the facility background information, findings of previous investigations, and source areas.

2.1 SITE DESCRIPTION AND ENVIRONMENTAL SETTING

The FMNOL property is located in an industrialized area in the southern portion of Macon, Bibb County, Georgia (see Figure 1 in Appendix A). Specifically, the geographical coordinates for the FMNOL are latitude 32.768732 north and longitude 83.646588 west (as measured from the center of the FMNOL). The geographical coordinates for the Armstrong remote landfill are latitude 32.767985 north and longitude 83.650058 west (as measured from the center of the Armstrong remote landfill). Both landfills are bordered to the north by the former Macon Naval Ordnance Plant (MNOP) and Armstrong. The Macon Water Authority (MWA) Rocky Creek water reclamation facility, along with Graphic Packaging International, an industrial plant, borders the landfills to the east. The landfills are bordered to the south by Rocky Creek and to the west by the abandoned Central of Georgia railroad tracks and the Lafarge Industries sand quarry (see Figure 2 in Appendix A). The 15-acre FMNOL is within the 433-acre MNOP property. The abandoned Central Georgia Railroad tracks separate the FMNOL property from the MNOP (References [Refs]. 1, p. 2; 2, pp. 2-1, 2-3; 10, p. 4-83) (see Figure 2 in Appendix A). The Armstrong facility is approximately 130 acres in area and is divided into two parcels, the northern and southern. The northern parcel makes up the manufacturing area, the wastewater treatment plant (WWTP) area that includes the sludge storage yard landfill (WWTP landfill) (approximately 7.7 acres), and a landfill

referred to as the woodyard landfill (approximately 3.8 acres). The northern parcel is discussed under separate cover. The southern parcel is made up of an approximately 5-acre landfill referred to as the remote landfill (Refs. 3; 4, p. 22; 5, p. 6; 6, pp. 2, 8) (see Figure 2 in Appendix A).

2.2 OPERATIONAL HISTORY

The 15-acre FMNOL was reportedly used for disposal of solid wastes and ordnance throughout the operational history (1941 to 1974) of the MNOP site (Ref. 1, p. 2). Available file information indicates that the landfill was also used for disposal of used parts and construction debris (Refs. 1, p. 2; 2, p. 2-11). A steel box believed to contain cyanide-contaminated soil was also located near the landfill. Cyanide was reportedly used in metal plating operations (Ref. 2, pp. 2-11, 2-12). A fenced explosives demolition area, located near the toe of the landfill, was used for testing and demolishing explosives, primarily detonators, flares, and primers manufactured at the MNOP. Flammable materials were reportedly burned in this area as well (Ref. 2, p. 2-11). Additionally, in September 1989, approximately 500 deteriorated, unlabeled drums were found west and southwest of the landfill in a pond occupying a low-lying area that contained reddish-orange water. Available file information does not indicate the contents of the drums, if any (Ref. 2, p. 3-2). In 2007, Georgia Environmental Protection Division (GAEPD) personnel observed deteriorated drums on the FMNOL property. However, it is not known whether these are the same drums that were observed in 1989 (Ref. 5, p. 6). The 15-acre FMNOL is currently owned by the MWA (Refs. 7; 10, p. 1-7).

Since 1948, Armstrong has operated an acoustic ceiling tile manufacturing facility (Ref. 9, p. 2). Three types of Armstrong ceiling tiles (Travertone Sanserra, Santaglio, and Embossed Design) manufactured in 1969 and 1970 were coated with a formulation containing Aroclor-1254, a commercial formulation of polychlorinated biphenyls (PCB) (Refs. 38, p. 1; 39, p. 1). Many commercial PCB mixtures are also known in the U.S. by the trade name Aroclor (Ref. 40, p. 1). Armstrong representatives have stated that these ceiling tiles were not manufactured at the Macon plant, nor were they ever recycled there. According to Armstrong, the possible sources of PCB contamination are recycled raw materials and recycled newsprint with older dye formulations (Refs. 4, p. 28; 22, p. 2; 37, p. 6). Armstrong began disposing of general and industrial trash, old equipment, and excess bark and scrap wood in the remote landfill in the mid-1960s (Refs. 4, p. 22; 37, p. 5). In 1971, Armstrong constructed a new WWTP outfitted with two large coil filters that removed excess fiber from the WWTP influent. The fibrous material removed by the coil filters was subsequently disposed of in either the remote landfill or the newly constructed WWTP landfill. In the late 1970s or early 1980s, Armstrong constructed the woodyard

landfill as an additional area to dispose of the filtered fiber material from the WWTP (Refs. 4, p. 22; 22, pp. 1, 2). An analysis of aerial photographs taken over a 50-year period from 1938 to 1988 indicates that the Armstrong remote landfill and the FMNOL appear to be one large landfill between 1975 and 1988 (Ref. 8, pp. 38, 39, 42, 43, 46, 47). Sometime in 1996, a fence was erected between the two landfills, which gives the appearance that there are two distinctly separate landfills (Refs. 1, p. 11; 4, p. 25; 6, p. 10; 10, p. 1-6; 37, p. 13). However, based on the aerial photographic record, there appears to be some comingling of wastes between 1975 and 1988 (Ref. 8, pp. 38, 39, 42, 43, 46, 47).

2.3 PREVIOUS INVESTIGATIONS

These subsections describe the previous investigations conducted at the FMNOL and Armstrong remote landfill. The following discussion addresses only those hazardous constituents with the greatest waste characteristics values for the ground water and surface water migration pathways.

2.3.1 1996 RUST Site Investigation

From January to May 1996, RUST Environment and Infrastructure Inc., on behalf of the U.S. Army Corps of Engineers (USACE), Savannah District, conducted a site investigation at the FMNOL. Surface and subsurface soil, ground water, surface water, sediment, and biota samples were collected during the investigation. Permanent monitoring wells were also installed and sampled (Ref. 1, pp. 1, 25, 36). Analysis of soil samples collected from the FMNOL indicated the presence of heavy metals and PCBs in the surface and subsurface soil. Analysis of ground water samples collected from monitoring wells located in the vicinity of the FMNOL indicated the presence of trichloroethene (TCE), cis-1,2-dichloroethene (DCE), and vinyl chloride. Low levels of heavy metals were also detected in ground water samples (Ref. 1, Figures 4-1, 5-2, Tables 4-3, 5-3).

Surface water and sediment samples were collected from the drainage easement leading from the FMNOL to Rocky Creek as well as from Rocky Creek itself (Ref. 1, p. 33). Analytical results for surface water samples collected from the drainage easement contained lead, zinc, cis-1,2-DCE, and TCE. Analytical results for sediment samples collected from the drainage easement contained cadmium, chromium, lead, mercury, cis-1,2-DCE, TCE, vinyl chloride, and benzo(a)pyrene. Analytical results for the surface water samples collected from Rocky Creek downstream of the FMNOL and the Armstrong remote landfill did not indicate the presence of heavy metals, volatile organic compounds (VOCs), or semivolatile organic compounds (SVOCs). Analytical results for sediment samples collected from Rocky Creek downstream

from the FMNOL and Armstrong remote landfill contained cadmium, chromium, lead, and benzo(a)pyrene (Ref. 1, Figure 6-1, Tables 6-2, 6-3).

Biota (fish tissue) samples were also collected during the site investigation from several fish species caught from Rocky Creek. Fish species including bluegill (*Lepomis macrochirus*), white crappie (*Poxomis annularis*), spotted sucker (*Minytrema melanops*), and silver redhorse sucker (*Moxostoma anisurum*) were caught from Rocky Creek at locations upstream and downstream of the FMNOL and the Armstrong remote landfill (Ref. 1, p. 36). Analytical results for the fish tissue samples indicated the presence of barium, selenium, and total petroleum hydrocarbons. In addition, PCB-1254 was detected in all of the fish tissue analyzed (Ref. 1, p. 37, Table 6-4).

2.3.2 1996 Armstrong Sampling

In January 1996, Armstrong collected sludge samples from the Armstrong remote landfill as part of its solid waste management program. Composite sludge samples were collected from four excavated test pits. Analytical results revealed PCBs at concentrations ranging from 1.65 milligrams per kilogram (mg/kg) to 6.65 mg/kg. All four samples exceeded the GAEPD Hazardous Site Response Act (HSRA) notification concentration of 1.55 mg/kg for PCBs (Ref. 9, pp. 2, 5, 6). Analytical results for the sludge samples also revealed the presence of chromium, copper, lead, nickel, and zinc at concentrations below the HSRA notification concentrations (Ref. 9, p. 6).

2.3.3 1998 and 1999 SAIC Phase I Remedial Investigation

From February 1998 to March 1999, Science Applications International Corporation (SAIC), on behalf of the USACE, Savannah District, conducted a Phase I remedial investigation at the FMNOL (Ref. 10, pp. i, 1-1). Surface and subsurface soil, surface water, sediment, and biota samples were collected during the investigation (Ref. 10, pp. 2-1, 4-1). Ground water samples were also collected from existing and newly installed monitoring wells located in the vicinity of the FMNOL (Ref. 10, pp. 2-20, 4-53).

Analytical results for surface soil samples collected from the FMNOL and the Armstrong remote landfill, as well as the surrounding area, contained arsenic, cadmium, chromium, lead, mercury, TCE, 1,2-DCE, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, pyrene, and PCBs (Ref. 10, Figure 4-1, Table 4-3). Analytical results for ground water samples contained arsenic, chromium, zinc, tetrachloroethene (PCE), TCE, 1,2-DCE, vinyl chloride, and PCBs (Ref. 10, Figure 4-20,

Table 4-9). Surface water and sediment samples were collected from the drainage easement and from Rocky Creek. Analytical results for surface water and/or sediment samples collected from the drainage easement leading from Armstrong to Rocky Creek contained arsenic, beryllium, cadmium, chromium, lead, PCE, TCE, 1,2-DCE, vinyl chloride, and PCB-1248. Analytical results for surface water and/or sediment samples collected from Rocky Creek downstream of the FMNOL and the Armstrong remote landfill contained arsenic, beryllium, cadmium, chromium, lead, mercury, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, pyrene, and the PCB-1248 and PCB-1254 (Ref. 10, Figures 4-28 and 4-33, Tables 4-12 and 4-16).

Biota (fish tissue) samples were collected from several fish species caught from Rocky Creek, but were analyzed only for PCBs. Fish species including redear sunfish (*Lepomis microlophus*), bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), American eel (*Anguilla rostrata*), and brown bullhead catfish (*Ictalurus nebulosus*), among others, were caught from Rocky Creek at locations upstream and downstream of the FMNOL and the Armstrong remote landfill. Analytical results for biota samples collected downstream of the FMNOL and the Armstrong remote landfill indicated the presence of the PCB-1248 and PCB-1254 (Ref. 10, Figure 4-42, Table 4-17).

2.3.4 2005 GADNR Surface Water Sampling Event

In 2005, the Georgia Department of Natural Resources (GADNR) conducted a surface water sampling event to ascertain whether contamination was present at the FMNOL. Eight surface water samples were collected: four downstream from the previously existing pond located adjacent to the southern end of the landfill, one adjacent to the Armstrong remote landfill fence line, one near Rocky Creek, and two from the drainage easement located adjacent to the FMNOL, which is fed by the Armstrong WWTP discharge as well as the FMNOL. Surface water samples collected downstream from the previously existing pond located adjacent to the southern end of the FMNOL contained TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride (Ref. 11, pp. 1, 2, 3, 12, 17, 24). These ponds may be created by standing water in temporarily flooded areas.

3.0 EXPANDED SITE INSPECTION ACTIVITIES

This section outlines field observations and sampling procedures at the site. Individual subsections address the sampling investigation and rationale for specific ESI activities. The ESI sampling was conducted in accordance with the EPA-approved final SAP dated May 9, 2009 (Ref. 12).

3.1 SAMPLE COLLECTION METHODOLOGY AND PROCEDURES

Tetra Tech collected surface soil, subsurface soil, ground water, surface water, and sediment samples during the ESI, conducted the week of May 11, 2009. The specific number, type, and location of samples are listed below.

- 12 surface and 10 subsurface soil samples were collected from the FMNOL
- Four surface and four subsurface soil samples were collected from the Armstrong remote landfill
- Four ground water samples were collected from the FMNOL
- Two surface water and four sediment samples were collected from drainage ditches that receive runoff from the FMNOL and Armstrong remote landfill
- Six surface water and six sediment samples were collected from Rocky Creek

Tetra Tech also collected one collocated background surface and subsurface soil sample to attribute contaminants detected in on-site samples. The background ground water sample was collected from a permanent monitoring well in the vicinity of the background soil sample location. Tetra Tech also collected two background sediment samples from two drainage ditches (Drainage Ditch 2 and Drainage Ditch 3) upgradient of the FMNOL and Armstrong remote landfill to attribute contaminants detected in samples of site runoff (see Figure 3 in Appendix A). In addition, Tetra Tech collected five collocated background surface water and sediment samples (including one duplicate) from Rocky Creek to attribute contaminants detected in downstream samples.

The ESI sampling locations are depicted on Figure 3 in Appendix A and are summarized in Tables 1 through 4 in Appendix B. Tetra Tech followed sample collection procedures outlined in the final SAP and in accordance with the EPA Region 4 Science and Ecosystem Support Division (SESD) Field Branch Quality System and Technical Procedures dated February 2008 (Refs. 12; 13). Field logbooks for the ESI sampling event are contained in Appendix C.

3.2 ANALYTICAL SUPPORT AND METHODOLOGY

All samples were submitted to EPA Contract Laboratory Program (CLP) laboratories for analysis of all parameters on the EPA Target Analyte List (TAL), including total metals and cyanide, and were analyzed in accordance with the EPA CLP Statement of Work (SOW) for Inorganic Analysis, Multi-Media, Multi-Concentration (ILM05.4). Surface water samples collected from Rocky Creek and selected drainage ditch stations were also analyzed for dissolved metals and cyanide in accordance with CLP SOW

ILM05.4 (Ref. 14). Samples were also submitted for analysis of all parameters on the EPA Target Compound List (TCL), which includes VOCs, SVOCs, pesticides, and PCBs, and were analyzed in accordance with the EPA CLP SOW for Organics Analysis, Multi-Media, Multi-Concentration (SOM01.2) (Ref. 15). Surface water samples collected from Rocky Creek and the drainage ditches were analyzed for total and dissolved TAL metals. In addition to TAL and TCL parameters, a number of samples were also submitted for analysis of energetic compounds and were analyzed in accordance with EPA Methods 8330A, 8331, and 314 (Refs. 16; 17; 18).

The CLP and non-CLP analytical data packages were validated by the EPA Region 4 SESD, Office of Quality Assurance. Data validation was conducted in accordance with the EPA CLP SOW for Organics Analysis, Multi-Media, Multi-Concentration (SOM01.2), April 2007; the EPA CLP SOW for Inorganic Analysis, Multi-Media, Multi-Concentration (ILM05.4), December 2006; Nitoaromatics, Nitramines, and Nitrate Esters Analysis, Method 8330A, including perchlorate analysis (Method 314); Tetrazene Analysis, Method 8331; the EPA National Functional Guidelines for Superfund Organic Methods Data Review, EPA540/R-07/003, June 2008; the EPA National Functional Guidelines for Inorganic Data Review, EPA540-R-04/004, October 2004; and the EPA Data Validation SOP for CLP Routine Analytical Services, Revision 2.1, July 1999 (Refs. 14 through 21).

3.3 ANALYTICAL DATA QUALITY AND DATA QUALIFIERS

All analytical data were subject to a quality assurance review, as described in the EPA SESD laboratory data evaluation guidelines. The text and analytical data tables presented in this report list some concentrations of the parameters as qualified with a "J," indicating that the identification of the analyte is acceptable; however, the reported value is an estimate. Some parameters in the data tables may be qualified with a "J^1" indicating that the concentration reported is less than the lowest standard on the calibration curve and is, therefore, less than the analyte-specific minimum reporting limit (MRL). As a result, any parameter qualified with a "J^1" cannot be considered elevated even if the concentration is three times the background. Constituent concentrations in samples that are greater than or equal to three times the background concentration or that are greater than or equal to the sample-specific and analyte-specific MRL in the background sample are considered elevated. "J" qualified parameters may also include a "+" or "-" indicating either a high or a low bias. Explosive parameters qualified with a "JN" indicate that the result is presumptive (tentatively identified), but a confirmation was not performed because the result was greater than the method detection limit, but less than the reporting limit. Some sample results are reported with a "U" qualifier, meaning that the analyte was not detected at or above the reporting limit.

The reported value is the sample-specific, laboratory-derived reporting limit for the constituent. Sample results reported with an "R" qualifier indicate that the data are unusable (rejected). The analytical data sheets are presented in Appendices E and F.

4.0 DEVIATIONS FROM THE SAMPLING AND ANALYSIS PLAN

During the field sampling event, some sampling locations deviated from the locations proposed in the final SAP in response to site conditions. Deviations in the field were documented in the logbook notes contained in Appendix C and are summarized below.

- Subsurface soil sample FML-310-SB was deleted because the auger met refusal at several locations.
- Ground water sample FML-311-MW was not collected because a wasp's nest was located inside the well covering; therefore, attempts to sample the well were not made as a safety precaution.
- An additional ground water sample, FML-315-MW, was collected from RUST permanent monitoring well MW-19.
- A surface water sample was not collected at drainage ditch station DD509 because the drainage ditch was dry. Therefore, a surface water sample was added at drainage ditch station DD508.
- RUST permanent monitoring well MW-7 did not produce enough ground water for all analytical parameters; therefore, ground water sample FML-312-MW was only submitted for VOC analysis.
- Explosives were added to the analytical suite for ground water sample FML-314-MW.
- Samples were not collected from Rocky Creek stations RC410 and RC411 because these locations were inaccessible.

5.0 SOURCE SAMPLING

This section discusses the source areas evaluated at the site and the sampling locations and analytical results for samples collected from the source areas. The discussion below addresses only the hazardous constituents associated with site operations and the hazardous constituents that may pose a threat to human health or the environment. Only the highest concentrations of each contaminant of concern are discussed.

Source areas at FMNOL include the 15-acre FMNOL and the 5-acre Armstrong remote landfill, as well as an unknown quantity of soil surrounding the landfills. No engineered runon/runoff control systems or

liners have been constructed for the FMNOL sources, and the total amount of wastes disposed of is unknown. The 15-acre FMNOL was used for disposal of used parts, construction debris, solid wastes, and ordnance, including detonators, flares, and primers that were manufactured at the MNOP (Refs. 1, p. 2; 2, p. 2-11). Armstrong began disposing of general and industrial trash, old equipment, and excess bark and scrap wood in the Armstrong remote landfill in the mid-1960s. Between 1969 and 1970, Armstrong manufactured three types of ceiling tiles (Travertone Sanserra, Santaglio, and Embossed Design) that were coated with a formulation containing Aroclor-1254; however, Armstrong representatives have stated that these ceiling tiles were not manufactured at the Macon plant, nor were they ever recycled there (Refs. 4, p. 28; 22, p. 2; 37, p. 6; 38, p. 1; 39, p. 1). According to Armstrong, the possible sources of PCB contamination are recycled raw materials and recycled newsprint with older dye formulations (Refs. 4, p. 28; 22, p. 2; 37, p. 6). Based on an analysis of historical aerial photographs, the FMNOL and the Armstrong remote landfill appear to be one large landfill between 1975 and 1988 (Refs. 8, pp. 38, 39, 42, 43, 46, 47; 22, pp. 1, 2).

5.1 SOURCE SAMPLING LOCATIONS AND ANALYTICAL RESULTS

During the ESI, Tetra Tech collected 16 surface soil (0 to 6 inches below ground surface [bgs]) and 14 subsurface soil (12 to 24 inches bgs) samples from the source areas. Source sampling locations are depicted on Figure 3 in Appendix A and are summarized in Table 1 of Appendix B. Source samples were collected in accordance with the EPA Region 4 SESD Field Branch Quality System and Technical Procedures (Ref. 13, SESDPROC-300-R1). Analytical results for source samples are summarized in Tables 5 through 8 in Appendix B. The complete set of analytical data sheets are provided in Appendices E and F.

5.1.1 Surface Soil

Surface soil samples collected from the FMNOL property contained elevated concentrations of pesticides, PCBs, and metals. Pesticides detected at elevated concentrations include 4,4'-DDE (DDE), 4,4'-DDT (DDT), alpha-chlordane, and gamma-chlordane. DDE was detected in sample FML-310-SF at a concentration of 81 micrograms per kilogram (µg/kg); DDT was detected in sample FML-310-SF at a concentration of 86 µg/kg; alpha-chlordane was detected in sample FML-301-SF at a concentration of 9.3 µg/kg; and gamma-chlordane was detected in sample FML-304-SF at a concentration of 36 µg/kg. PCBs detected at elevated concentrations include PCB-1248, PCB-1254, and PCB-1260. Surface soil sample FML-301-SF contained the highest concentrations of PCBs, at 2,000 J- µg/kg (PCB-1248), 1,500 µg/kg

(PCB-1254), and 270 µg/kg (PCB-1260) (see Table 5 in Appendix B). Metals detected at elevated concentrations in surface soil samples include cadmium, lead, mercury, and nickel. Cadmium was detected at a concentration of 13 mg/kg in sample FML-303-SF, lead was detected at a concentration of 560 mg/kg in sample FML-303-SF, mercury was detected at a concentration of 1.2 J- mg/kg in sample FML-308-SF, and nickel was detected at a concentration of 14 J+ mg/kg in sample FML-303-SF (see Table 6 in Appendix B).

Surface soil samples collected from the Armstrong remote landfill property contained elevated concentrations of SVOCs, pesticides, PCBs, and metals. Benzo(a)pyrene was detected in sample AWI-215-SF at a concentration of 3,600 µg/kg. Gamma-chlordane was detected in sample AWI-216-SF at a concentration of 150 µg/kg. PCB-1254 was detected at a concentration of 4,000 µg/kg in sample AWI-216-SF (see Table 5 in Appendix B). Cadmium was detected at a concentration of 140 J mg/kg in sample AWI-215-SF; mercury was detected at a concentration of 0.29 J mg/kg in sample AWI-214-SF; and nickel was detected at a concentration of 12 J+ mg/kg in sample AWI-214-SF. See Tables 5 and 6 in Appendix B for a full list of contaminants detected at elevated concentrations in surface soil samples collected from the sources.

5.1.2 Subsurface Soil

Subsurface soil samples collected from the FMNOL property contained elevated concentrations of VOCs, SVOCs, pesticides, PCBs, and metals. One sample, FML-303-SB, contained cis-1,2-DCE at a concentration of 42 µg/kg. Cis-1,2-DCE is a degradation product of TCE (Ref. 46, p. 24). Benzo(a)pyrene was detected at a concentration of 16,000 µg/kg (FML-304-SB). Pesticides detected at elevated concentrations include, 4,4'-DDD (DDD), DDE, DDT, alpha-chlordane, and gamma-chlordane, among others. DDD was detected at a concentration of 30 µg/kg in sample FML-308-SB; DDE was detected at a concentration of 92 µg/kg in sample FML-301-SB; DDT was detected at a concentration of 52 µg/kg in sample FML-301-SB; alpha-chlordane was detected at a concentration of 6.7 µg/kg in sample FML-301-SB; and gamma-chlordane was detected at a concentration of 170 µg/kg in sample FML-309-SB. PCBs were detected at elevated concentrations of 9,600 µg/kg (FML-309-SB) for PCB-1248, 74 µg/kg (FML-303-SB) for PCB-1254, and 170 µg/kg (FML-301-SB) for PCB-1260 (see Table 7 in Appendix B). Metals detected at elevated concentrations in subsurface soil samples include arsenic, cadmium, chromium, lead, mercury, and nickel. Arsenic was detected at a concentration of 5.7 mg/kg (FML-309-SB); cadmium was detected at a concentration of 150 mg/kg (FML-303-SB); chromium was detected at a concentration of 140 mg/kg (FML-303-SB); lead was detected at a concentration of 1,000

mg/kg (FML-303-SB); mercury was detected at a concentration of 4.7 J- mg/kg (FML-304-SB); and nickel was detected at a concentration of 150 J+ mg/kg (FML-303-SB) (see Table 8 in Appendix B).

Subsurface soil samples collected from the Armstrong remote landfill property contained elevated concentrations of SVOCs, pesticides, PCBs, and metals. SVOCs detected at elevated concentrations include benzo(a)anthracene, benzo(a)pyrene, and dibenzo(a,h)anthracene. Benzo(a)anthracene was detected at a concentration of 1,200 µg/kg in sample AWI-215-SB; benzo(a)pyrene was detected at a concentration of 3,500 µg/kg in sample AWI-215-SB; and dibenzo(a,h)anthracene was detected at a concentration of 870 µg/kg in sample AWI-215-SB. Pesticides alpha-chlordane and gamma-chlordane were detected at elevated concentrations of 8.1 µg/kg (AWI-216-SB) and 100 µg/kg (AWI-214-SB). Elevated concentrations of PCB-1254 ranged from 230 µg/kg (AWI-215-SB) to 2,000 µg/kg (AWI-214-SB) (see Table 7 in Appendix B). Metals detected at elevated concentrations in subsurface soil samples include cadmium, lead, mercury, and nickel. Cadmium was detected at a concentration of 4.9 J mg/kg (AWI-215-SB); lead was detected at a concentration of 120 mg/kg (AWI-214-SB); mercury was detected at a concentration of 0.78 J mg/kg (AWI-214-SB); and nickel was detected at a concentration of 34 J+ mg/kg (AWI-214-SB). See Tables 7 and 8 in Appendix B for a full list of contaminants detected at elevated concentrations in subsurface soil samples collected from the sources.

5.2 SOURCE CONCLUSIONS

Tetra Tech collected 16 surface soil and 14 subsurface soil samples from source areas. Analytical results for the surface and subsurface soil samples collected on site contained elevated concentrations of VOCs, SVOCs, pesticides, PCBs, and metals, including cis-1,2-DCE, benzo(a)anthracene, benzo(a)pyrene, dibenzo(a,h)anthracene, DDD, DDE, DDT, alpha-chlordane, gamma-chlordane, PCB-1248, PCB-1254, PCB-1260, cadmium, chromium, lead, mercury, and nickel. Soil samples collected from source areas were also analyzed for explosive compounds, but none were detected at elevated concentrations. Based on wastes reportedly disposed of in the landfills, contaminants of concern, including PCBs and metals, have been documented in source samples.

6.0 PATHWAYS

This section discusses the ground water migration, surface water migration, soil exposure, and air migration pathways. Additionally, this section discusses the targets associated with each pathway and draws pathway-specific conclusions. Sampling locations and analytical results for samples collected from

the specific pathways also are discussed. The discussion below addresses only the hazardous constituents associated with site operations and the hazardous constituents that may pose a threat to human health or the environment. Only the highest concentrations are discussed.

6.1 GROUND WATER MIGRATION PATHWAY

Five ground water samples were collected during the ESI, including one background sample, from permanent monitoring wells located at and in the vicinity of the FMNOL and Armstrong remote landfill. The permanent monitoring wells were previously installed by either RUST or SAIC on behalf of the USACE. Ground water sampling locations are depicted on Figure 3 in Appendix A and are summarized in Table 2 in Appendix B. Ground water samples were collected in accordance with the EPA Region 4 SESD Field Branch Quality System and Technical Procedures (Ref. 13, SESDPROC-301-R1). Field parameters for ground water samples are summarized in Table 9 of Appendix B, and analytical results for ground water samples are summarized in Table 10 of Appendix B. The complete set of analytical data sheets are provided in Appendices E and F.

6.1.1 Geologic and Hydrogeologic Setting

The FMNOL and Armstrong remote landfill are located in the Fall Line Hills District of the Coastal Plain Physiographic Province of Georgia (Refs. 23; 24, p. 4). The elevation of the area ranges from about 345 feet above mean sea level (amsl) on the top of the ridge on the northeast portion of the property to about 275 feet amsl in the stream valley south of the property (Ref. 27). The topography of this area is referred to as the Sand Hills, which consists of gently rolling to swampy flatlands (Ref. 24, p. 4).

Geologically, the area is underlain in descending stratigraphic order by: recent alluvial deposits, pleistocene alluvial deposits, and the Tuscaloosa Formation (Ref. 24, p. 36). The recent alluvial deposits that underlie the properties consist of four major soil types which include the Cowarts Sandy Loam, 2 to 5 percent slopes, the Cowarts Sandy Loam, 5 to 8 percent slopes, the Norfolk Sandy Loam, 0 to 2 percent slopes, and the Vaucluse-Urban Land Complex, 2 to 8 percent slopes. Generally, these soils are well drained, gently sloped, and acidic; and consist of sandy loams, sandy clay loams, and loamy sands. The total thickness of the soils on site is approximately 75 inches (Ref. 25, pp. 12, 13, 17, 19, 21, 22). The pleistocene alluvial deposits, which underlie the recent alluvial deposits, consist of unconsolidated sediments of interbedded clayey silts and silty clays which grade with depth into silty sands, and gravel (Ref. 24, pp. 9, 10). The depth of these deposits is usually less than 40 feet (Ref. 24, p. 36).

The Tuscaloosa Formation, which lies unconformably beneath the pleistocene alluvial deposits, consists of light-colored fine to coarse sand in some areas and is mingled with white kaolin, and in other areas is separated by lenticular and pure kaolin masses (Ref. 24, pp. 23, 36). The Tuscaloosa Formation is not well bedded, and the beds do not indicate regular or cyclic deposition; hence the basal part of the formation may be lithologically similar to the top (Ref. 24, p. 23). The base of the Tuscaloosa Formation dips slightly southeast at about 30 feet per mile (Ref. 24, p. 36). The Tuscaloosa Formation thickens southward and may be as deep as 600 feet (Ref. 24, p. 23).

Ground water in the area is available in a surficial aquifer system, consisting of the recent alluvium, pleistocene alluvium, and the Tuscaloosa Formation. Soils in this aquifer system range from moderate to low permeability (Refs. 24, pp. 9, 12; 25, pp. 12, 13, 17, 19, 21, 22). These three geologic units act as a recharge for the surficial aquifer located in the Tuscaloosa Formation. The Tuscaloosa Formation furnishes water to almost all drilled wells on the Coastal Plain of Bibb County (Ref. 24, p. 37). The hydraulic conductivity for the silty sands found in the Tuscaloosa is on the order of 10^{-3} centimeters per second (Refs. 1, p. 4; 24, p. 36; 26, p. 29). The regional flow direction for this aquifer is to the south-southeast towards Rocky Creek (Ref. 1, p. 6).

6.1.2 Ground Water Sampling Locations and Analytical Results

Five ground water samples, including one background sample, were collected from permanent monitoring wells installed in the surficial aquifer. The on-site monitoring wells that were sampled ranged in depth from 8.0 feet bgs to 16.3 feet bgs. The monitoring wells were purged and water quality readings were allowed to stabilize before ground water samples were collected (see Table 9 in Appendix B).

Ground water samples contained VOCs at elevated concentrations. Sample FML-313-MW contained 1,1-DCE at a concentration of 17 micrograms per liter (µg/L) and cis-1,2-DCE at a concentration of 840 µg/L. Sample FML-314-MW contained vinyl chloride at a concentration of 190 J µg/L, and sample FML-315-MW contained TCE at a concentration of 170 µg/L. Inorganic constituents and explosives were not detected at elevated concentrations in monitoring wells at and in the vicinity of the FMNOL and Armstrong remote landfill. See Table 10 in Appendix B for a full list of contaminants detected at elevated concentrations in ground water samples.

6.1.3 Ground Water Targets

Municipal water within the 4-mile radius is obtained from the MWA. The MWA maintains two surface water intakes along the Ocmulgee River, which are upstream of the landfills (Ref. 28). Some areas within the 4-mile radius are supplied drinking water by private wells. In 2007, one drinking water well, which serves residents at a mobile home park (MHP), was identified within 2 miles south of the FMNOL property. At that time, the Pine Acres MHP well served about 80 residents. Municipal water was available to about 160 residents in the Pine Acres MHP. The depth of the Pine Acres well is about 200 feet deep, and the well water undergoes chlorination treatment. At the time of the ESI report preparation, Tetra Tech was unable to verify whether the Pine Acres MHP well is still active (Refs. 27; 29).

6.1.4 Ground Water Conclusions

The ground water migration pathway is of some concern at the FMNOL site due to elevated concentrations of VOCs detected in ground water samples. One subsurface source sample, collected from the explosives demolition area, contained cis-1,2-DCE at an elevated concentration. Cis-1,2-DCE is a degradation product of TCE. Soil samples collected from source areas collected during the 1996 RUST and 1998 to 2000 SAIC investigations also contained VOCs at elevated concentrations (Refs. 1, Figure 5-2, Table 5-3, pp. 1, 2; 10, Figure 4-20, Table 4-9, pp. 4-65, 4-66, 4-67). Municipal water in the area is obtained from a surface water intake; however, the regional flow direction for the surficial aquifer is to the south-southeast toward Rocky Creek (Refs. 1, p. 6; 27). At the time of this ESI, attempts were made to verify whether the Pine Acres MHP well was still in use, but were unsuccessful.

6.2 SURFACE WATER MIGRATION PATHWAY

Tetra Tech collected 13 surface water and 17 sediment samples during the ESI from Rocky Creek and drainage ditches. Specifically, six surface water and six sediment samples were collected from Rocky Creek, and two surface water and four sediment samples were collected from drainage ditches that receive runoff from the FMNOL. Tetra Tech collected five (including one duplicate) background surface water samples collocated with five (including one duplicate) background sediment samples from Rocky Creek to attribute contaminants detected in on-site and downstream samples.

Surface water and sediment sampling locations are depicted on Figure 3 in Appendix A and are summarized in Tables 3 and 4 in Appendix B. Surface water and sediment sampling was conducted in

accordance with EPA Region 4 SESD Field Branch's Quality System and Technical Procedures (Ref. 13, SESDPROC-200-R1, SESDPROC-201-R1). Analytical results for surface water and sediment samples are summarized in Tables 11 through 19 in Appendix B. The complete set of analytical data sheets are provided in Appendices E and F.

6.2.1 Hydrologic Setting

Surface water runoff flows south-southeast from the FMNOL and Armstrong remote landfill into the drainage easement and HRS-eligible wetlands along Rocky Creek (Refs. 10, p. 3-29; 30; 31) (see Figure 2 in Appendix A). Rocky Creek flows east-southeast for about 1.5 miles before it converges with Tobesofkee Creek. Tobesofkee Creek flows south-southeast for about 4 miles before it converges with the Ocmulgee River, which flows for more than 9.5 miles, thus completing the 15-mile surface water migration pathway target distance limit (TDL) (Ref. 30). The southern halves of the FMNOL and Armstrong remote landfill properties are located in the 100-year flood plain of Rocky Creek (Ref. 32). The flow rate for Rocky Creek is estimated to be less than 10 cubic feet per second (cfs) (Ref. 33). Rocky Creek has several branches. Specific stream channels are difficult to discern due to extensive wetlands in the area. Also, ground water in the area flows to the south-southeast toward Rocky Creek (Ref. 1, pp. 5, 6). According to the U.S. Geological Survey, the flow rate for Tobesofkee Creek is about 91.2 cfs and the flow rate for the Ocmulgee River is about 1,082 cfs (Ref. 34).

6.2.2 Drainage Ditch Surface Water and Sediment Sampling Locations and Analytical Results

Tetra Tech collected two surface water and four sediment samples from drainage ditches that receive runoff from the FMNOL and Armstrong remote landfill during the ESI. In addition, Tetra Tech collected two background sediment samples (DD-502-SD and DD-503-SD) from a drainage ditch upgradient of the FMNOL and Armstrong remote landfill to attribute contaminants detected in samples that receive runoff (see Figure 3 in Appendix A). A surface water background sample was not collected for the drainage ditches because surface water was not present in drainage ditches upgradient of the FMNOL and Armstrong remote landfill sites. Therefore, the contaminants detected in the surface water samples collected from the drainage ditches could not be evaluated as being elevated above background. The highest concentrations of contaminants detected in surface water samples collected from the drainage ditches include: gamma-chlordane (0.15 µg/L), PCB-1248 (2.2 µg/L), and total lead (6.2 J[1] µg/L) (see Table 11 in Appendix B).

Sediment samples collected from drainage ditches that receive runoff from the FMNOL and Armstrong remote landfill contained elevated concentrations of SVOCs, pesticides, PCBs, and metals. Sediment sample DD-509-SD, collected near the explosives demolition area, contained benzo(a)anthracene (910 µg/kg), benzo(a)pyrene (1,500 µg/kg), and endrin (17 µg/kg) at elevated concentrations. Sediment sample DD-508-SD, collected north of the FMNOL, contained DDD at a concentration of 34 µg/kg, DDE at a concentration of 230 µg/kg, DDT at a concentration of 210 J µg/kg, alpha-chlordane at a concentration of 27 µg/kg, methoxychlor at a concentration of 24 µg/kg, PCB-1248 at a concentration of 14,000 J- µg/kg, and PCB-1260 at a concentration of 750 µg/kg. Sediment sample DD-514-SD, collected north of PPE 2, contained elevated concentrations of gamma-BHC (Lindane) (8.5 µg/kg) and gamma-chlordane (72 µg/kg), cadmium (12 mg/kg), and mercury (0.63 J- mg/kg). See Tables 11 through 13 in Appendix B for a full list of contaminants detected at elevated concentrations in surface water and sediment samples collected from drainage ditches that receive runoff from the FMNOL and the Armstrong remote landfill.

6.2.3 Rocky Creek Surface Water and Sediment Sampling Locations and Analytical Results

Tetra Tech collected six collocated surface water and sediment samples from Rocky Creek adjacent to and downstream from the FMNOL and Armstrong remote landfill during the ESI. In addition, Tetra Tech collected five (including one duplicate) collocated background surface water and sediment samples upstream from the FMNOL and Armstrong remote landfill to attribute contaminants detected in downstream samples (see Figure 3 in Appendix A). The highest background concentration for each constituent detected in surface water and sediment samples was used for comparison to downstream samples. See Table 14 in Appendix B for background surface water analytical results and Tables 16 and 18 in Appendix B for background sediment analytical results.

Analytical results for surface water samples collected from Rocky Creek did not contain any constituents at elevated concentrations (see Table 15 in Appendix B). Analytical results for sediment samples collected from Rocky Creek downstream from the FMNOL and Armstrong remote landfill contained elevated concentrations of pesticides, PCBs, and metals. Sediment sample RC-408-SD, collected at PPE 3, contained the highest concentrations of DDE (77 µg/kg), DDT (72 µg/kg), alpha-chlordane (9.9 µg/kg), gamma-chlordane (94 µg/kg), PCB-1248 (7,800 µg/kg), cadmium (15 mg/kg), and mercury (1.9 mg/kg). Sediment sample RC-406-SD, collected at PPE 2, contained PCB-1254 at a concentration of 140 µg/kg. See Tables 15, 17, and 19 in Appendix B for a full list of contaminants detected at elevated concentrations

in surface water and sediment samples collected from Rocky Creek downstream from the FMNOL and the Armstrong remote landfill.

6.2.4 Surface Water Targets

No drinking water intakes are located along the 15-mile surface water migration pathway TDL. The MWA maintains two surface water intakes along the Ocmulgee River, which are upstream of the landfills. MWA's primary intake is located on a newly constructed reservoir, Javors Lucas Lake, created from the Ocmulgee River. MWA's secondary intake is located about 2 miles upstream of the I-16 Bridge (Ref. 28). The Rocky Creek Water Reclamation Facility, located east of the FMNOL, provides water treatment for the southern and western portions of the City of Macon. Treated wastewater from this facility is discharged into the Ocmulgee River (Ref. 45, p. 1). Rocky Creek, Tobesofkee Creek, and the Ocmulgee River are all fished recreationally, where accessible to the public; fish are also harvested for consumption (Refs. 33). Rocky Creek, Tobesofkee Creek, and the Ocmulgee River are designated as fisheries by the State of Georgia (Refs. 41, p. 2; 42, Appendix A, pp. A-78, A-80; 44, p. 4-14). The USACE has posted signs advising fishermen that the fish in Rocky Creek contain PCBs and the State of Georgia has issued fish consumption guidelines for the Ocmulgee River as a result of PCB and mercury contamination (Ref. 43, p. 39). In 2007, GAEPD personnel observed people fishing in Rocky Creek (Ref. 5, p. 9). Also, during the ESI sampling event conducted during the week of May 11, 2009, Tetra Tech observed fishing paraphernalia, including fishing line and a weight, along Rocky Creek (see the Photographic Log in Appendix D).

HRS eligible, palustrine forested, palustrine scrub-shrub, and palustrine emergent wetlands are located in the southern halves of the FMNOL and Armstrong remote landfill properties, along Rocky Creek, Tobesofkee Creek, and the Ocmulgee River (Ref. 31). The wetland frontages for the water bodies along the 15-mile surface water migration pathway are as follows: Rocky Creek, about 3 miles; Tobesofkee Creek, about 8 miles; and the Ocmulgee River, about 15 miles (Refs. 30; 31). There are no state or federally designated threatened or endangered fish species that inhabit water bodies in Bibb County; however, the bald eagle *(Haliaeetus leucocephalus)*, the wood stork *(Mycteria Americana)*, and the gopher tortoise *(Gopherus polyphemus)* are listed as endangered or threatened species in Bibb County, although, specific habitat locations are not known (Ref. 35).

6.2.5 Surface Water Conclusions

The surface water migration pathway is the primary pathway of concern for the landfills. Source samples collected from the landfills contained elevated concentrations of pesticides, PCBs, and metals in soil. Analysis of sediment samples collected from drainage ditches that receive runoff from the landfills and Rocky Creek also contained elevated concentrations of pesticides, PCBs, and metals. The highest concentrations of hazardous substances detected in drainage ditch samples were collected from the Armstrong drainage easement. The highest concentrations of hazardous substances detected in Rocky Creek samples were collected downstream from the FMNOL and Armstrong remote landfill, before the Rocky Creek Water Reclamation Facility. Rocky Creek is fished downstream of the FMNOL and Armstrong remote landfill, and the fish are consumed. Advisories of PCB contamination in fish have been issued for Rocky Creek.

6.3 SOIL EXPOSURE AND AIR MIGRATION PATHWAYS

All soil samples collected during this investigation are discussed in Section 5.0 Source Sampling of this report. No soil samples were collected from residential properties. Disposal activities have ceased at both landfills, so no workers are expected to come into contact with the landfills on a regular basis.

Both of the FMNOL and Armstrong remote landfill properties are zoned for heavy industrial use (Refs. 3, pp. 10, 12; 7, pp. 3, 5). No residences or buildings are located on the FMNOL or Armstrong remote landfill properties. Both of the landfill properties were overgrown with vegetation during the sampling event; therefore, it was necessary to cut paths to access the sampling locations. Based on the U.S. Bureau of the Census 2000 population data, the residential population within a 4-mile radius is distributed as follows: 0 to 0.25 mile, 0 persons; 0.25 to 0.50 mile, 4 persons; 0.50 to 1.0 mile, 275 persons; 1.0 to 2.0 miles, 5,817 persons; 2.0 to 3.0 miles, 11,408 persons; and 3.0 to 4.0 miles, 20,485 persons (Ref. 36). The U.S. Fish and Wildlife Service list the bald eagle *(Haliaeetus leucocephalus)*, the red-cockaded woodpecker *(Picoides borealis)*, the wood stork *(Mycteria Americana)*, and the gopher tortoise *(Gopherus polyphemus)* as endangered or threatened species in Bibb County; however, specific habitat locations are not known (Ref. 35).

7.0 SUMMARY AND CONCLUSIONS

The FMNOL and Armstrong remote landfill are located in a primarily industrial area of Macon, Bibb County, Georgia, and encompasses about 20 acres of land (combined). The 15-acre FMNOL was reportedly used for disposal of wastes and ordnance, as well as used parts and construction debris throughout the operational history of the MNOP site. An explosives demolition area, located near the toe of the landfill, was used for testing and demolishing explosives, primarily detonators, flares, and primers manufactured at the MNOP. Flammable materials were reportedly burned in this area as well. Armstrong began disposing of general and industrial trash, old equipment, and excess bark and scrap wood in the 5-acre remote landfill in the mid-1960s. From 1969 to 1970, Armstrong manufactured ceiling tiles that were coated with a formulation containing PCB-1254; however, Armstrong representatives have stated that these ceiling tiles were not manufactured at the Macon plant, nor were they ever recycled there. According to Armstrong representatives, the possible sources of PCB contamination are recycled raw materials and recycled newsprint with older dye formulations. In 1971, a new WWTP outfitted with two large coil filters that removed excess fiber from the WWTP influent was constructed. The fibrous material removed by the coil filters was subsequently disposed of in either the Armstrong remote landfill or the newly constructed WWTP landfill. An analysis of aerial photographs taken over a 50-year period from 1938 to 1988 indicates that between 1975 and 1988 the Armstrong remote landfill and the FMNOL appear to be one large landfill.

Surface and subsurface soil samples collected from source areas contained cis-1,2-DCE, benzo(a)anthracene, benzo(a)pyrene, dibenzo(a,h)anthracene, DDD, DDE, DDT, alpha-chlordane, gamma-chlordane, PCB-1248, PCB-1254, PCB-1260, cadmium, chromium, lead, mercury, and nickel. The highest concentrations of hazardous substances were detected in source samples collected from the area south of the landfills and north of Rocky Creek.

Analytical results for ground water samples collected on site indicated the presence of VOCs at elevated concentrations, including 1,1-DCE, cis-1,2-DCE, TCE, and vinyl chloride. The highest concentrations of VOCs in ground water were detected in samples collected from the area north of PPE 2 and Rocky Creek. Municipal water in the area is obtained from a surface water intake; however, the regional flow direction for the surficial aquifer is to the south-southeast toward Rocky Creek.

Sediment samples collected from drainage ditches that receive runoff from the FMNOL and Armstrong remote landfill contained elevated concentrations of benzo(a)anthracene, benzo(a)pyrene, DDD, DDE,

DDT, alpha-chlordane, PCB-1248, PCB-1260, cadmium, and mercury. The highest concentrations of hazardous substances were detected in drainage ditch samples collected from the Armstrong drainage easement.

Analytical results for sediment samples collected from Rocky Creek indicated the presence of elevated concentrations of DDE, DDT, alpha-chlordane, PCB-1248, PCB-1254, cadmium, and mercury. The highest concentrations of hazardous substances were detected in Rocky Creek samples collected downstream from the FMNOL and Armstrong remote landfill, before the Rocky Creek Water Reclamation Facility. No drinking water intakes are located along the 15-mile surface water migration pathway TDL. Rocky Creek, Tobesofkee Creek, and the Ocmulgee River are all fished recreationally, where accessible to the public; fish are also harvested for consumption. HRS eligible, palustrine forested, palustrine scrub-shrub, and palustrine emergent wetlands are located in the southern half of the FMNOL and Armstrong remote landfill properties and along Rocky Creek.

Based on the analytical results of the ground water samples collected on site and the sediment samples collected from drainage ditches and Rocky Creek, Tetra Tech recommends further action at the FMNOL site at the discretion of EPA.

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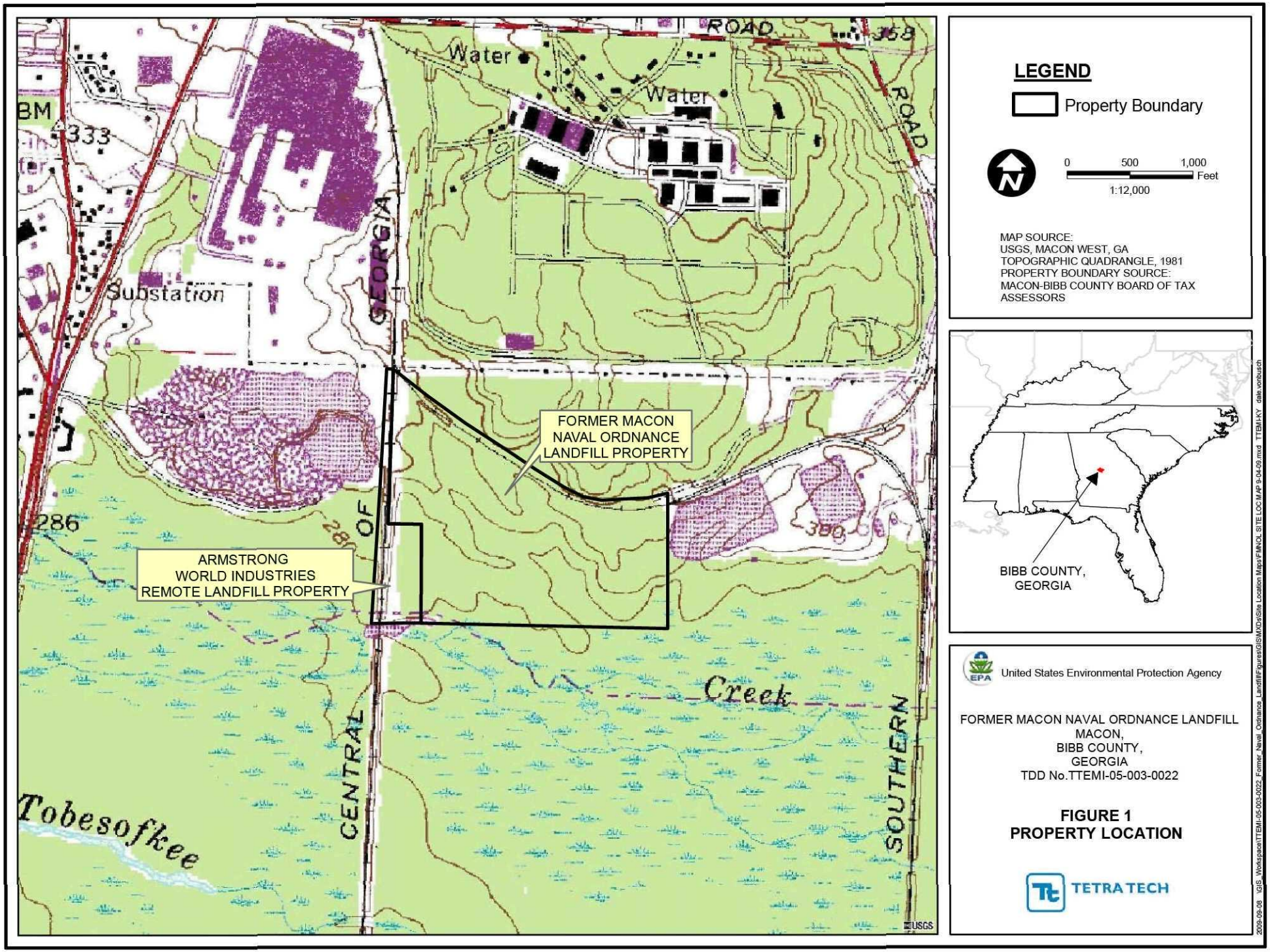
APPENDIX A

FIGURES

(Three Pages)

FIGURE

1 PROPERTY LOCATION
2 SURROUNDING PROPERTIES
3 SAMPLING LOCATIONS AND SELECTED ELEVATED ANALYTICAL RESULTS



LEGEND

Property Boundary

0 500 1,000 Feet

1:12,000

MAP SOURCE:
USGS, MACON WEST, GA
TOPOGRAPHIC QUADRANGLE, 1981
PROPERTY BOUNDARY SOURCE:
MACON-BIBB COUNTY BOARD OF TAX ASSESSORS

United States Environmental Protection Agency

FORMER MACON NAVAL ORDNANCE LANDFILL
MACON,
BIBB COUNTY,
GEORGIA
TDD No.TTEMI-05-003-0022

FIGURE 1
PROPERTY LOCATION

TETRA TECH

2009-09-08 IGIS_Workspace\TTEMI-05-003-0022_Former_Naval_Ordnance_Landfill\Figures\GIS\MXDs\Site Location Maps\FMNOL SITE LOC MAP 9-04-09.mxd TTEMI-KY dale.vonbusch

GUY PAINE ROAD
BROADWAY
ARMSTRONG WORLD INDUSTRIES
ALLIED INDUSTRIAL PARK
GEORGIA POWER
YANCY BROTHERS
LAFARGE INDUSTRIES SAND QUARRY
GRAPHIC PACKAGING INTERNATIONAL
ROCKY CREEK WATER RECLAMATION FACILITY
ARMSTRONG WORLD INDUSTRIES REMOTE LANDFILL PROPERTY
FORMER MACON NAVAL ORDNANCE LANDFILL PROPERTY
Rocky Creek
Rocky Creek
Rocky Creek
Abandoned Central of Georgia Railroad Tracks
Norfolk Southern Railroad Tracks
DIGITALGLOBE
Image © 2007 DigitalGlobe
LEGEND
Subject Property Boundaries
Adjacent Property
Creek
Drainage Ditch
Drainage Easement
Armstrong World Industries Remote Landfill
FMNOL
Notes:
FMNOL - Former Macon Naval Ordnance Landfill
Source:
Aerial Photograph: DigitalGlobe/Globe Explorer, 2004
Property Boundaries: Macon-Bibb County, Board of Tax Assessors
0 400 800
Feet
1:9,600
United States Environmental Protection Agency
FORMER MACON NAVAL ORDNANCE LANDFILL
MACON,
BIBB COUNTY,
GEORGIA
TDD No.TTEMI-05-003-0022
FIGURE 2
SURROUNDING PROPERTIES
TETRA TECH

APPENDIX B

TABLES

(60 Pages)

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6 INORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES
7 ORGANIC ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES (1 TO 2 FEET BGS)
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13 DRAINAGE DITCHES – INORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES
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15 ROCKY CREEK – ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES
16 ROCKY CREEK – ORGANIC ANALYTICAL RESULTS FOR BACKGROUND SEDIMENT SAMPLES
17 ROCKY CREEK – ORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES
18 ROCKY CREEK – INORGANIC ANALYTICAL RESULTS FOR BACKGROUND SEDIMENT SAMPLES
19 ROCKY CREEK – INORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES

TABLE 1
EXPANDED SITE INSPECTION
SURFACE AND SUBSURFACE SOIL SAMPLING LOCATIONS AND RATIONALE

Station ID	Sample ID	Depth (inches bgs)	Sample Type	Location	Rationale
AIP100	AIP-100-SF	0 to 6	Grab	Background location, northeastern corner of AIP	Background soil sample for comparison to on-site sample results
	AIP-100-SB	12 to 24			
FML300	FML-300-SF	0 to 6	Grab	Area surrounding the landfills, north of the FMNOL	Determine the presence or absence of hazardous substances
	FML-300-SB	12 to 24			
FML301	FML-301-SF	0 to 6	Grab	Area surrounding the landfills, northeast of the FMNOL	Determine the presence or absence of hazardous substances
	FML-301-SB	12 to 24			
FML302	FML-302-SF	0 to 6	Grab	Southeastern portion of the FMNOL	Determine the presence or absence of hazardous substances
	FML-302-SB	12 to 24			
FML303	FML-303-SF	0 to 6	Grab	Explosives demolition area	Determine the presence or absence of hazardous substances
	FML-303-SB	12 to 24			
FML304	FML-304-SF	0 to 6	Grab	Area surrounding the landfills, south of the FMNOL	Determine the presence or absence of hazardous substances
	FML-304-SB	12 to 24			
FML305	FML-305-SF	0 to 6	Grab	Area surrounding the landfills, south of the FMNOL	Determine the presence or absence of hazardous substances
	FML-305-SB	12 to 24			
FML306	FML-306-SF	0 to 6	Grab	Between the FMNOL and the Armstrong Remote Landfill	Determine the presence or absence of hazardous substances
	FML-306-SB	12 to 24			
FML307	FML-307-SF	0 to 6	Grab	Center portion of the FMNOL	Determine the presence or absence of hazardous substances
	FML-307-SB	12 to 24			
FML308	FML-308-SF	0 to 6	Grab	Area surrounding the landfills, south of the FMNOL	Determine the presence or absence of hazardous substances
	FML-308-SB	12 to 24			
FML309	FML-309-SF	0 to 6	Grab	Area surrounding the landfills, south of the FMNOL	Determine the presence or absence of hazardous substances
	FML-309-SF-DUP				
	FML-309-SB	12 to 24			
FML310	FML-310-SF	0 to 6	Grab	North of the Armstrong remote landfill	Determine the presence or absence of hazardous substances
AWI213	AWI-213-SF	0 to 6	Grab	Northern portion of the Armstrong remote landfill	Determine the presence or absence of hazardous substances
	AWI-213-SB	12 to 24			

TABLE 1
EXPANDED SITE INSPECTION
SURFACE AND SUBSURFACE SOIL SAMPLING LOCATIONS AND RATIONALE

Station ID	Sample ID	Depth (inches bgs)	Sample Type	Location	Rationale
AWI214	AWI-214-SF	0 to 6	Grab	Southern portion of the Armstrong remote landfill	Determine the presence or absence of hazardous substances
	AWI-214-SB	12 to 24			
AWI215	AWI-215-SF	0 to 6	Grab	Between the Armstrong remote landfill and Rocky Creek	Determine the presence or absence of hazardous substances
	AWI-215-SB	12 to 24			
AWI216	AWI-216-SF	0 to 6	Grab	Between the Armstrong remote landfill and Rocky Creek	Determine the presence or absence of hazardous substances
	AWI-216-SB	12 to 24			

Notes:

AIP	Allied Industrial Park
AWI	Armstrong World Industries
bgs	Below ground surface
FML	Former Macon Naval Ordnance Landfill
FMNOL	Former Macon Naval Ordnance Landfill
ID	Identification
SB	Subsurface soil
SF	Surface soil

TABLE 2
EXPANDED SITE INSPECTION
GROUND WATER SAMPLING LOCATIONS AND RATIONALE

Station ID	Sample ID	USACE Well ID	Depth of Well (feet bgs)	Sample Type	Location	Rationale
AIP148	AIP-148-MW	MW-30	43.33	Grab	Background monitoring well location, northeast corner of AIP	Background ground water sample for comparison to on-site sample results
FML312	FML-312-MW	MW-7	9.1	Grab	North of PPE 1, west of the Armstrong drainage easement	To assess whether on-site contamination is affecting underlying ground water
FML313	FML-313-MW	MW-9	8.0	Grab	North of PPE 2, east of Drainage Ditch 3	To assess whether on-site contamination is affecting underlying ground water
FML314	FML-314-MW	MW-10	8.3	Grab	North of PPE 2, east of Drainage Ditch 3	To assess whether on-site contamination is affecting underlying ground water
FML315	FML-315-MW	MW-19	16.1	Grab	North of Rocky Creek, between PPE 2 and PPE 3	To assess whether on-site contamination is affecting underlying ground water

Notes:

AIP	Allied Industrial Park
bgs	Below ground surface
FML	Former Macon Naval Ordnance Landfill
ID	Identification
MW	Monitoring Well
PPE	Probable point of entry
USACE	U.S. Army Corps of Engineers

TABLE 3
EXPANDED SITE INSPECTION
DRAINAGE DITCHES
SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS AND RATIONALE

Station ID	Sample ID	Depth (inches bgs)	Sample Type	Location	Rationale
Drainage Ditch 2					
DD502	DD-502-SD	0 to 3	Grab	Background location, AIP western boundary drainage	Background sample for comparison to downgradient sample results.
DD503	DD-503-SD	0 to 3	Grab	Background location, AIP western boundary drainage	Background sample for comparison to downgradient sample results.
DD508	DD-508-SW	0 to 3	Grab	Drainage easement that receives drainage from AIP, Armstrong, FMNOL	To assess whether on-site contaminants have entered drainage pathways to Rocky Creek
	DD-508-SD				
DD509	DD-509-SD	0 to 3	Grab	Drainage easement that receives drainage from AIP, Armstrong, FMNOL	To assess whether on-site contaminants have entered drainage pathways to Rocky Creek
DD510	DD-510-SD	0 to 3	Grab	Drainage easement that receives drainage from AIP, Armstrong, FMNOL	To assess whether on-site contaminants have entered drainage pathways to Rocky Creek
Drainage Ditch 3					
DD514	DD-514-SW	NA	Grab	Receives drainage from AIP, Armstrong, FMNOL, north of Rocky Creek	To assess whether on-site contaminants have entered drainage pathways to Rocky Creek
	DD-514-SD	0 to 3	Grab		

TABLE 3
EXPANDED SITE INSPECTION
DRAINAGE DITCHES
SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS AND RATIONALE

Notes:

AIP	Allied Indusrial Park
Armstrong	Armstrong World Industries
bgs	Below ground surface
DD	Drianage ditch
FMNOL	Former Macon Naval Ordnance Landfill
ID	Identification
NA	Not applicable
SD	Sediment
SW	Surface water

TABLE 4
EXPANDED SITE INSPECTION
ROCKY CREEK
SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS AND RATIONALE

Station ID	Sample ID	Depth (inches bgs)	Sample Type	Location	Rationale
RC400	RC-400-SW	NA	Grab	Background location, upstream, east of Broadway, south branch	To assess whether on-site contamination has migrated to Rocky Creek
	RC-400-SD	0 to 3			
RC401	RC-401-SW	NA	Grab	Background location, upstream, east of Broadway, north branch	To assess whether on-site contamination has migrated to Rocky Creek
	RC-401-SD	0 to 3			
RC402	RC-402-SW	NA	Grab	Background location, upstream, between Broadway and Central of Georgia railroad tracks	To assess whether on-site contamination has migrated to Rocky Creek
	RC-402-SD	0 to 3			
RC403	RC-403-SW	NA	Grab	Background location, west of Central of Georgia railroad tracks and Armstrong remote landfill	To assess whether on-site contamination has migrated to Rocky Creek
	RC-403-SW-DUP				
	RC-403-SD	0 to 3			
	RC-403-SD-DUP				
RC404	RC-404-SW	NA	Grab	East of Central of Georgia railroad tracks, south of Armstrong remote landfill	To assess whether on-site contamination has migrated to Rocky Creek
	RC-404-SD	0 to 3			
RC405	RC-405-SW	NA	Grab	Downstream from PPE 1	To assess whether on-site contamination has migrated to Rocky Creek
	RC-405-SD	0 to 3			
RC406	RC-406-SW	NA	Grab	At PPE 2	To assess whether on-site contamination has migrated to Rocky Creek
	RC-406-SD	0 to 3			

TABLE 4
EXPANDED SITE INSPECTION
ROCKY CREEK
SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS AND RATIONALE

Station ID	Sample ID	Depth (inches bgs)	Sample Type	Location	Rationale
RC407	RC-407-SW	NA	Grab	Between PPE 2 and PPE 3	To assess whether on-site contamination has migrated to Rocky Creek
	RC-407-SD	0 to 3			
RC408	RC-408-SW	NA	Grab	At PPE 3	To assess whether on-site contamination has migrated to Rocky Creek
	RC-408-SD	0 to 3			
RC409	RC-409-SW	NA	Grab	Downstream of PPE 3	To assess whether on-site contamination has migrated to Rocky Creek
	RC-409-SD	0 to 3			

Notes:

bgs	Below ground surface
DUP	Duplicate
ID	Identification
NA	Not applicable
PPE	Probable point of entry
RC	Rocky Creek
SD	Sediment
SW	Surface water

TABLE 5
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SF	Area North of the FMNOL FML-300-SF	Area North of the FMNOL FML-301-SF	Former Macon Naval Ordnance Landfill FML-302-SF	Explosives Demolition Area FML-303-SF	Area South of the FMNOL FML-304-SF
Volatile Organic Compounds (µg/kg)							
Acetone	610,000,000	81 J	R	R	6.7 U	23	R
Semivolatile Organic Compounds (µg/kg)							
(3-and/or 4-)Methylphenol	3,100,000	200 U	200 U	230 U	200 U	220 U	5,500 U
Acenaphthene	33,000,000	49 J[1]	200 U	230 U	200 U	220 U	5,500 U
Acenaphthylene	NE	200 U	200 U	230 U	200 U	220 U	5,500 U
Acetophenone	100,000,000	200 U	200 U	82 J[1]	200 U	220 U	5,500 U
Anthracene	170,000,000	56 J[1]	200 UJ	51 J[1]	200 UJ	220 UJ	5,500 U
Benzaldehyde	100,000,000	200 U	200 U	230 U	200 U	220 U	5,500 U
Benzo(a)anthracene	2,100	270	110 J[1]	350	58 J[1]	130 J[1]	5,500 U
Benzo(a)pyrene	210	290	120 J[1]	560	75 J[1]	180 J[1]	890 J[1]
Benzo(b)fluoranthene	2,100	360	140 J[1]	520	79 J[1]	280	5,500 U
Benzo(g,h,i)perylene	NE	140 J[1]	200 U	270	200 U	120 J[1]	1,300 J[1]
Benzo(k)fluoranthene	21,000	320 J	130 J[1]	290	59 J[1]	190 J[1]	5,500 U
Bis(2-ethylhexyl) phthalate	120,000	200 UJ	200 U	**310**	200 UJ	**2,600 J**	5,500 UJ
Carbazole	NE	90 J[1]	200 U	230 U	200 UJ	220 UJ	5,500 U
Chrysene	210,000	330	130 J[1]	560	82 J[1]	200 J[1]	690 J[1]
Dibenzo(a,h)anthracene	210	50 J[1]	200 U	69 J[1]	200 U	49 J[1]	5,500 U
Di-n-octylphthalate	NE	200 U	200 U	230 U	200 U	220 U	5,500 UJ
Fluoranthene	22,000,000	630	240	480	120 J[1]	250	5,500 U
Indeno(1,2,3-cd) pyrene	2,100	180 J[1]	69 J[1]	160 J[1]	43 J[1]	110 J[1]	5,500 U
Phenanthrene	NE	360	100 J[1]	210 J[1]	74 J[1]	100 J[1]	5,500 U
Pyrene	17,000,000	500	200 U	470	200 U	240	5,500 U
Pesticides (µg/kg)							
4,4'-DDD (p,p'-DDD)	7,200	3.8 U	4.0 U	4.4 U	3.8 U	4.2 U	6.5 J[1]
4,4'-DDE (p,p'-DDE)	5,100	5.7	3.5 J[1]	**62**	4.2	7.5	11 U
4,4'-DDT (p,p'-DDT)	7,000	9.5	7.1	40 U	5.5 U	18	11 U
alpha-Chlordane	6,500[a]	2.0 U	2.0 U	**9.3**	2.0 U	**2.4**	5.5 U

TABLE 5
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level	Background	Area North of the FMNOL		Former Macon Naval Ordnance Landfill	Explosives Demolition Area	Area South of the FMNOL
	Industrial Soil	AIP-100-SF	FML-300-SF	FML-301-SF	FML-302-SF	FML-303-SF	FML-304-SF
Pesticides (µg/kg)							
beta-BHC	960	2.0 U	2.0 U	**16**	2.3 U	2.2 U	5.5 U
Dieldrin	110	2.4 J[1]	1.0 J[1]	39 U	3.8 U	8.5 U	11 U
Endosulfan Sulfate	3,700,000[b]	3.8 U	4.0 U	4.4 U	3.8 U	4.2 U	11 U
Endrin	180,000	3.8 U	4.0 U	4.4 U	1.0 J[1]	4.2 U	11 U
Endrin aldehyde	NE	3.8 U	4.0 U	**13**	3.8 U	4.2 U	11 U
Endrin ketone	NE	3.8 U	4.0 U	4.4 U	3.8 U	4.2 U	11 U
gamma-BHC (Lindane)	2,100	2.0 U	2.0 U	2.3 U	2.0 U	2.2 U	3.7 J[1]
gamma-Chlordane	6,500[a]	2.0 U	0.75 J[1]	4.5 U	**2.4**	**5.6**	**36**
Heptachlor	380	2.0 U	2.0 U	2.3 U	2.0 U	2.2 U	5.5 U
Heptachlor epoxide	190	0.51 J[1]	2.0 U	15 U	2.0 U	2.4 U	5.5 U
Polychlorinated Biphenyls (µg/kg)							
PCB-1248 (Aroclor 1248)	740	38 UJ	40 UJ	**2,000 J-**	**100 J-**	**180 J-**	**1,200**
PCB-1254 (Aroclor 1254)	740	21 J[1]	40 U	**1,500**	61	**180**	110 U
PCB-1260 (Aroclor 1260)	740	68	40 U	**270**	24 J[1]	81	110 U

TABLE 5
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SF	Area South of the FMNOL FML-305-SF	Area South of the FMNOL FML-306-SF	Former Macon Naval Ordnance Landfill FML-307-SF	Area South of the FMNOL FML-308-SF	Area South of the FMNOL FML-309-SF
Volatile Organic Compounds (µg/kg)							
Acetone	610,000,000	81 J	R	R	4.1 UJ	R	R
Semivolatile Organic Compounds (µg/kg)							
(3-and/or 4-)Methylphenol	3,100,000	200 U	3,300 U	260 U	190 U	5,700 U	**3,400**
Acenaphthene	33,000,000	49 J[1]	3,300 U	260 U	190 U	5,700 U	1,000 U
Acenaphthylene	NE	200 U	3,300 U	95 J[1]	190 U	5,700 U	1,000 U
Acetophenone	100,000,000	200 U	3,300 U	260 U	190 U	5,700 U	1,000 U
Anthracene	170,000,000	56 J[1]	3,300 U	120 J[1]	190 UJ	5,700 U	1,000 U
Benzaldehyde	100,000,000	200 U	3,300 U	260 U	190 U	5,700 U	160 J[1]
Benzo(a)anthracene	2,100	270	3,300 U	410	190 U	5,700 U	1,000 U
Benzo(a)pyrene	210	290	420 J[1]	540	190 U	5,700 U	1,000 U
Benzo(b)fluoranthene	2,100	360	3,300 U	770	190 U	5,700 U	1,000 U
Benzo(g,h,i)perylene	NE	140 J[1]	720 J[1]	150 J[1]	190 UJ	960 J[1]	320 J[1]
Benzo(k)fluoranthene	21,000	320 J	3,300 U	500	190 U	5,700 U	1,000 U
Bis(2-ethylhexyl) phthalate	120,000	200 UJ	3,300 UJ	**25,000**	190 UJ	5,700 UJ	1,000 UJ
Carbazole	NE	90 J[1]	3,300 U	260 U	190 UJ	5,700 U	1,000 U
Chrysene	210,000	330	3,300 U	500	190 U	5,700 U	150 J[1]
Dibenzo(a,h)anthracene	210	50 J[1]	3,300 U	59 J[1]	190 UJ	5,700 U	1,000 U
Di-n-octylphthalate	NE	200 U	3,300 UJ	260 U	190 U	5,700 UJ	1,000 UJ
Fluoranthene	22,000,000	630	3,300 U	570	190 U	5,700 U	1,000 U
Indeno(1,2,3-cd) pyrene	2,100	180 J[1]	3,300 U	140 J[1]	190 UJ	5,700 U	1,000 U
Phenanthrene	NE	360	3,300 U	92 J[1]	190 U	5,700 U	1,000 U
Pyrene	17,000,000	500	3,300 U	510	190 U	5,700 U	1,000 U
Pesticides (µg/kg)							
4,4'-DDD (p,p'-DDD)	7,200	3.8 U	6.3 U	5.0 U	3.6 U	11 U	20 U
4,4'-DDE (p,p'-DDE)	5,100	5.7	6.3 U	**29**	3.6 U	11 U	20 U
4,4'-DDT (p,p'-DDT)	7,000	9.5	6.3 U	**55**	3.6 U	11 U	20 U
alpha-Chlordane	6,500[a]	2.0 U	3.3 U	**5.4**	1.9 U	5.6 U	10 U

TABLE 5
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level	Background	Area South of the FMNOL		Former Macon Naval Ordnance Landfill	Area South of the FMNOL	
	Industrial Soil	AIP-100-SF	FML-305-SF	FML-306-SF	FML-307-SF	FML-308-SF	FML-309-SF
Pesticides (µg/kg)							
beta-BHC	960	2.0 U	3.3 U	2.6 U	1.9 U	5.6 U	10 U
Dieldrin	110	2.4 J[1]	6.3 U	5.0 U	1.1 J[1]	11 U	20 U
Endosulfan Sulfate	3,700,000[b]	3.8 U	2.4 J[1]	5.0 U	3.6 U	11 U	20 U
Endrin	180,000	3.8 U	6.3 U	5.0 U	3.6 U	11 U	20 U
Endrin aldehyde	NE	3.8 U	6.3 U	5.0 U	3.6 U	11 U	20 U
Endrin ketone	NE	3.8 U	6.3 U	3.2 J[1]	3.6 U	11 U	20 U
gamma-BHC (Lindane)	2,100	2.0 U	3.3 U	2.6 U	1.9 U	5.6 U	10 U
gamma-Chlordane	6,500[a]	2.0 U	**8.0**	**4.7**	1.9 U	**19**	10 U
Heptachlor	380	2.0 U	3.3 U	1.0 J[1]	1.9 U	5.6 U	10 U
Heptachlor epoxide	190	0.51 J[1]	3.3 U	1.4 J[1]	0.49 J[1]	5.6 U	10 U
Polychlorinated Biphenyls (µg/kg)							
PCB-1248 (Aroclor 1248)	740	38 UJ	**240**	50 UJ	11 J[1]	**470**	91 J[1]
PCB-1254 (Aroclor 1254)	740	21 J[1]	63 U	50 U	9.0 J[1]	110 U	200 U
PCB-1260 (Aroclor 1260)	740	68	63 U	50 U	36 U	110 U	200 U

TABLE 5
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SF	Area South of the FMNOL FML-309-SF-DUP	North of the Armstrong Remote Landfill FML-310-SF	Northern Portion of the Armstrong Remote Landfill AWI-213-SF	Southern Portion of the Armstrong Remote Landfill AWI-214-SF	Between the Armstrong Remote Landfill and Rocky Creek AWI-215-SF
Volatile Organic Compounds (µg/kg)							
Acetone	610,000,000	81 J	R	3.9 UJ	R	19 U	25 U
Semivolatile Organic Compounds (µg/kg)							
(3-and/or 4-)Methylphenol	3,100,000	200 U	**2,800**	200 U	220 U	220 U	2,500 U
Acenaphthene	33,000,000	49 J[1]	980 U	200 U	220 U	220 U	2,500 U
Acenaphthylene	NE	200 U	980 U	200 U	220 U	220 U	2,500 U
Acetophenone	100,000,000	200 U	980 U	200 U	220 U	220 U	2,500 U
Anthracene	170,000,000	56 J[1]	980 U	200 UJ	220 U	220 U	2,500 U
Benzaldehyde	100,000,000	200 U	220 J[1]	200 U	220 U	220 U	2,500 U
Benzo(a)anthracene	2,100	270	980 U	61 J[1]	130 J[1]	200 J[1]	1,200 J[1]
Benzo(a)pyrene	210	290	220 J[1]	61 J[1]	250	460	**3,600**
Benzo(b)fluoranthene	2,100	360	980 U	75 J[1]	130 J[1]	190 J[1]	1,100 J[1]
Benzo(g,h,i)perylene	NE	140 J[1]	370 J[1]	200 U	440	**780**	**6,800**
Benzo(k)fluoranthene	21,000	320 J	980 U	61 J[1]	70 J[1]	89 J[1]	490 J[1]
Bis(2-ethylhexyl) phthalate	120,000	200 UJ	1,500 J	1,200 J	**83,000 J**	**43,000 J**	**6,200 J**
Carbazole	NE	90 J[1]	980 U	200 UJ	220 U	220 U	2,500 U
Chrysene	210,000	330	170 J[1]	67 J[1]	210 J[1]	380	2300 J[1]
Dibenzo(a,h)anthracene	210	50 J[1]	980 U	200 U	97 J[1]	180 J[1]	1,300 J[1]
Di-n-octylphthalate	NE	200 U	980 UJ	**200**	220 UJ	220 UJ	2,500 UJ
Fluoranthene	22,000,000	630	980 U	140 J[1]	160 J[1]	160 J[1]	2,500 U
Indeno(1,2,3-cd) pyrene	2,100	180 J[1]	980 U	47 J[1]	160 J[1]	250	1,600 J[1]
Phenanthrene	NE	360	980 U	84 J[1]	84 J[1]	89 J[1]	2,500 U
Pyrene	17,000,000	500	110 J[1]	200 U	180 J[1]	200 J[1]	740 J[1]
Pesticides (µg/kg)							
4,4'-DDD (p,p'-DDD)	7,200	3.8 U	19 U	3.4 J[1]	4.4 U	4.3 U	5.1 U
4,4'-DDE (p,p'-DDE)	5,100	5.7	19 U	**81**	4.4 U	4.3 U	5.1 U
4,4'-DDT (p,p'-DDT)	7,000	9.5	19 U	**86**	4.4 U	4.3 U	5.1 U
alpha-Chlordane	6,500[a]	2.0 U	9.8 U	**3.5**	2.3 U	2.2 U	2.6 U

TABLE 5
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SF	Area South of the FMNOL FML-309-SF-DUP	North of the Armstrong Remote Landfill FML-310-SF	Northern Portion of the Armstrong Remote Landfill AWI-213-SF	Southern Portion of the Armstrong Remote Landfill AWI-214-SF	Between the Armstrong Remote Landfill and Rocky Creek AWI-215-SF
Pesticides (µg/kg)							
beta-BHC	960	2.0 U	9.8 U	2.0 U	2.3 U	2.2 U	2.6 U
Dieldrin	110	2.4 J[1]	19 U	3.0 J[1]	4.4 U	4.3 U	5.1 U
Endosulfan Sulfate	3,700,000[b]	3.8 U	19 U	3.8 U	4.4 U	4.3 U	5.1 U
Endrin	180,000	3.8 U	19 U	1.1 J[1]	4.4 U	4.3 U	5.1 U
Endrin aldehyde	NE	3.8 U	19 U	5.0 U	3.9	**6.7**	5.1 U
Endrin ketone	NE	3.8 U	19 U	3.8 U	4.4 U	4.3 U	5.1 U
gamma-BHC (Lindane)	2,100	2.0 U	9.8 U	2.0 U	2.3 U	2.2 U	2.6 U
gamma-Chlordane	6,500[a]	2.0 U	9.8 U	**3.1**	**14**	**12**	**24**
Heptachlor	380	2.0 U	9.8 U	2.0 U	2.3 U	2.2 U	2.6 U
Heptachlor epoxide	190	0.51 J[1]	9.8 U	2.0 U	2.3 U	2.2 U	2.6 U
Polychlorinated Biphenyls (µg/kg)							
PCB-1248 (Aroclor 1248)	740	38 UJ	99 J[1]	38 UJ	44 U	43 U	51 U
PCB-1254 (Aroclor 1254)	740	21 J[1]	190 U	38 U	**340**	**260**	**440**
PCB-1260 (Aroclor 1260)	740	68	190 U	90	44 U	43 U	51 U

TABLE 5
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SF	Between the Armstrong Remote Landfill and Rocky Creek AWI-216-SF
Volatile Organic Compounds (µg/kg)			
Acetone	610,000,000	81 J	26 U
Semivolatile Organic Compounds (µg/kg)			
(3-and/or 4-)Methylphenol	3,100,000	200 U	7,900 U
Acenaphthene	33,000,000	49 J[1]	7,900 U
Acenaphthylene	NE	200 U	7,900 U
Acetophenone	100,000,000	200 U	7,900 U
Anthracene	170,000,000	56 J[1]	7,900 U
Benzaldehyde	100,000,000	200 U	7,900 U
Benzo(a)anthracene	2,100	270	7,900 U
Benzo(a)pyrene	210	290	7,900 U
Benzo(b)fluoranthene	2,100	360	7,900 U
Benzo(g,h,i)perylene	NE	140 J[1]	7,900 U
Benzo(k)fluoranthene	21,000	320 J	7,900 U
Bis(2-ethylhexyl) phthalate	120,000	200 UJ	**36,000 J**
Carbazole	NE	90 J[1]	7,900 U
Chrysene	210,000	330	7,900 U
Dibenzo(a,h)anthracene	210	50 J[1]	7,900 U
Di-n-octylphthalate	NE	200 U	7,900 UJ
Fluoranthene	22,000,000	630	7,900 U
Indeno(1,2,3-cd) pyrene	2,100	180 J[1]	7,900 U
Phenanthrene	NE	360	7,900 U
Pyrene	17,000,000	500	7,900 UJ
Pesticides (µg/kg)			
4,4'-DDD (p,p'-DDD)	7,200	3.8 U	5.6 U
4,4'-DDE (p,p'-DDE)	5,100	5.7	5.6 U
4,4'-DDT (p,p'-DDT)	7,000	9.5	5.6 U
alpha-Chlordane	6,500[a]	2.0 U	2.9 U

TABLE 5
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SF	Between the Armstrong Remote Landfill and Rocky Creek AWI-216-SF
Pesticides (µg/kg)			
beta-BHC	960	2.0 U	2.9 U
Dieldrin	110	2.4 J[1]	5.6 U
Endosulfan Sulfate	3,700,000[b]	3.8 U	**45**
Endrin	180,000	3.8 U	5.6 U
Endrin aldehyde	NE	3.8 U	5.6 U
Endrin ketone	NE	3.8 U	5.6 U
gamma-BHC (Lindane)	2,100	2.0 U	2.9 U
gamma-Chlordane	6,500[a]	2.0 U	**150**
Heptachlor	380	2.0 U	2.9 U
Heptachlor epoxide	190	0.51 J[1]	2.9 U
Polychlorinated Biphenyls (µg/kg)			
PCB-1248 (Aroclor 1248)	740	38 UJ	56 U
PCB-1254 (Aroclor 1254)	740	21 J[1]	**4,000**
PCB-1260 (Aroclor 1260)	740	68	56 U

TABLE 5
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Notes:

[a]	EPA April 2009 Regional Screening Level for chlordane.
[b]	EPA April 2009 Regional Screening Level for endosulfan.
AIP	Allied Industrial Park
AWI	Armstrong World Industries
DUP	Field duplicate
EPA	U.S. Environmental Protection Agency
FML	Former Macon Landfill (Former Macon Naval Ordnance Landfill)
FMNOL	Former Macon Naval Ordnance Landfill
J	The identification of the analyte is acceptable; the reported value is an estimate.
J-	The identification of the analyte is acceptable; the reported value is an estimate with a possible low bias.
J^1	Concentration reported is less than the lowest standard on the calibration curve.
µg/kg	Micrograms per kilogram
mg/kg	Milligrams per kilogram
NA	Not analyzed
NE	Not established
R	The sample results are unusable based on the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
SF	Surface soil sample
U	The analyte was not detected at or above the minimum reporting limit.
UJ	The analyte was not detected at or above the minimum reporting limit; the reported value is an estimate.

BOLD	Bolded values are elevated, meaning that the values are three times the concentration of detected constituents in the background sample or greater than or equal to the non-detect concentration in the background sample.
BOLD	Shaded and bolded values are elevated and are above the EPA April 2009 Regional Screening Level.
	Shaded values are above the EPA April 2009 Regional Screening Level.

TABLE 6
EXPANDED SITE INSPECTION
INORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level	Background	Area North of the FMNOL		Former Macon Naval Ordnance Landfill	Explosives Demolition Area	Area South of the FMNOL
	Industrial Soil	AIP-100-SF	FML-300-SF	FML-301-SF	FML-302-SF	FML-303-SF	FML-304-SF
Metals (mg/kg)							
Aluminum	990,000	6,600	2,600	6,400	3,500	4,900	9,900
Antimony	410[c]	0.82 J[1]	R	0.30 J[1]	0.41 J[1]	3.3 J[1]	R
Arsenic	1.6[d]	2.2 J-	1.2	4.8	1.2	1.6	6.5
Barium	190,000	53	24	71	99	**250**	**250**
Beryllium	2,000[e]	0.21 UJ	0.088 UJ	0.27 UJ	0.18 J[1]	0.15 J[1]	0.56 UJ
Cadmium	810[f]	0.58 U	0.35 J[1]	**4.5**	**2.7**	**13**	**6.2**
Calcium	NE	1,400	1,200	**5,200**	2,400	3,800	**9,100**
Chromium	1,400[g]	170	5.6	15	9.1	30	24
Cobalt	300	1.4 UJ	0.49 UJ	3.1 UJ	0.88 J[1]	1.6 J[1]	10 UJ
Copper	41,000	34	53	49	47	**710**	53
Iron	720,000	12,000	3,800	14,000	4,300	6,600	31,000
Lead	800[h]	57	22	150	25	**560**	90
Magnesium	NE	640	200 J[1]	730	190 J[1]	550 J[1]	1,400 J[1]
Manganese	23,000[i]	150	120	260	320	230	**2,400**
Mercury	24[j]	0.096 UJ	0.033 UJ	**0.21**	**0.69**	**0.47**	**0.56 J-**
Nickel	20,000[k]	3.6 J[1]	0.90 J[1]	5.0 J[1]	3.1 J[1]	**14 J+**	7.5 J[1]
Potassium	NE	330 J[1]	390 J[1]	220 J[1]	70 J[1]	180 J[1]	550 J[1]
Selenium	5,100	R	4.1 UJ	5.0 UJ	4.1 UJ	0.92 J[1]	12 UJ
Sodium	NE	24 J[1]	4.6 J[1]	62 J[1]	15 J[1]	20 J[1]	110 J[1]
Vanadium	7,200[l]	34 J-	11 J-	28 J-	12 J-	18 J-	50 J-
Zinc	310,000[m]	240	54	190	100	**1,300**	270
Cyanide (mg/kg)							
Cyanide	20,000[n]	2.9 U	3.0 U	3.5 U	2.9 U	3.1 U	8.5 U

TABLE 6
EXPANDED SITE INSPECTION
INORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level	Background	Area South of the FMNOL		Former Macon Naval Ordnance Landfill	Area South of the FMNOL	
	Industrial Soil	AIP-100-SF	FML-305-SF	FML-306-SF	FML-307-SF	FML-308-SF	FML-309-SF
Metals (mg/kg)							
Aluminum	990,000	6,600	8,800	12,000	2,300	9,000	6,800
Antimony	410[c]	0.82 J[1]	R	0.32 J[1]	R	0.95 J[1]	R
Arsenic	1.6[d]	2.2 J-	4.2	2.0	0.69 J[1]	4.6	3.6 J[1]
Barium	190,000	53	**230**	**160**	11 J[1]	**260**	**220**
Beryllium	2,000[e]	0.21 UJ	0.65 UJ	**1.0**	0.043 UJ	0.45 UJ	0.33 UJ
Cadmium	810[f]	0.58 U	**1.6**	0.57 J[1]	0.54 U	**7.8**	**4.6**
Calcium	NE	1,400	1,600	**29,000**	210 J[1]	**12,000**	**13,000**
Chromium	1,400[g]	170	19	23	4.2	23	17
Cobalt	300	1.4 UJ	**18**	1.7 UJ	0.094 UJ	5.8 UJ	3.3 UJ
Copper	41,000	34	14	39	6.5	47	73
Iron	720,000	12,000	27,000	7,300	3,900	25,000	18,000
Lead	800[h]	57	35	37	5.0	90	57
Magnesium	NE	640	870 J[1]	**6,600**	46 J[1]	1,400 J[1]	1,100 J[1]
Manganese	23,000[i]	150	**3,600**	**690**	27	**1,800**	320
Mercury	24[j]	0.096 UJ	**0.51 J-**	0.088 UJ	0.11 U	**1.2 J-**	0.23 UJ
Nickel	20,000[k]	3.6 J[1]	5.0 J[1]	6.1 J+	0.23 J[1]	8.2 J[1]	9.5 J[1]
Potassium	NE	330 J[1]	560 J[1]	**1,400**	40 UJ	540 J[1]	520 J[1]
Selenium	5,100	R	6.7 UJ	1.2 J[1]	3.8 UJ	12 UJ	20 UJ
Sodium	NE	24 J[1]	42 J[1]	200 J[1]	3.0 J[1]	140 J[1]	180 J[1]
Vanadium	7,200[l]	34 J-	46 J-	18 J-	15 J-	41 J-	32 J-
Zinc	310,000[m]	240	75	130	4.8 UJ	210	260
Cyanide (mg/kg)							
Cyanide	20,000[n]	2.9 U	4.8 U	3.5 U	2.7 U	8.4 U	14 U

TABLE 6
EXPANDED SITE INSPECTION
INORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SF	Area South of the FMNOL FML-309-SF-DUP	North of the Armstrong Remote Landfill FML-310-SF	Northern Portion of the Armstrong Remote Landfill AWI-213-SF	Southern Portion of the Armstrong Remote Landfill AWI-214-SF	Between the Armstrong Remote Landfill and Rocky Creek AWI-215-SF
Metals (mg/kg)							
Aluminum	990,000	6,600	7,100	5,700	10,000	14,000	15,000
Antimony	410[e]	0.82 J[1]	R	R	3.5 J[1]	2.4 J[1]	9.1 J[1]
Arsenic	1.6[d]	2.2 J-	5.4 J[1]	2.7	0.96 J[1]	0.59 J[1]	1.5 U
Barium	190,000	53	**280**	26	140	**190**	**400**
Beryllium	2,000[e]	0.21 UJ	0.40 UJ	0.14 UJ	**0.86**	**1.5**	**1.5**
Cadmium	810[f]	0.58 U	**6.5**	0.57 U	**0.93 J**	**2.6 J**	**140 J**
Calcium	NE	1,400	**18,000**	1,900	**22,000**	**42,000**	**43,000**
Chromium	1,400[g]	170	19	20	13	25	61
Cobalt	300	1.4 UJ	4.0 UJ	0.66 UJ	1.9 UJ	2.7 UJ	2.1 UJ
Copper	41,000	34	84	9.6	78 J+	**110 J+**	100 J+
Iron	720,000	12,000	28,000	16,000	5,900	15,000	20,000
Lead	800[h]	57	60	17	51	87	54
Magnesium	NE	640	1,400 J[1]	210 J[1]	**4,000**	**7,900**	**8,000**
Manganese	23,000[i]	150	**560**	99	**510**	**600**	**700**
Mercury	24[j]	0.096 UJ	0.40 UJ	0.056 UJ	0.086 UJ	**0.29 J**	**0.25 J**
Nickel	20,000[k]	3.6 J[1]	11 J[1]	1.6 J[1]	5.1 J[1]	**12 J+**	9.9 J+
Potassium	NE	330 J[1]	640 J[1]	240 J[1]	460 J[1]	790	**1,700**
Selenium	5,100	R	23 UJ	4.0 UJ	4.6 UJ	4.6 U	**7.2**
Sodium	NE	24 J[1]	200 J[1]	9.7 J[1]	180 J[1]	250 J[1]	390 J[1]
Vanadium	7,200[l]	34 J-	35 J-	38 J-	16 J-	16 J-	17 J-
Zinc	310,000[m]	240	280	26	93 J	120 J	22 J
Cyanide (mg/kg)							
Cyanide	20,000[n]	2.9 U	16 U	2.8 U	R	R	R

TABLE 6
EXPANDED SITE INSPECTION
INORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SF	Between the Armstrong Remote Landfill and Rocky Creek AWI-216-SF
Metals (mg/kg)			
Aluminum	990,000	6,600	15,000
Antimony	410[e]	0.82 J[1]	1.2 J[1]
Arsenic	1.6[d]	2.2 J-	1.9
Barium	190,000	53	**220**
Beryllium	2,000[e]	0.21 UJ	**1.5**
Cadmium	810[f]	0.58 U	**2.3**
Calcium	NE	1,400	**32,000**
Chromium	1,400[g]	170	19
Cobalt	300	1.4 UJ	2.0 UJ
Copper	41,000	34	99
Iron	720,000	12,000	6,100
Lead	800[h]	57	57
Magnesium	NE	640	**5,800**
Manganese	23,000[i]	150	**750**
Mercury	24[j]	0.096 UJ	0.12 UJ
Nickel	20,000[k]	3.6 J[1]	9.7 J+
Potassium	NE	330 J[1]	**990**
Selenium	5,100	R	1.7 J[1]
Sodium	NE	24 J[1]	290 J[1]
Vanadium	7,200[l]	34 J-	14 J-
Zinc	310,000[m]	240	120
Cyanide (mg/kg)			
Cyanide	20,000[n]	2.9 U	1.5 J[1]

TABLE 6
EXPANDED SITE INSPECTION
INORGANIC ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

Notes:

[c]	EPARegional Screening Level for metallic antimony.
[d]	EPA April 2009 Regional Screening Level for inorganic arsenic.
[e]	EPA April 2009 Regional Screening Level for beryllium and compounds.
[f]	EPA April 2009 Regional Screening Level for dietary cadmium.
[g]	EPA April 2009 Regional Screening Level for total chromium.
[h]	EPA April 2009 Regional Screening Level for lead and compounds.
[i]	EPA April 2009 Regional Screening Level for manganese (water).
[j]	EPA April 2009 Regional Screening Level for elemental mercury.
[k]	EPA April 2009 Regional Screening Level for soluble salts of nickel.
[l]	EPA April 2009 Regional Screening Level for metallic vanadium.
[m]	EPA April 2009 Regional Screening Level for metallic zinc.
[n]	EPA April 2009 Regional Screening Level for cyanide (CN-).
AIP	Allied Industrial Park
AWI	Armstrong World Industries
DUP	Field duplicate
EPA	U.S. Environmental Protection Agency
FML	Former Macon Landfill (Former Macon Naval Ordnance Landfill)
FMNOL	Former Macon Naval Ordnance Landfill
J	The identification of the analyte is acceptable; the reported value is an estimate.
J+	The identification of the analyte is acceptable; the reported value is an estimate with a possible high bias.
J-	The identification of the analyte is acceptable; the reported value is an estimate with a possible low bias.
J[1]	Concentration reported is less than the lowest standard on the calibration curve.
mg/kg	Milligrams per kilogram
NE	Not established
R	The sample results are unusable based on the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
SF	Surface soil sample
U	The analyte was not detected at or above the minimum reporting limit.
UJ	The analyte was not detected at or above the minimum reporting limit; the reported value is an estimate.
BOLD	Bolded values are elevated, meaning that the values are three times the concentration of detected constituents in the background sample or greater than or equal to the non-detect concentration in the background sample.
	Shaded values are above the EPA April 2009 Regional Screening Level.

TABLE 7
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level	Background	Area North of the FMNOL		Former Macon Naval Ordnance Landfill	Explosives Demolition Area	Area South of the FMNOL
	Industrial Soil	AIP-100-SB	FML-300-SB	FML-301-SB	FML-302-SB	FML-303-SB	FML-304-SB
Volatile Organic Compounds (µg/kg)							
Acetone	610,000,000	25 J	R	R	5.3 U	42	R
cis-1,2-Dichloroethene	10,000,000	5.0 U	2.9 U	2.2 U	2.7 U	**42**	28 U
Tetrachloroethene (Tetrachloroethylene)	2,700	5.0 U	2.9 U	2.2 U	0.48 J[1]	0.52 J[1]	28 U
trans-1,2-Dichloroethene	500,000	5.0 U	2.9 U	2.2 U	2.7 U	0.58 J[1]	28 U
Trichloroethene (Trichloroethylene)	14,000	5.0 UJ	2.9 U	2.2 U	2.7 U	0.47 J[1]	28 U
Trichlorofluoromethane (Freon 11)	3,400,000	5.0 U	2.9 U	2.2 U	0.28 J[1]	0.38 J[1]	28 U
Semivolatile Organic Compounds (µg/kg)							
2-Methylnaphthalene	4,100,000	210 U	190 U	190 U	190 U	210 U	7,400 U
Acenaphthene	33,000,000	210 U	190 U	190 U	190 U	210 U	7,400 U
Anthracene	170,000,000	210 UJ	190 UJ	190 UJ	190 UJ	210 UJ	7,400 U
Acetophenone	100,000,000	210 U	190 U	190 U	190 U	210 U	7,400 U
Benzaldehyde	100,000,000	210 U	190 U	57 J[1]	190 U	210 U	7,400 U
Benzo(a)anthracene	2,100	210 U	190 U	170 J[1]	190 U	47 J[1]	4,000 J[1]
Benzo(a)pyrene	210	210 U	190 U	**310**	190 U	50 J[1]	**16,000**
Benzo(b)fluoranthene	2,100	210 U	190 U	150 J[1]	190 U	82 J[1]	3,400 J[1]
Benzo(g,h,i)perylene	NE	210 U	190 U	180 J[1]	190 U	210 U	**36,000**
Benzo(k)fluoranthene	21,000	210 U	190 U	81 J[1]	190 U	210 U	1,500 J[1]
Bis(2-ethylhexyl) phthalate	120,000	210 U	190 U	190 U	190 UJ	410 UJ	7,400 UJ
Carbazole	NE	210 UJ	190 U	190 U	190 UJ	210 UJ	7,400 UJ
Chrysene	210,000	210 U	190 U	**270**	190 U	78 J[1]	6,600 J[1]
Dibenz(a,h)anthracene	210	210 U	190 U	190 U	190 U	210 U	7,400 U
Dibenzofuran	NE	210 U	190 U	190 U	190 U	210 U	7,400 U
Di-n-butylphthalate	62,000,000	210 U	190 U	190 U	190 U	**1,800**	7,400 U
Fluoranthene	22,000,000	210 U	190 U	110 J[1]	190 U	110 J[1]	770 J[1]
Fluorene	22,000,000	210 UJ	190 UJ	190 UJ	190 UJ	210 UJ	7,400 U
Indeno(1,2,3-cd) pyrene	2,100	210 U	190 U	66 J[1]	190 U	210 U	5,900 J[1]
Naphthalene	20,000	210 U	190 U	190 U	190 U	210 U	7,400 U

TABLE 7
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SB	Area North of the FMNOL FML-300-SB	Area North of the FMNOL FML-301-SB	Former Macon Naval Ordnance Landfill FML-302-SB	Explosives Demolition Area FML-303-SB	Area South of the FMNOL FML-304-SB
Semivolatile Organic Compounds (µg/kg)							
Pentachlorophenol	9,000	400 U	360 U	370 U	370 U	410 U	3,400 J[1]
Phenanthrene	NE	210 U	190 U	77 J[1]	190 U	61 J[1]	1,100 J[1]
Pyrene	17,000,000	210 U	190 U	190 U	190 U	210 U	5,100 J[1]
Pesticides (µg/kg)							
4,4'-DDD (p,p'-DDD)	7,200	4.0 U	3.6 U	3.7 U	3.7 U	3.4 J[1]	**25**
4,4'-DDE (p,p'-DDE)	5,100	4.0 U	1.8 J[1]	**92**	3.7 U	1.4 J[1]	14 U
4,4'-DDT (p,p'-DDT)	7,000	4.0 U	**5.8**	**52**	3.7 U	**7.4**	14 U
alpha-Chlordane	6,500[a]	2.1 U	1.1 J[1]	**6.7**	1.9 U	0.96 J[1]	7.4 U
beta-BHC	960	2.1 U	1.9 U	4.2 U	1.9 U	2.1 U	7.4 U
Dieldrin	110	4.0 U	3.6 U	19 U	3.7 U	3.1 J[1]	14 U
Endosulfan I (alpha)	3,700,000[b]	2.1 U	1.9 U	1.9 U	1.9 U	2.1 U	**14**
Endosulfan II (beta)	3,700,000[b]	4.0 U	3.6 U	2.4 J[1]	3.7 U	4.1 U	**14**
Endosulfan Sulfate	3,700,000[b]	4.0 U	3.6 U	3.7 U	3.7 U	4.1 U	**34**
gamma-Chlordane	6,500[a]	2.1 U	1.9 U	**73**	1.9 U	**3.2**	**49**
Heptachlor epoxide	190	2.1 U	1.9 U	14 U	1.9 U	2.1 U	7.4 U
Methoxychlor	3,100,000	21 U	19 U	19 U	19 U	21 U	74 U
Polychlorinated Biphenyls (µg/kg)							
PCB-1016 (Aroclor 1016)	21,000	17 J[1]	36 U	37 U	37 U	41 U	140 U
PCB-1248 (Aroclor 1248)	740	40 UJ	36 UJ	**4,500 J-**	37 U	**69 J-**	**1,500**
PCB-1254 (Aroclor 1254)	740	40 U	36 U	37 U	37 U	**74**	140 U
PCB-1260 (Aroclor 1260)	740	20 J[1]	18 J[1]	**170**	37 U	50	140 U
Explosives (mg/kg)							
RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine	24	2.4 U	NA	NA	2.1 U	2.5 U	5.1 JN
Tetryl (Trinitrophenylmethylnitramine)	2,500	2.4 U	NA	NA	2.1 U	0.29 JN	9.2 U
1,3,5-Trinitrobenzene	27,000	2.4 U	NA	NA	2.1 U	2.5 U	2.4 JN

TABLE 7
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SB	Area South of the FMNOL FML-305-SB	Area South of the FMNOL FML-306-SB	Former Macon Naval Ordnance Landfill FML-307-SB	Area South of the FMNOL FML-308-SB	Area South of the FMNOL FML-309-SB
Volatile Organic Compounds (µg/kg)							
Acetone	610,000,000	25 J	R	12 U	R	R	**110 J**
cis-1,2-Dichloroethene	10,000,000	5.0 U	11 U	5.8 U	2.3 U	29 U	38 U
Tetrachloroethene (Tetrachloroethylene)	2,700	5.0 U	11 U	5.8 UJ	2.3 U	29 U	38 U
trans-1,2-Dichloroethene	500,000	5.0 U	11 U	5.8 U	2.3 U	29 U	38 U
Trichloroethene (Trichloroethylene)	14,000	5.0 UJ	11 U	5.8 UJ	2.3 U	29 U	38 U
Trichlorofluoromethane (Freon 11)	3,400,000	5.0 U	11 U	5.8 U	2.3 U	29 U	38 U
Semivolatile Organic Compounds (µg/kg)							
2-Methylnaphthalene	4,100,000	210 U	2,700 U	290 U	180 U	6,500 U	8,900 U
Acenaphthene	33,000,000	210 U	2,700 U	290 U	180 U	6,500 U	8,900 U
Anthracene	170,000,000	210 UJ	2,700 U	290 UJ	180 UJ	6,500 U	8,900 U
Acetophenone	100,000,000	210 U	2,700 U	85 J[1]	180 U	6,500 U	8,900 U
Benzaldehyde	100,000,000	210 U	2,700 U	290 U	180 U	6,500 U	8,900 U
Benzo(a)anthracene	2,100	210 U	2,700 U	210 J[1]	180 U	2,200 J[1]	2,200 J[1]
Benzo(a)pyrene	210	210 U	350 J[1]	**670**	180 U	**7,100**	4,800 J[1]
Benzo(b)fluoranthene	2,100	210 U	2,700 U	**350**	180 U	2,000 J[1]	1,300 J[1]
Benzo(g,h,i)perylene	NE	210 U	630 J[1]	**400**	180 U	**17,000**	**9,700**
Benzo(k)fluoranthene	21,000	210 U	2,700 U	180 J[1]	180 U	6,500 U	8,900 U
Bis(2-ethylhexyl) phthalate	120,000	210 U	2,700 UJ	**3,200**	180 UJ	6,500 UJ	8,900 UJ
Carbazole	NE	210 UJ	2,700 U	290 U	180 UJ	6,500 U	8,900 U
Chrysene	210,000	210 U	2,700 U	**350 J-**	180 U	3,200 J[1]	3,200 J[1]
Dibenz(a,h)anthracene	210	210 U	2,700 U	290 U	180 U	6,500 U	8,900 U
Dibenzofuran	NE	210 U	2,700 U	290 U	180 U	6,500 U	8,900 U
Di-n-butylphthalate	62,000,000	210 U	2,700 U	290 U	180 U	6,500 U	8,900 U
Fluoranthene	22,000,000	210 U	2,700 U	140 J[1]	180 U	720 J[1]	8,900 U
Fluorene	22,000,000	210 UJ	2,700 U	290 UJ	180 UJ	6,500 U	8,900 U
Indeno(1,2,3-cd) pyrene	2,100	210 U	2,700 U	110 J[1]	180 U	2,800 J[1]	1,800 J[1]
Naphthalene	20,000	210 U	2,700 U	290 U	180 U	6,500 U	8,900 U

TABLE 7
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level	Background	Area South of the FMNOL		Former Macon Naval Ordnance Landfill	Area South of the FMNOL	
	Industrial Soil	AIP-100-SB	FML-305-SB	FML-306-SB	FML-307-SB	FML-308-SB	FML-309-SB
Semivolatile Organic Compounds (µg/kg)							
Pentachlorophenol	9,000	400 U	5,300 U	560 U	340 U	3,300 J[1]	2,700 J[1]
Phenanthrene	NE	210 U	2,700 U	290 U	180 U	670 J[1]	8,900 U
Pyrene	17,000,000	210 U	2,700 U	290 UJ	180 U	3,400 J[1]	2,000 J[1]
Pesticides (µg/kg)							
4,4'-DDD (p,p'-DDD)	7,200	4.0 U	5.3 U	5.6 U	3.4 U	**30**	**27**
4,4'-DDE (p,p'-DDE)	5,100	4.0 U	5.3 U	4.0 J[1]	3.4 U	13 U	17 U
4,4'-DDT (p,p'-DDT)	7,000	4.0 U	5.3 U	**12**	3.4 U	13 U	17 U
alpha-Chlordane	6,500[a]	2.1 U	2.7 U	2.9 U	1.8 U	6.5 U	8.9 U
beta-BHC	960	2.1 U	2.7 U	1.1 J[1]	1.8 U	6.5 U	8.9 U
Dieldrin	110	4.0 U	5.3 U	5.6 U	3.4 U	13 U	17 U
Endosulfan I (alpha)	3,700,000[b]	2.1 U	2.7 U	2.9 U	1.8 U	20 U	8.9 U
Endosulfan II (beta)	3,700,000[b]	4.0 U	5.3 U	5.6 U	3.4 U	13 U	17 U
Endosulfan Sulfate	3,700,000[b]	4.0 U	5.3 U	5.6 U	3.4 U	**38**	**46**
gamma-Chlordane	6,500[a]	2.1 U	**4.1**	1.4 J[1]	1.8 U	**140**	**170**
Heptachlor epoxide	190	2.1 U	2.7 U	0.92 J[1]	1.8 U	6.5 U	8.9 U
Methoxychlor	3,100,000	21 U	27 U	10 J[1]	18 U	65 U	89 U
Polychlorinated Biphenyls (µg/kg)							
PCB-1016 (Aroclor 1016)	21,000	17 J[1]	53 U	56 U	34 U	130 U	170 U
PCB-1248 (Aroclor 1248)	740	40 UJ	**110**	56 UJ	34 UJ	**7,400**	**9,600**
PCB-1254 (Aroclor 1254)	740	40 U	53 U	56 U	34 U	130 U	170 U
PCB-1260 (Aroclor 1260)	740	20 J[1]	53 U	56 U	34 U	130 U	170 U
Explosives (mg/kg)							
RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine	24	2.4 U	3.2 U	NA	1.9 U	NA	NA
Tetryl (Trinitrophenylmethylnitramine)	2,500	2.4 U	3.2 U	NA	1.9 U	NA	NA
1,3,5-Trinitrobenzene	27,000	2.4 U	3.2 U	NA	1.9 U	NA	NA

TABLE 7
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SB	Northern Portion of the Armstrong Remote Landfill AWI-213-SB	Southern Portion of the Armstrong Remote Landfill AWI-214-SB	Between the Armstrong Remote Landfill and Rocky Creek AWI-215-SB	AWI-216-SB
Volatile Organic Compounds (µg/kg)						
Acetone	610,000,000	25 J	R	R	26 U	24 U
cis-1,2-Dichloroethene	10,000,000	5.0 U	8.8 U	8.3 U	13 U	12 U
Tetrachloroethene (Tetrachloroethylene)	2,700	5.0 U	8.8 U	8.3 U	13 U	12 U
trans-1,2-Dichloroethene	500,000	5.0 U	8.8 U	8.3 U	13 U	12 U
Trichloroethene (Trichloroethylene)	14,000	5.0 UJ	8.8 U	8.3 U	13 U	12 U
Trichlorofluoromethane (Freon 11)	3,400,000	5.0 U	8.8 U	8.3 U	13 U	12 U
Semivolatile Organic Compounds (µg/kg)						
2-Methylnaphthalene	4,100,000	210 U	25 J[1]	2,200 U	280 U	2,700 U
Acenaphthene	33,000,000	210 U	80 J[1]	2,200 U	280 U	2,700 U
Anthracene	170,000,000	210 UJ	92 J[1]	2,200 U	29 J[1]	2,700 U
Acetophenone	100,000,000	210 U	210 U	2,200 U	280 U	2,700 U
Benzaldehyde	100,000,000	210 U	210 U	2,200 U	280 U	2,700 U
Benzo(a)anthracene	2,100	210 U	**490 J-**	410 J[1]	**1,200**	330 J[1]
Benzo(a)pyrene	210	210 U	**600 J-**	1,100 J[1]	**3,500**	990 J[1]
Benzo(b)fluoranthene	2,100	210 U	**510 J-**	2,200 U	280 U	390 J[1]
Benzo(g,h,i)perylene	NE	210 U	**880 J-**	2,100 J[1]	**5,100**	3,100 J[1]
Benzo(k)fluoranthene	21,000	210 U	**340 J-**	2,200 U	**1,200**	2,700 U
Bis(2-ethylhexyl) phthalate	120,000	210 U	**34,000 J-**	**15,000 J**	**1,200 J**	**24,000 J**
Carbazole	NE	210 UJ	120 J[1]	2,200 U	280 U	2,700 U
Chrysene	210,000	210 U	**600 J-**	730 J[1]	**2,100**	2,700 U
Dibenz(a,h)anthracene	210	210 U	**250 J-**	2,200 U	**870**	2,700 U
Dibenzofuran	NE	210 U	58 J[1]	2,200 U	280 U	2,700 U
Di-n-butylphthalate	62,000,000	210 U	210 UJ	2,200 U	280 U	2,700 U
Fluoranthene	22,000,000	210 U	**1,100 J-**	2,200 U	110 J[1]	2,700 U
Fluorene	22,000,000	210 UJ	72 J[1]	2,200 U	280 U	2,700 U
Indeno(1,2,3-cd) pyrene	2,100	210 U	**510 J-**	2,200 U	**1,400**	2,700 U
Naphthalene	20,000	210 U	35 J[1]	2,200 U	280 U	2,700 U

TABLE 7
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SB	Northern Portion of the Armstrong Remote Landfill AWI-213-SB	Southern Portion of the Armstrong Remote Landfill AWI-214-SB	Between the Armstrong Remote Landfill and Rocky Creek AWI-215-SB	Between the Armstrong Remote Landfill and Rocky Creek AWI-216-SB
Semivolatile Organic Compounds (µg/kg)						
Pentachlorophenol	9,000	400 U	400 U	4,300 UJ	550 UJ	5,100 UJ
Phenanthrene	NE	210 U	**890**	2,200 U	160 J1	2,700 U
Pyrene	17,000,000	210 U	**890 J-**	330 J1	**760**	2,700 U
Pesticides (µg/kg)						
4,4'-DDD (p,p'-DDD)	7,200	4.0 U	4.0 U	4.2 U	5.5 U	5.3 U
4,4'-DDE (p,p'-DDE)	5,100	4.0 U	4.0 U	4.2 U	5.5 U	5.3 U
4,4'-DDT (p,p'-DDT)	7,000	4.0 U	4.0 U	4.2 U	5.5 U	5.3 U
alpha-Chlordane	6,500[a]	2.1 U	2.1 U	2.2 U	2.8 U	**8.1**
beta-BHC	960	2.1 U	2.1 U	2.2 U	2.8 U	2.7 U
Dieldrin	110	4.0 U	4.0 U	4.2 U	5.5 UJ	5.3 U
Endosulfan I (alpha)	3,700,000[b]	2.1 U	2.1 U	2.2 U	2.8 U	11 U
Endosulfan II (beta)	3,700,000[b]	4.0 U	4.0 U	4.2 U	5.5 U	5.3 U
Endosulfan Sulfate	3,700,000[b]	4.0 U	4.0 U	**29**	5.5 U	**47**
gamma-Chlordane	6,500[a]	2.1 U	**25**	**100**	**11**	**75**
Heptachlor epoxide	190	2.1 U	2.1 U	2.2 U	2.8 U	2.7 U
Methoxychlor	3,100,000	21 U	21 U	22 U	28 U	27 U
Polychlorinated Biphenyls (µg/kg)						
PCB-1016 (Aroclor 1016)	21,000	17 J[1]	40 U	42 U	55 U	53 U
PCB-1248 (Aroclor 1248)	740	40 UJ	40 U	42 U	55 U	53 U
PCB-1254 (Aroclor 1254)	740	40 U	**470**	**2,000**	**230**	**1,600**
PCB-1260 (Aroclor 1260)	740	20 J[1]	40 U	42 U	55 U	53 U
Explosives (mg/kg)						
RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine	24	2.4 U	2.1 U	2.2 U	3.4 U	2.8 U
Tetryl (Trinitrophenylmethylnitramine)	2,500	2.4 U	2.1 U	2.2 U	3.4 U	2.8 U
1,3,5-Trinitrobenzene	27,000	2.4 U	2.1 U	2.2 U	3.4 U	2.8 U

TABLE 7
EXPANDED SITE INSPECTION
ORGANIC ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES (1 TO 2 FEET BGS)

Notes:

[a]	EPA April 2009 Regional Screening Level for chlordane.
[b]	EPA April 2009 Regional Screening Level for endosulfan.
AIP	Allied Industrial Park
AWI	Armstrong World Industries
EPA	U.S. Environmental Protection Agency
FML	Former Macon Landfill (Former Macon Naval Ordnance Landfill)
FMNOL	Former Macon Naval Ordnance Landfill
J	The identification of the analyte is acceptable; the reported value is an estimate.
J-	The identification of the analyte is acceptable; the reported value is an estimate with a possible low bias.
J[1]	Concentration reported is less than the lowest standard on the calibration curve.
JN	The result is presumptive (tentatively identified), but a confirmation was not performed because the result was greater than the method detection limit, but less than the reporting limit.
µg/kg	Micrograms per kilogram
mg/kg	Milligrams per kilogram
NA	Not analyzed
NE	Not established
R	The sample results are unusable based on the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
SB	Subsurface soil sample
U	The analyte was not detected at or above the minimum or method reporting limit.
UJ	The analyte was not detected at or above the minimum or method reporting limit; the reported value is an estimate.
BOLD	Bolded values are elevated, meaning that the values are three times the concentration of detected constituents in the background sample or greater than or equal to the non-detect concentration in the background sample.
BOLD	Shaded and bolded values elevated and are above the EPA April 2009 Regional Screening Level.
	Shaded values are above the EPA April 2009 Regional Screening Level.

TABLE 8
EXPANDED SITE INSPECTION
INORGANIC ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SB	Area North of the FMNOL FML-300-SB	Area North of the FMNOL FML-301-SB	Former Macon Naval Ordnance Landfill FML-302-SB	Explosives Demolition Area FML-303-SB	Area South of the FMNOL FML-304-SB
Metals (mg/kg)							
Aluminum	990,000	8,900	5,000	2,800	470	8,900	7,600
Antimony	410[c]	R	R	R	7.7 UJ	**7.8 J-**	2.2 J[1]
Arsenic	1.6[d]	1.9 J-	1.0 J[1]	1.1	1.3 U	4.6	4.3 J[1]
Barium	190,000	34	71	62	16 J[1]	**2,600**	**120**
Beryllium	2,000[e]	0.26 UJ	0.19 UJ	0.088 UJ	0.64 J[1]	0.10 J[1]	0.42 UJ
Cadmium	810[f]	0.59 U	0.46 J[1]	**3.9**	0.64 UJ	**150**	**77**
Calcium	NE	210 J	**1,000**	**830**	120 J[1]	**6,000**	**4,800**
Chromium	1,400[g]	18	4.8	6.9	2.0	**140**	**61**
Cobalt	300	1.1 UJ	0.86 UJ	0.64 UJ	6.4 U	2.8 J[1]	2.3 UJ
Copper	41,000	5.9	**28**	**37**	0.91 J[1]	**1,300**	**97**
Iron	720,000	12,000	3,200	5,100	930	12,000	7,000
Lead	800[h]	11	20	**100**	1.1 UJ	**1,000**	**100**
Magnesium	NE	88 J[1]	210 J[1]	230 J[1]	7.3 UJ	**890**	700 J[1]
Manganese	23,000[i]	260	280	100	23	**1,500**	140
Mercury	24[j]	0.050 UJ	0.049 UJ	0.11 U	0.047 UJ	**3.4**	**4.7 J-**
Nickel	20,000[k]	1.7 J[1]	1.7 J[1]	1.6 J[1]	5.1 J[1]	**150 J+**	7.3 J[1]
Potassium	NE	74 J[1]	87 UJ	66 UJ	640 U	140 J[1]	150 J[1]
Selenium	5,100	R	3.9 UJ	3.9 UJ	4.5 UJ	4.3 UJ	18 UJ
Silver	5,100	1.2 U	1.1 U	1.1 U	1.3 U	**1.7**	5.1 U
Sodium	NE	13 J[1]	5.1 J[1]	22 J[1]	7.6 J[1]	38 J[1]	140 J[1]
Thallium	7,200[l]	0.37 UJ	0.23 UJ	2.8 U	3.2 U	0.36 J[1]	13 U
Vanadium	7,200[m]	33 J-	8.5 J-	11 J-	2.5 UJ	20 J-	37 J-
Zinc	310,000[n]	22	32	**92**	1.5 UJ	**3,100**	**210**
Cyanide (mg/kg)							
Cyanide	20,000[o]	3.0 U	2.7 U	2.8 U	3.2 U	3.1 U	13 U

TABLE 8
EXPANDED SITE INSPECTION
INORGANIC ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SB	Area South of the FMNOL FML-305-SB	Area South of the FMNOL FML-306-SB	Former Macon Naval Ordnance Landfill FML-307-SB	Area South of the FMNOL FML-308-SB	Area South of the FMNOL FML-309-SB
Metals (mg/kg)							
Aluminum	990,000	8,900	12,000	4,800	1,700	7,000	8,300
Antimony	410[e]	R	R	R	R	3.1 J[1]	R
Arsenic	1.6[d]	1.9 J-	2.2	2.0	0.38 J[1]	2.9 J[1]	**5.7**
Barium	190,000	34	**130**	62	9.7 J[1]	**120**	**130**
Beryllium	2,000[e]	0.26 UJ	0.77 UJ	0.35 UJ	0.051 UJ	0.28 UJ	0.41 UJ
Cadmium	810[f]	0.59 U	**5.2**	0.83 U	0.54 U	**75**	**110**
Calcium	NE	210 J	**1,200**	**17,000**	59 J[1]	**5,200**	**4,200**
Chromium	1,400[g]	18	27	9.5	3.7	**93**	**100**
Cobalt	300	1.1 UJ	6.4 UJ	1.0 UJ	0.13 UJ	1.2 UJ	3.4 UJ
Copper	41,000	5.9	**18**	**27**	1.1 UJ	**100**	**140**
Iron	720,000	12,000	16,000	6,600	3,000	8,400	14,000
Lead	800[h]	11	**36**	**35**	1.7	**170**	**140**
Magnesium	NE	88 J[1]	**900**	**1,700**	30 J[1]	620 J[1]	610 J[1]
Manganese	23,000[i]	260	410	230	25	120	95
Mercury	24[j]	0.050 UJ	0.078 UJ	**0.22**	0.11 U	0.089 UJ	**0.73 J-**
Nickel	20,000[k]	1.7 J[1]	5.3 J[1]	4.4 J[1]	0.81 J[1]	5.7 J[1]	16 J[1]
Potassium	NE	74 J[1]	650 J[1]	270 J[1]	47 UJ	190 J[1]	270 J[1]
Selenium	5,100	R	5.6 UJ	5.8 UJ	3.8 UJ	13 UJ	20 UJ
Silver	5,100	1.2 U	1.6 U	1.7 U	1.1 U	3.7 U	5.7 U
Sodium	NE	13 J[1]	48 J[1]	65 J[1]	540 U	280 J[1]	210 J[1]
Thallium	7,200[l]	0.37 UJ	0.51 UJ	4.1 U	0.13 UJ	9.2 U	14 U
Vanadium	7,200[m]	33 J-	56 J-	11 J-	14 J-	29 J-	45 J-
Zinc	310,000[n]	22	49	48	1.6 UJ	**140**	**210**
Cyanide (mg/kg)							
Cyanide	20,000[o]	3.0 U	4.1 U	4.1 U	2.7 U	9.2 U	14 U

TABLE 8
EXPANDED SITE INSPECTION
INORGANIC ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES

Analyte	EPA April 2009 Regional Screening Level Industrial Soil	Background AIP-100-SB	Northern Portion of the Armstrong Remote Landfill AWI-213-SB	Southern Portion of the Armstrong Remote Landfill AWI-214-SB	Between the Armstrong Remote Landfill and Rocky Creek AWI-215-SB	AWI-216-SB
Metals (mg/kg)						
Aluminum	990,000	8,900	14,000	16,000	17,000	20,000
Antimony	410[c]	R	1.1 J[1]	1.7 J[1]	1.5 J[1]	R
Arsenic	1.6[d]	1.9 J-	1.1 J[1]	1.4	0.69 J[1]	1.9
Barium	190,000	34	**160**	**210**	**240**	**240**
Beryllium	2,000[e]	0.26 UJ	**2.0**	**2.2**	**1.5**	**2.0**
Cadmium	810[f]	0.59 U	**2.5 J**	**3.9 J**	**4.9 J**	**0.87**
Calcium	NE	210 J	**47,000**	**45,000**	**50,000**	**44,000**
Chromium	1,400[g]	18	18	31	26	30
Cobalt	300	1.1 UJ	**15**	5.0 UJ	2.4 UJ	3.4 UJ
Copper	41,000	5.9	**260 J+**	**300 J+**	**200 J+**	**240**
Iron	720,000	12,000	7,700	13,000	25,000	8,300
Lead	800[h]	11	**61**	**120**	**46**	**82**
Magnesium	NE	88 J[1]	**8,200**	**8,700**	**9,300**	**9,200**
Manganese	23,000[i]	260	430	700	770	**1,000**
Mercury	24[j]	0.050 UJ	**0.13 J**	**0.78 J**	**0.27 J**	**0.17**
Nickel	20,000[k]	1.7 J[1]	**11 J+**	**34 J+**	**16 J+**	**17 J+**
Potassium	NE	74 J[1]	**700**	**850**	**1,200**	**990**
Selenium	5,100	R	4.2 U	0.81 J[1]	1.1 J[1]	1.5 J[1]
Silver	5,100	1.2 U	1.2 U	0.57 J[1]	1.7 U	1.6 U
Sodium	NE	13 J[1]	280 J[1]	350 J[1]	**880**	480 J[1]
Thallium	7,200[l]	0.37 UJ	0.23 UJ	3.2 U	0.29 UJ	4.0 U
Vanadium	7,200[m]	33 J-	19 J-	22 J-	17 J-	18 J[1]
Zinc	310,000[n]	22	**83 J**	**130 J**	**160 J**	**180**
Cyanide (mg/kg)						
Cyanide	20,000[o]	3.0 U	R	R	R	0.91 J-

TABLE 8
EXPANDED SITE INSPECTION
INORGANIC ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES (1 TO 2 FEET BGS)

Notes:

[c]	EPA April 2009 Regional Screening Level for metallic antimony.
[d]	EPA April 2009 Regional Screening Level for inorganic arsenic.
[e]	EPA April 2009 Regional Screening Level for beryllium and compounds.
[f]	EPA April 2009 Regional Screening Level for dietary cadmium.
[g]	EPA April 2009 Regional Screening Level for total chromium.
[h]	EPA April 2009 Regional Screening Level for lead and compounds.
[i]	EPA April 2009 Regional Screening Level for manganese (water).
[j]	EPA April 2009 Regional Screening Level for elemental mercury.
[k]	EPA April 2009 Regional Screening Level for soluble salts of nickel.
[l]	EPA April 2009 Regional Screening Level for soluble salts of thallium.
[m]	EPA April 2009 Regional Screening Level for metallic vanadium.
[n]	EPA April 2009 Regional Screening Level for metallic zinc.
[o]	EPA April 2009 Regional Screening Level for cyanide (CN-).
AIP	Allied Industrial Park
AWI	Armstrong World Industries
EPA	U.S. Environmental Protection Agency
FML	Former Macon Landfill (Former Macon Naval Ordnance Landfill)
FMNOL	Former Macon Naval Ordnance Landfill
J	The identification of the analyte is acceptable; the reported value is an estimate.
J+	The identification of the analyte is acceptable; the reported value is an estimate with a possible high bias.
J-	The identification of the analyte is acceptable; the reported value is an estimate with a possible low bias.
J[1]	Concentration reported is less than the lowest standard on the calibration curve.
mg/kg	Milligrams per kilogram
NE	Not established
R	The sample results are unusable based on the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
SB	Subsurface soil sample
U	The analyte was not detected at or above the minimum reporting limit
UJ	The analyte was not detected at or above the minimum reporting limit the reported value is an estimate.
BOLD	Bolded values are elevated, meaning that the values are three times the concentration of detected constituents in the background sample or greater than or equal tothe non-detect concentration in the background sample.
BOLD	Shaded and bolded values are elevated and are above the EPA April 2009 Regional Screening Level.
	Shaded values are above the EPA April 2009 Regional Screening Level.

TABLE 9
EXPANDED SITE INSPECTION
FIELD PARAMETERS FOR GROUND WATER SAMPLES

Station ID	USACE Well ID	Depth to Water (feet bgs)	Total Well Depth (feet bgs)	Purge Volume (gallons)	Temperature (°C)	pH (std. units)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity NTU
AIP148	MW-30	36	43.33	3.5	22.75	4.90	83	7.73	87.4
FML312*	MW-7	3	9.1	3	19.86	6.76	245	4.20	999
FML313	MW-9	2.95	8.0	3	NR	NR	NR	NR	NR
FML314	MW-10	2.85	8.3	2.7	17.74	6.04	290	2.21	NR
FML315	MW-19	3.25	16.1	6	17.47	5.23	66	4.10	760

Notes:

*	Field parameters were collected before the well ran dry. The sample was collected after the well was allowed to recharge.
AIP	Allied Industrial Park
bgs	Below ground surface
°C	Degrees Celsius
FML	Former Macon Naval Ordnance Landfill
ID	Identification
µg/L	Micrograms per liter
µS/cm	Microsiemens per centimeter
MW	Monitoring well
NR	Not recorded
NTU	Nephelometric turbidity units
std.	Standard
USACE	U.S. Army Corps of Engineers

TABLE 10
EXPANDED SITE INSPECTION
ANALYTICAL RESULTS FOR GROUND WATER SAMPLES

Analyte	MCL	Background (USACE MW-30) AIP-148-MW	North of PPE 1, West of the Armstrong Drainage Easement (USACE MW-7) FML-312-MW	North of PPE 2, East of Drainage Ditch 3 (USACE MW-9) FML-313-MW	North of PPE 2, East of Drainage Ditch 3 (USACE MW-10) FML-314-MW	North of Rocky Creek, Between PPE 2 and PPE 3 (USACE MW-19) FML-315-MW
Volatile Organic Compounds (µg/L)						
1,1-Dichloroethene (1,1-Dichloroethylene)	7.0	5.0 U	5.0 U	**17**	**8.6**	5.0 U
cis-1,2-Dichloroethene	70	5.0 U	5.0 U	**840**	**650**	**370**
Tetrachloroethene (Tetrachloroethylene)	5.0	0.58 J[1]	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,2-Dichloroethene	100	5.0 U	5.0 U	3.6 J[1]	3.2 J[1]	1.3 J[1]
Trichloroethene (Trichloroethylene)	5.0	1.7 J[1]	0.67 J[1]	**13**	**140**	**170**
Vinyl chloride	2.0	5.0 U	5.0 U	**170 J**	**190 J**	**100**
Pesticides (µg/L)						
Dieldrin	NE	0.10 U	NA	0.11 U	0.081 J[1]	0.10 U
Polychlorinated Biphenyls (µg/L)						
PCB-1248 (Aroclor 1248)	0.5	1.0 U	NA	1.1 U	1.0 U	0.30 J[1]
Perchlorate (µg/L)						
Perchlorate	NE	0.8 J[1]	NA	NA	1.0 U	1.0 U
Explosives (µg/L)						
2-Nitrotoluene	NE	2.2 U	NA	NA	1.2 JN	2.4 UJ
Metals (µg/L)						
Aluminum	50-200[a]	9,900	NA	3,900	3,100	11,000
Arsenic	10	3.7 J[1]	NA	10 U	3.8 J[1]	2.5 J[1]
Barium	2,000	130 J[1]	NA	48 J[1]	76 J[1]	130 J[1]
Beryllium	4.0	0.16 J[1]	NA	5.0 U	5.0 U	0.59 J[1]
Calcium	NE	7,200	NA	**22,000**	**53,000**	1,400 J[1]
Chromium	100	110	NA	5.3 J[1]	5.0 J[1]	12
Copper	1,300	19 J[1]	NA	2.2 J[1]	2.7 J[1]	7.4 J[1]
Iron	NE	15,000	NA	13,000	2,600	16,000
Lead	15	21	NA	6.0 J[1]	7.3 J[1]	13

TABLE 10
EXPANDED SITE INSPECTION
ANALYTICAL RESULTS FOR GROUND WATER SAMPLES

Analyte	MCL	Background (USACE MW-30) AIP-148-MW	North of PPE 1, West of the Armstrong Drainage Easement (USACE MW-7) FML-312-MW	North of PPE 2, East of Drainage Ditch 3 (USACE MW-9) FML-313-MW	North of PPE 2, East of Drainage Ditch 3 (USACE MW-10) FML-314-MW	North of Rocky Creek, Between PPE 2 and PPE 3 (USACE MW-19) FML-315-MW
Metals (µg/L)						
Magnesium	NE	1,900 J[1]	NA	2,500 J[1]	2,500 J[1]	930 J[1]
Manganese	NE	310	NA	110	130	470
Mercury	2.0	0.27	NA	0.065 UJ	0.051 UJ	0.40
Nickel	NE	65	NA	2.2 J[1]	3.0 J[1]	2.5 J[1]
Potassium	NE	2,100 J[1]	NA	1,100 J[1]	1,700 J[1]	1,200 J[1]
Sodium	NE	7,200	NA	19,000	**28,000**	8,200
Thallium	2.0	25 U	NA	25 U	25 U	2.0 J[1]
Vanadium	NE	53	NA	11 J[1]	11 J[1]	35 J[1]

TABLE 10
EXPANDED SITE INSPECTION
ANALYTICAL RESULTS FOR GROUND WATER SAMPLES

Notes:

[a]	Value represents the EPA May 2009 National Secondary Drinking Water Standard.
AIP	Allied Industrial Park
FML	Former Macon Landfill (Former Macon Naval Ordnance Landfill)
J[1]	Concentration reported is less than the lowest standard on the calibration curve.
JN	The result is presumptive (tentatively identified), but a confirmation was not performed because the result was greater than the method detection limit, but less than the reporting limit.
MCL	Maximum Contaminant Level
MW	Monitoring well
µg/L	Micrograms per liter
NA	Not analyzed
NE	Not established
PPE	Probable point of entry
U	The analyte was not detected at or above the minimum or method reporting limit.
USACE	U.S. Army Corps of Engineers
BOLD	Bolded values are elevated, meaning that the values are three times the concentration of detected constituents in the background sample or greater than or equal to the non-detect concentration in the background sample.
BOLD	Shaded and bolded values are elevated and are above the EPA May 2009 MCL.
	Shaded values are above the EPA May 2009 MCL.

TABLE 11
EXPANDED SITE INSPECTION
DRAINAGE DITCHES
ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES

Analyte	EPA Region 4 Freshwater Surface Water Screening Value		Drainage Easement that Receives Drainage from AIP, Armstrong, and FMNOL	Receives Drainage from AIP, Armstrong, and FMNOL, North of Rocky Creek
	Acute	Chronic	DD-508-SW	DD-514-SW
Volatile Organic Compounds (µg/L)				
cis-1,2-Dichloroethene	NE	NE	5.0 U	15
Trichloroethene (Trichloroethylene)	NE	NE	5.0 U	3.6 J[1]
Vinyl chloride	NE	NE	5.0 U	7.9
Pesticides (µg/L)				
gamma-Chlordane	2.4[a]	0.0043[a]	0.050 U	0.15
Polychlorindated Biphenyls (µg/L)				
PCB-1248 (Aroclor 1248)	0.2	0.014	1.0 U	2.2
Total Metals (µg/L)				
Aluminum	750	87	84 J[1]	790
Arsenic	360[b]	190[b]	4.4 J[1]	2.3 J[1]
Barium	NE	NE	100 J[1]	58 J[1]
Calcium	NE	NE	89,000	66,000
Copper	9.22	6.54	2.6 J[1]	2.6 J[1]
Iron	NE	1,000	3,400	3,200
Lead	33.78	1.32	1.9 J[1]	6.2 J[1]
Magnesium	NE	NE	3,500 J[1]	2,900 J[1]
Manganese	NE	NE	440	260
Nickel	789.00	87.71	2.9 J[1]	2.4 J[1]
Potassium	NE	NE	3,100 J[1]	2,300 J[1]
Sodium	NE	NE	22,000	18,000

TABLE 11
EXPANDED SITE INSPECTION
DRAINAGE DITCHES
ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES

Analyte	EPA Region 4 Freshwater Surface Water Screening Value		Drainage Easement that Receives Drainage from AIP, Armstrong, and FMNOL	Receives Drainage from AIP, Armstrong, and FMNOL, North of Rocky Creek
	Acute	Chronic	DD-508-SW	DD-514-SW
Total Metals (µg/L)				
Vanadium	NE	NE	3.4 J[1]	6.8 J[1]
Zinc	65.04	58.91	120	24 UJ
Dissolved Metals (µg/L)				
Barium	NE	NE	86 J[1]	38 J[1]
Calcium	NE	NE	91,000	60,000
Copper	9.22	6.54	2.6 J[1]	1.4 J[1]
Iron	NE	1,000	220	430
Magnesium	NE	NE	3,600 J[1]	2,700 J[1]
Manganese	NE	NE	440	140
Nickel	789.00	87.71	2.2 J[1]	1.3 J[1]
Potassium	NE	NE	3,200 J[1]	2,200 J[1]
Silver	1.23	0.012	2.8 J[1]	10 U
Sodium	NE	NE	21,000	18,000
Zinc	65.04	58.91	98	8.8 UJ

TABLE 11
EXPANDED SITE INSPECTION
DRAINAGE DITCHES
ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES

Notes:

[a]	EPA Region 4 November 2001 Freshwater Surface Water Screening Value entry used is for chlordane.
[b]	EPA Region 4 November 2001 Freshwater Surface Water Screening Value entry used is for arsenic III.
AIP	Allied Industrial Park
Armstrong	Armstrong World Industries, Inc.
DD	Drainage ditches
EPA	U.S. Environmental Protection Agency
FMNOL	Former Macon Naval Ordnance Landfill
J[1]	Concentration reported is less than the lowest standard on the calibration curve.
µg/L	Micrograms per liter
NE	Not established
SW	Surface water sample
U	The analyte was not detected at or above the minimum reporting limit.
UJ	The analyte was not detected at or above the minimum reporting limit; the reported value is an estimate.
	Shaded values are above the EPA Region 4 November 2001 Freshwater Surface Water Screening Value.

The surface water screeing values were obtained from the EPA Region 4, Waste Management Division, Freshwater Surface Water Screening Values for Hazardous Waste Sites, last updated November 2001.

TABLE 12
EPANDED SITE INSPECTION
DRAINAGE DITCHES
ORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES

Analyte	EPA Region 4 Sediment Screening Value	Background		Drainage Easement that Receives Drainage from AIP, Armstrong, and FMNOL			Receives Drainage from AIP, Armstrong, and FMNOL, North of Rocky Creek
		DD-502-SD	DD-503-SD	DD-508-SD	DD-509-SD	DD-510-SD	DD-514-SD
Volatile Organic Compounds (µg/kg)							
Methyl Acetate	NE	6.8	2.1 J[1]	8.5 U	3.0 U	16 U	31 U
Semivolatile Organic Compounds (µg/kg)							
Acenaphthene	330	210 U	200 U	530 U	56 J[1]	3,700 U	8,300 U
Acenaphthylene	330	210 U	74 J[1]	530 U	210 U	3,700 U	8,300 U
Acetophenone	NE	210 U	200 U	140 J[1]	47 J[1]	3,700 U	8,300 U
Anthracene	330	210 U	23 J[1]	530 UJ	120 J[1]	3,700 U	8,300 U
Benzaldehyde	NE	210 U	46 J[1]	120 J[1]	210 UJ	3,700 U	8,300 U
Benzo(a)anthracene	330	210 U	220	**710 J-**	**910**	1,500 J[1]	8,300 U
Benzo(a)pyrene	330	61 J[1]	230	**1,400**	**1,500**	3,700 J[1]	1,900 J[1]
Benzo(b)fluoranthene	NE	100 J[1]	330 J	**1,000**	**1,400**	1,200 J[1]	8,300 U
Benzo(g,h,i)perylene	NE	72 J[1]	210	**680**	560	**7,100**	2,800 J[1]
Benzo(k)fluoranthene	NE	38 J[1]	230	610	640	3,700 U	8,300 U
Bis(2-ethylhexyl) phthalate	182	240 J	270 J	**2,200**	**2,500**	3,700 UJ	8,300 UJ
Carbazole	NE	210 U	200 U	530 UJ	120 J[1]	3,700 U	8,300 U
Chrysene	330	68 J[1]	260	**1,200 J-**	**1,300**	2,500 J[1]	1,200 J[1]
Dibenzo(a,h)anthracene	330	210 U	97 J[1]	130 J[1]	140 J[1]	3,700 U	8,300 U
Fluoranthene	330	87 J[1]	310	920 J-	**1,300**	3,700 U	8,300 U
Indeno(1,2,3-cd) pyrene	NE	92 J[1]	270 J	290 J[1]	270	1,800 J[1]	8,300 U
Pentachlorophenol	NE	410 U	390 U	1,000 U	410 U	1,600 J[1]	16,000 U
Phenanthrene	330	35 J[1]	69 J[1]	360 J[1]	**570**	370 J[1]	8,300 U
Pyrene	330	79 J[1]	270	**950 J-**	**1,200**	1,400 J[1]	8,300 U

TABLE 12
EPANDED SITE INSPECTION
DRAINAGE DITCHES
ORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES

Analyte	EPA Region 4 Sediment Screening Value	Background		Drainage Easement that Receives Drainage from AIP, Armstrong, and FMNOL			Receives Drainage from AIP, Armstrong, and FMNOL, North of Rocky Creek
		DD-502-SD	DD-503-SD	DD-508-SD	DD-509-SD	DD-510-SD	DD-514-SD
Chlorinated Pesticides (µg/kg)							
4,4'-DDD (p,p'-DDD)	3.3	4.1 U	3.9 U	**34**	4.1 U	7.1 U	16 U
4,4'-DDE (p,p'-DDE)	3.3	2.7 J[1]	16	**230**	16 U	7.1 U	16 U
4,4'-DDT (p,p'-DDT)	3.3	2.4 J[1]	2.0 J[1]	**210 J**	33 U	7.1 U	16 U
alpha-Chlordane	1.7[a]	2.1 U	2.0 U	**27**	**13**	3.7 U	8.3 U
beta-BHC	NE	2.1 U	2.0 U	32 U	**22**	3.7 U	8.3 U
Endrin	3.3	4.1 U	3.9 U	21 U	**17**	7.1 U	16 U
gamma-BHC (Lindane)	3.3	2.1 U	2.0 U	19 U	**7.2**	3.7 U	**8.5**
gamma-Chlordane	1.7[a]	2.1 U	2.0 U	19 U	6.4 U	**56**	**72**
Methoxychlor	NE	21 U	20 U	**24**	11 J[1]	37 U	83 U
Polychlorinated Biphenyls (µg/kg)							
PCB-1248 (Aroclor 1248)	33[b]	41 U	39 U	**14,000 J-**	**3,700 J-**	**1,800**	**2,400 J**
PCB-1260 (Aroclor 1260)	33[b]	41 U	39 U	**750**	**470**	71 U	160 U
Explosives (mg/kg)							
1,3,5-Trinitrobenzene	NE	NA	NA	4.6 U	2.5 U	0.82 JN	NA

TABLE 12
EXPANDED SITE INSPECTION
DRAINAGE DITCHES
ORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES

Notes:

[a]	EPA Region 4 November 2001 Sediment Screening Value entry used is for chlordane
[b]	EPA Region 4 November 2001 Sediment Screening Value entry used is for total PCBs.
AIP	Allied Industrial Park
Armstrong	Armstrong World Industries, Inc.
DD	Drainage ditches
EPA	U.S. Environmental Protection Agency
FMNOL	Former Macon Naval Ordnance Landfill
J	The identification of the analyte is acceptable; the reported value is an estimate.
J-	The identification of the analyte is acceptable; the reported value is an estimate with a possible low bias.
J[1]	Concentration reported is less than the lowest standard on the calibration curve.
JN	The result is presumptive (tentatively identified), but a confirmation was not performed because the result was greater than the method detection limit, but less than the reporting limit.
µg/kg	Micrograms per kilogram
mg/kg	Milligrams per kilogram
NA	Not analyzed
NE	Not established
SD	Sediment sample
U	The analyte was not detected at or above the minimum or method reporting limit.
UJ	The analyte was not detected at or above the minimum or method reporting limit; the reported value is an estimate.
BOLD	Bolded values are elevated, meaning that the values are three times the concentration of detected constituents in the background sample or greater than or equal to the non-detect concentration in the background sample.
BOLD	Shaded and bolded values are elevated and are above the EPA Region 4 November 2001 Sediment Screening Value.
	Shaded values are above the EPA Region 4 November 2001 Sediment Screening Value.

The sediment screeing values were obtained from the EPA Region 4, Waste Management Division, Sediment Screening Values for Hazardous Waste Sites, last updated November 2001.

TABLE 13
EXPANDED SITE INSPECTION
DRAINAGE DITCHES
INORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES

Analyte	EPA Region 4 Sediment Screening Value	Background		Drainage Easement that Receives Drainage from AIP, Armstrong, and FMNOL			Receives Drainage from AIP, Armstrong, and FMNOL, North of Rocky Creek
		DD-502-SD	DD-503-SD	DD-508-SD	DD-509-SD	DD-510-SD	DD-514-SD
Metals (mg/kg)							
Aluminum	NE	6,900	3,800	4,500	5,700	8,900	11,000
Antimony	12	0.37 J[1]	7.1 UJ	0.47 J[1]	2.8 J[1]	0.53 J[1]	R
Arsenic	7.24	2.8	1.1 J[1]	0.63 J[1]	0.91 J[1]	2.7	4.4 J[1]
Barium	NE	89	25	57	100	140	110 J[1]
Beryllium	NE	0.22 J[1]	0.056 J[1]	0.16 J[1]	0.45 J[1]	0.59 UJ	0.73 UJ
Cadmium	0.676	1.2	0.36 UJ	**8.4**	**12**	**4.5**	**12**
Calcium	NE	1,200	970	**3,600**	**9,300**	1,200	**11,000**
Chromium	52.3	26	9.1	18	16	31	29
Cobalt	NE	2.5 J[1]	0.37 J[1]	1.3 J[1]	1.0 J[1]	8.1 UJ	5.1 UJ
Copper	18.7	13	3.9	38	28	20	**45**
Iron	NE	10,000	6,800	5,000	4,800	18,000	11,000
Lead	30.2	80	10	110	77	49	110
Magnesium	NE	650	180 J[1]	470 J[1]	1,700	760 J[1]	1,200 J[1]
Manganese	NE	490	94	67	180	960	220
Mercury	0.13	0.088 UJ	0.030 UJ	**0.24**	**0.27**	**0.35 J-**	**0.63 J-**
Nickel	15.9	3.3 J[1]	0.85 J[1]	3.7 J[1]	3.3 J[1]	4.5 J[1]	8.6 J[1]
Potassium	NE	330 J[1]	95 J[1]	100 J[1]	280 J[1]	460 J[1]	410 J[1]
Sodium	NE	15 J[1]	6.2 J[1]	79 J[1]	160 J[1]	46 J[1]	260 J[1]
Thallium	NE	0.40 J[1]	0.16 J[1]	3.6 U	4.1 U	0.50 UJ	14 U
Vanadium	NE	28 J-	19 J-	17 J-	13 J-	43 J-	47 J-
Zinc	124	150	12	390	150	56	300

TABLE 13
EXPANDED SITE INSPECTION
DRAINAGE DITCHES
INORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES

Notes:

AIP	Allied Industrial Park
Armstrong	Armstrong World Industries
DD	Drainage ditches
EPA	U.S. Environmental Protection Agency
FMNOL	Former Macon Naval Ordnance Landfill
J-	The identification of the analyte is acceptable; the reported value is an estimate with a possible low bias.
J[1]	Concentration reported is less than the lowest standard on the calibration curve.
mg/kg	Milligrams per kilogram
NE	Not established
R	The sample results are unusable based on the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
SD	Sediment sample
U	The analyte was not detected at or above the minimum reporting limit.
UJ	The analyte was not detected at or above the minimum reporting limit; the reported value is an estimate.
BOLD	Bolded values are elevated, meaning that the values are three times the concentration of detected constituents in the background sample or greater than or equal to the non-detect concentration in the background sample.
BOLD	Shaded and bolded values are eleavated and are above the EPA Region 4 November 2001 Sediment Screening Value.
	Shaded values are above the EPA Region 4 November 2001 Sediment Screening Value.

The sediment screeing values were obtained from the EPA Region 4, Waste Management Division, Sediment Screening Values for Hazardous Waste Sites, last updated November 2001.

TABLE 14
EXPANDED SITE INSPECTION
ROCKY CREEK
ANALYTICAL RESULTS FOR BACKGROUND SURFACE WATER SAMPLES

Analyte	Background Locations					Highest Background Value[1]
	RC-400-SW	RC-401-SW	RC-402-SW	RC-403-SW	RC-403-SW-DUP	
Total Metals (µg/L)						
Aluminum	750	420	560	660	390	750
Barium	56 J[1]	49 J[1]	54 J[1]	56 J[1]	48 J[1]	56 J[1]
Calcium	3,900 J[1]	6,500	5,000 J[1]	5,000	4,800 J[1]	6,500
Copper	1.3 J[1]	25 U	25 U	1.1 J[1]	1.0 J[1]	1.3 J[1]
Iron	2,500	3,200	2,300	2,500	1,800	3,200
Lead	10 U	10 U	10 U	10 U	10 U	10 U
Magnesium	1,500 J[1]	1,800 J[1]	1,800 J[1]	1,800 J[1]	1,700 J[1]	1,800 J[1]
Manganese	380	360	560	620	420	620
Potassium	2,400 J[1]	2,000 J[1]	2,400 J[1]	2,400 J[1]	2,400 J[1]	2,400 J[1]
Sodium	2,800 J[1]	3,800 J[1]	3,200 J[1]	3,300 J[1]	3,200 J[1]	3,800 J[1]
Thallium	25 U	25 U	25 U	25 U	25 U	25 U
Vanadium	3.3 J[1]	1.9 J[1]	2.3 J[1]	2.3 J[1]	2.1 J[1]	3.3 J[1]
Dissolved Metals (µg/L)						
Barium	49 J[1]	42 J[1]	45 J[1]	38 J[1]	36 J[1]	49 J[1]
Calcium	4,000 J[1]	6,600	5,500	4,700 J[1]	4,800 J[1]	6,600
Copper	1.0 J[1]	1.3 J[1]	1.7 J[1]	25 U	1.4 J[1]	1.7 J[1]
Iron	1,000	1,400	940	950	900	1,400
Magnesium	1,500 J[1]	1,900 J[1]	1,700 J[1]	1,700 J[1]	1,700 J[1]	1,900 J[1]
Manganese	300	250	110	110	50	300
Potassium	2,500 J[1]	2,200 J[1]	2,500 J[1]	2,400 J[1]	2,400 J[1]	2,500 J[1]
Sodium	3,000 J[1]	3,800 J[1]	3,500 J[1]	3,200 J[1]	3,500 J[1]	3,800 J[1]

TABLE 14
EXPANDED SITE INSPECTION
ROCKY CREEK
ANALYTICAL RESULTS FOR BACKGROUND SURFACE WATER SAMPLES

Notes:

[1]	The background value listed is either the highest detection or, if the analyte was not detected in any background sample, the non-detect with the highest minimum reporting limit.
DUP	Field duplicate
J[1]	Concentration reported is less than the lowest standard on the calibration curve.
µg/L	Micrograms per liter
RC	Rocky Creek
SW	Surface water sample
U	The analyte was not detected at or above the minimum reporting limit.

TABLE 15
EXPANDED SITE INSPECTION
ROCKY CREEK
ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES

Analyte	EPA Region 4 Freshwater Surface Water Screening Value		Highest Background Value[1]	South of Armstrong Remote Landfill	Downstream from PPE 1	At PPE 2	Between PPE 2 and PPE 3	At PPE 3	Downstream from PPE 3
	Acute	Chronic		RC-404-SW	RC-405-SW	RC-406-SW	RC-407-SW	RC-408-SW	RC-409-SW
Total Metals (µg/L)									
Aluminum	750	87	750	460	400	750	220	380	410
Barium	NE	NE	56 J[1]	52 J[1]	55 J[1]	51 J[1]	50 J[1]	48 J[1]	54 J[1]
Calcium	NE	NE	6,500	5,200	5,600	5,600	6,100	7,600	8,200
Copper	9.22	6.54	1.3 J[1]	0.91 J[1]	25 U	1.3 J[1]	25 U	25 U	25 U
Iron	NE	1,000	3,200	2,200	2,200	3,000	2,900	2,100	2,500
Lead	33.78	1.32	10 U	10 U	10 U	2.1 J[1]	10 U	10 U	10 U
Magnesium	NE	NE	1,800 J[1]	1,800 J[1]	2,000 J[1]	1,700 J[1]	1,800 J[1]	1,900 J[1]	2,000 J[1]
Manganese	NE	NE	620	560	710	320	390	490	630
Potassium	NE	NE	2,400 J[1]	2,400 J[1]	2,400 J[1]	2,300 J[1]	2,100 J[1]	2,300 J[1]	2,200 J[1]
Sodium	NE	NE	3,800 J[1]	3,300 J[1]	3,400 J[1]	3,200 J[1]	3,500 J[1]	3,700 J[1]	3,800 J[1]
Thallium	140.00	4.00	25 U	25 U	25 U	1.7 J[1]	25 U	25 U	25 U
Vanadium	NE	NE	3.3 J[1]	1.7 J[1]	1.2 J[1]	3.6 J[1]	1.5 J[1]	1.6 J[1]	1.8 J[1]
Dissolved Metals (µg/L)									
Barium	NE	NE	49 J[1]	42 J[1]	41 J[1]	43 J[1]	42 J[1]	46 J[1]	50 J[1]
Calcium	NE	NE	6,600	5,100	5,400	5,300	6,000	7,100	8,100
Copper	9.22	6.54	1.7 J[1]	1.4 J[1]	1.2 J[1]	0.98 J[1]	0.93 J[1]	1.0 J[1]	1.9 J[1]
Iron	NE	1,000	1,400	1,100	1,100	810	930	1,000	1,100
Magnesium	NE	NE	1,900 J[1]	1,800 J[1]	1,900 J[1]	1,600 J[1]	1,700 J[1]	1,800 J[1]	2,000 J[1]
Manganese	NE	NE	300	200	240	230	290	410	520
Potassium	NE	NE	2,500 J[1]	2,500 J[1]	2,400 J[1]	2,200 J[1]	2,100 J[1]	2,400 J[1]	2,400 J[1]
Sodium	NE	NE	3,800 J[1]	3,300 J[1]	3,400 J[1]	3,200 J[1]	3,500 J[1]	3,800 J[1]	3,900 J[1]

TABLE 15
EXPANDED SITE INSPECTION
ROCKY CREEK
ANALYTICAL RESULTS FOR SURFACE WATER SAMPLES

Notes:

[1]	The background values listed were obtained from Table 14.
EPA	U.S. Environmental Protection Agency
J[1]	Concentration reported is less than the lowest standard on the calibration curve.
µg/L	Micrograms per liter
NE	Not established
PPE	Probable point of entry
RC	Rocky Creek
SW	Surface water sample
U	The analyte was not detected at or above the minimum reporting limit.
	Shaded values are above the EPA Region 4 November 2001 Freshwater Surface Water Screening Value.

The surface water screeing values were obtained from the EPA Region 4, Waste Management Division, Freshwater Surface Water Screening Values for Hazardous Waste Sites, last updated November 2001.

TABLE 16
EXPANDED SITE INSPECTION
ROCKY CREEK
ORGANIC ANALYTICAL RESULTS FOR BACKGROUND SEDIMENT SAMPLES

Analyte	Background Locations					Highest Background Value[1]
	RC-400-SD	RC-401-SD	RC-402-SD	RC-403-SD	RC-403-SD-DUP	
Volatile Organic Compounds (µg/kg)						
Dichlorodifluoromethane (Freon 12)	4.5 U	1.6 J[1]	11 UJ	14 UJ	15 UJ	1.6 J[1]
Trichlorofluoromethane (Freon 11)	4.5 UJ	1.2 J[1]	11 U	14 U	15 U	1.2 J[1]
Semivolatile Organic Compounds (µg/kg)						
2-Methylnaphthalene	77 J[1]	220 U	290 U	350 U	350 U	77 J[1]
Acenaphthene	430	220 U	290 U	350 U	350 U	430
Acenaphthylene	75 J[1]	220 U	290 U	350 U	350 U	75 J[1]
Acetophenone	200 U	220 U	290 U	350 U	350 U	350 U
Anthracene	2,000 J-	220 UJ	290 U	350 U	350 U	2,000 J-
Benzaldehyde	200 UJ	220 UJ	290 U	350 U	350 U	350 U
Benzo(a)anthracene	4,900	220 U	290 U	350 U	350 U	4,900
Benzo(a)pyrene	2,800	220 U	290 U	350 U	350 U	2,800
Benzo(b)fluoranthene	3,900	220 U	290 U	350 U	350 U	3,900
Benzo(g,h,i)perylene	520	220 U	290 U	350 U	350 U	520
Benzo(k)fluoranthene	1,600	220 U	290 U	350 U	350 U	1,600
Bis(2-ethylhexyl) phthalate	570	220 U	290 UJ	350 UJ	350 UJ	570
Carbazole	560 J	220 UJ	290 U	350 U	350 U	560 J
Chrysene	4,400	220 U	290 U	350 U	350 U	4,400
Dibenzo(a,h)anthracene	340	220 U	290 U	350 U	350 U	340
Dibenzofuran	340	220 U	290 U	350 U	350 U	340
Fluoranthene	15,000	220 U	290 U	350 U	350 U	15,000
Fluorene	600 J-	220 UJ	290 U	350 U	350 U	600 J-
Indeno(1,2,3-cd) pyrene	900	220 U	290 U	350 U	350 U	900
Naphthalene	43 J[1]	220 U	290 U	350 U	350 U	43 J[1]
Pentachlorophenol	380 U	R	570 UJ	670 UJ	680 UJ	680 UJ
Phenanthrene	11,000	220 U	290 U	350 U	350 U	11,000
Pyrene	9,900	220 U	290 U	350 U	350 U	9,900

TABLE 16
EXPANDED SITE INSPECTION
ROCKY CREEK
ORGANIC ANALYTICAL RESULTS FOR BACKGROUND SEDIMENT SAMPLES

Analyte	Background Locations					Highest Background Value[1]
	RC-400-SD	RC-401-SD	RC-402-SD	RC-403-SD	RC-403-SD-DUP	
Chlorinated Pesticides (µg/kg)						
4,4'-DDE (p,p'-DDE)	3.8 U	4.3 U	5.7 U	6.7 U	6.8 U	6.8 U
4,4'-DDT (p,p'-DDT)	4.0 U	4.3 U	5.7 U	6.7 U	6.8 U	6.8 U
alpha-Chlordane	3.2 U	2.2 U	2.9 U	3.5 U	3.5 U	3.5 U
beta-BHC	2.6 U	2.2 U	2.9 U	3.5 U	3.5 U	3.5 U
Endosulfan I (alpha)	0.45 J[1]	2.2 U	2.9 U	3.5 U	3.5 U	0.45 J[1]
Endosulfan II (beta)	3.8 U	4.3 U	5.7 U	6.7 U	6.8 U	6.8 U
Endosulfan Sulfate	1.5 J[1]	4.3 U	5.7 U	6.7 U	6.8 U	1.5 J[1]
Endrin	2.1 J[1]	4.3 U	5.7 U	6.7 U	6.8 U	2.1 J[1]
Endrin ketone	3.7 J[1]	4.3 U	5.7 U	6.7 U	6.8 U	3.7 J[1]
gamma-Chlordane	2.3	2.2 U	2.9 U	3.5 U	3.5 U	2.3
Methoxychlor	20 U	22 U	29 U	35 U	35 U	35 U
Polychlorinated Biphenyls (µg/kg)						
PCB-1248 (Aroclor 1248)	38 UJ	43 UJ	57 U	67 U	68 U	68 U
PCB-1254 (Aroclor 1254)	38 U	43 U	57 U	67 U	68 U	68 U
Explosives (mg/kg)						
3-Nitrotoluene	NA	NA	2.7 U	NA	NA	2.7 U
RDX	NA	NA	2.7 U	NA	NA	2.7 U
1,3,5-Trinitrobenzene	NA	NA	2.7 U	NA	NA	2.7 U

TABLE 16
EXPANDED SITE INSPECTION
ROCKY CREEK
ANALYTICAL RESULTS FOR BACKGROUND SEDIMENT SAMPLES

Notes:

[1]	The background value listed is either the highest detection or, if the analyte was not detected in any background sample, the non-detect with the highest sample quantitation limit.
DUP	Field duplicate
J	The identification of the analyte is acceptable; the reported value is an estimate.
J-	The identification of the analyte is acceptable; the reported value is an estimate with a possible low bias.
J[1]	Concentration reported is less than the lowest standard on the calibration curve.
µg/kg	Micrograms per kilogram
mg/kg	Milligrams per kilogram
NA	Not analyzed
R	The sample results are unusable based on the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
RC	Rocky Creek
SD	Sediment sample
U	The analyte was not detected at or above the minimum or method reporting limit.
UJ	The analyte was not detected at or above the minimum or method reporting limit; the reported value is an estimate.

TABLE 17
EXPANDED SITE INSPECTION
ROCKY CREEK
ORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES

Analyte	EPA Region 4 Sediment Screening Value	Highest Background Value[1]	South of Armstrong Remote Landfill RC-404-SD	Downstream from PPE 1 RC-405-SD	At PPE 2 RC-406-SD	Between PPE 2 and PPE 3 RC-407-SD
Volatile Organic Compounds (µg/kg)						
Dichlorodifluoromethane (Freon 12)	NE	1.6 J[1]	12 UJ	7.7 UJ	9.1 U	12 UJ
Trichlorofluoromethane (Freon 11)	NE	1.2 J[1]	12 U	7.7 U	9.1 U	12 U
Semivolatile Organic Compounds (µg/kg)						
2-Methylnaphthalene	330	77 J[1]	310 U	230 U	290 U	3,800 U
Acenaphthene	330	430	310 U	230 U	290 U	3,800 U
Acenaphthylene	330	75 J[1]	310 U	230 U	290 U	3,800 U
Acetophenone	NE	350 U	310 U	230 U	77 J[1]	3,800 U
Anthracene	330	2,000 J-	310 U	230 U	290 UJ	3,800 U
Benzaldehyde	NE	350 U	310 U	33 J[1]	290 UJ	3,800 U
Benzo(a)anthracene	330	4,900	310 U	53 J[1]	110 J[1]	1,600 J[1]
Benzo(a)pyrene	330	2,800	310 U	130 J[1]	240 J[1]	3,800 J[1]
Benzo(b)fluoranthene	NE	3,900	310 U	230 U	97 J[1]	990 J[1]
Benzo(g,h,i)perylene	NE	520	310 U	200 J[1]	260 J[1]	**5,400**
Benzo(k)fluoranthene	NE	1,600	310 U	230 U	290 U	510 J[1]
Bis(2-ethylhexyl) phthalate	182	570	310 UJ	230 UJ	290 U	3,800 UJ
Carbazole	NE	560 J	310 U	230 U	290 UJ	3,800 U
Chrysene	330	4,400	310 U	92 J[1]	200 J[1]	2,700 J[1]
Dibenzo(a,h)anthracene	330	340	310 U	230 U	290 U	3,800 U
Dibenzofuran	NE	340	310 U	230 U	290 U	3,800 U
Fluoranthene	330	15,000	97 J[1]	230 U	53 J[1]	420 J[1]
Fluorene	330	600 J-	310 U	230 U	290 UJ	3,800 U
Indeno(1,2,3-cd) pyrene	NE	900	310 U	230 U	54 J[1]	1,100 J[1]
Naphthalene	330	43 J[1]	310 U	230 U	290 U	3,800 U
Pentachlorophenol	NE	680 UJ	600 UJ	450 U	570 U	7,500 U
Phenanthrene	330	11,000	310 U	230 U	290 U	540 J[1]
Pyrene	330	9,900	75 J[1]	51 J[1]	290 U	1,600 J[1]

TABLE 17
EXPANDED SITE INSPECTION
ROCKY CREEK
ORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES

Analyte	EPA Region 4 Sediment Screening Value	Highest Background Value[1]	South of Armstrong Remote Landfill RC-404-SD	Downstream from PPE 1 RC-405-SD	At PPE 2 RC-406-SD	Between PPE 2 and PPE 3 RC-407-SD
Chlorinated Pesticides (µg/kg)						
4,4'-DDE (p,p'-DDE)	3.3	6.8 U	6.0 U	4.5 U	5.7 U	7.5 U
4,4'-DDT (p,p'-DDT)	3.3	6.8 U	6.0 U	4.5 U	**8.8**	7.5 U
alpha-Chlordane	1.7[a]	3.5 U	3.1 U	2.3 U	2.9 U	3.9 U
beta-BHC	NE	3.5 U	3.1 U	2.3 U	2.9 J[1]	3.9 U
Endosulfan I (alpha)	NE	0.45 J[1]	3.1 U	2.3 U	2.9 U	3.9 U
Endosulfan II (beta)	NE	6.8 U	6.0 U	4.5 U	5.7 U	7.5 U
Endosulfan Sulfate	NE	1.5 J[1]	6.0 U	4.5 U	5.7 U	7.5 U
Endrin	3.3	2.1 J[1]	6.0 U	4.5 U	2.4 J[1]	7.5 U
Endrin ketone	NE	3.7 J[1]	6.0 U	4.5 U	5.7 U	7.5 U
gamma-Chlordane	1.7[a]	2.3	3.1 U	**10**	4.6 U	**93**
Methoxychlor	NE	35 U	31 U	23 U	29 U	39 U
Polychlorinated Biphenyls (µg/kg)						
PCB-1248 (Aroclor 1248)	33[b]	68 U	60 U	**370**	**290 J-**	**3,500**
PCB-1254 (Aroclor 1254)	33[b]	68 U	60 U	45 U	**140**	75 U
Explosives (mg/kg)						
3-Nitrotoluene	NE	2.7 U	NA	2.4 U	3.4 U	NA
RDX	NE	2.7 U	NA	0.32 JN	3.4 U	NA
1,3,5-Trinitrobenzene	NE	2.7 U	NA	2.4 U	3.4 U	NA

TABLE 17
EXPANDED SITE INSPECTION
ROCKY CREEK
ORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES

Analyte	EPA Region 4 Sediment Screening Value	Highest Background Value[1]	At PPE 3 RC-408-SD	Downstream from PPE 3 RC-409-SD
Volatile Organic Compounds (µg/kg)				
Dichlorodifluoromethane (Freon 12)	NE	1.6 J[1]	9.2 U	7.9 U
Trichlorofluoromethane (Freon 11)	NE	1.2 J[1]	9.2 U	7.9 U
Semivolatile Organic Compounds (µg/kg)				
2-Methylnaphthalene	330	77 J[1]	1,500 U	610 U
Acenaphthene	330	430	1,500 U	610 U
Acenaphthylene	330	75 J[1]	1,500 U	610 U
Acetophenone	NE	350 U	500 J[1]	140 J[1]
Anthracene	330	2,000 J-	1,500 UJ	130 J[1]
Benzaldehyde	NE	350 U	1,300 J[1]	590 J[1]
Benzo(a)anthracene	330	4,900	2,200	1,900
Benzo(a)pyrene	330	2,800	6,600	5,100
Benzo(b)fluoranthene	NE	3,900	2,200	2,000
Benzo(g,h,i)perylene	NE	520	**5,000 J**	**3,100 J**
Benzo(k)fluoranthene	NE	1,600	670 J[1]	420 J[1]
Bis(2-ethylhexyl) phthalate	182	570	**13,000 J**	**3,100 J**
Carbazole	NE	560 J	1,500 UJ	610 UJ
Chrysene	330	4,400	4,100	3,400
Dibenzo(a,h)anthracene	330	340	790 J[1]	580 J[1]
Dibenzofuran	NE	340	1,500 U	610 U
Fluoranthene	330	15,000	360 J[1]	320 J[1]
Fluorene	330	600 J-	1,500 UJ	610 UJ
Indeno(1,2,3-cd) pyrene	NE	900	990 J[1]	670 J
Naphthalene	330	43 J[1]	1,500 U	610 U
Pentachlorophenol	NE	680 UJ	**3,300**	**1,300**
Phenanthrene	330	11,000	720 J[1]	570 J[1]
Pyrene	330	9,900	2,400	2,000

TABLE 17
EXPANDED SITE INSPECTION
ROCKY CREEK
ORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES

Analyte	EPA Region 4 Sediment Screening Value	Highest Background Value[1]	At PPE 3 RC-408-SD	Downstream from PPE 3 RC-409-SD
Chlorinated Pesticides (µg/kg)				
4,4'-DDE (p,p'-DDE)	3.3	6.8 U	**77**	5.9 UJ
4,4'-DDT (p,p'-DDT)	3.3	6.8 U	**72**	**25 J-**
alpha-Chlordane	1.7[a]	3.5 U	**9.9**	2.8 J[1]
beta-BHC	NE	3.5 U	12 U	5.1 UJ
Endosulfan I (alpha)	NE	0.45 J[1]	5.2 U	3.0 UJ
Endosulfan II (beta)	NE	6.8 U	10 U	2.1 J[1]
Endosulfan Sulfate	NE	1.5 J[1]	10 U	5.9 UJ
Endrin	3.3	2.1 J[1]	10 U	5.9 UJ
Endrin ketone	NE	3.7 J[1]	10 U	5.9 UJ
gamma-Chlordane	1.7[a]	2.3	**94**	**28 J-**
Methoxychlor	NE	35 U	21 J[1]	9.0 J[1]
Polychlorinated Biphenyls (µg/kg)				
PCB-1248 (Aroclor 1248)	33[b]	68 U	**7,800 J-**	**5,000 J-**
PCB-1254 (Aroclor 1254)	33[b]	68 U	100 U	59 U
Explosives (mg/kg)				
3-Nitrotoluene	NE	2.7 U	0.91 JN	NA
RDX	NE	2.7 U	6.4 U	NA
1,3,5-Trinitrobenzene	NE	2.7 U	3.9 JN	NA

TABLE 17
EXPANDED SITE INSPECTION
ROCKY CREEK
ORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES

Notes:

[1]	The background values listed were obtained from Table 16
[a]	EPA Region 4 November 2001 Sediment Screening Value entry used is for chlordane
[b]	EPA Region 4 November 2001 Sediment Screening Value entry used is for total PCBs
EPA	U.S. Environmental Protection Agency
J	The identification of the analyte is acceptable; the reported value is an estimate.
J-	The identification of the analyte is acceptable; the reported value is an estimate with a possible low bias.
J[1]	Concentration reported is less than the lowest standard on the calibration curve.
JN	The result is presumptive (tentatively identified), but a confirmation was not performed because the result was greater than the method detection limit, but less than the reporting limit.
µg/kg	Micrograms per kilogram
mg/kg	Milligrams per kilogram
NA	Not analyzed for
NE	Not established
PCB	Polychlorinated biphenyl
PPE	Probable point of entry
RC	Rocky Creek
SD	Sediment sample
U	The analyte was not detected at or above the minimum or method reporting limit.
UJ	The analyte was not detected at or above the minimum or method reporting limit; the reported value is an estimate.
BOLD	Bolded values are elevated, meaning that the values are three times the concentration of detected constituents in the background sample or greater than or equal to the non-detect concentration in the background sample.
BOLD	Shaded and bolded values are elvated and are above the EPA Region 4 November 2001 Sediment Screening Value.
	Shaded values are above the EPA Region 4 November 2001 Sediment Screening Value.

The sediment screeing values were obtained from the EPA Region 4, Waste Management Division, Sediment Screening Values for Hazardous Waste Sites, last updated November 2001.

TABLE 18
EXPANDED SITE INSPECTION
ROCKY CREEK
INORGANIC ANALYTICAL RESULTS FOR BACKGROUND SEDIMENT SAMPLES

Analyte	Background Locations					Highest Background Value[1]
	RC-400-SD	RC-401-SD	RC-402-SD	RC-403-SD	RC-403-SD-DUP	
Metals (mg/kg)						
Aluminum	2,300	1,400	13,000	9,600	9,200	13,000
Antimony	11 UJ	7.6 UJ	R	R	R	11 UJ
Arsenic	1.1 J[1]	0.55 J[1]	5.2	5.8	5.6	5.8
Barium	53	44	240	550	400	550
Beryllium	0.078 J[1]	0.12 J[1]	0.95	0.73 UJ	0.68 UJ	0.95
Cadmium	0.93 UJ	0.63 UJ	0.86 U	1.1 U	1.0 U	1.1 U
Calcium	390 J[1]	510 J[1]	720 J[1]	1,600	1,500	1,600
Chromium	5.7	3.1	23	17	16	23
Cobalt	2.5 J[1]	4.1 J[1]	21	28	23	28
Copper	3.7 J[1]	2.3 J[1]	16	11	11	16
Iron	6,900	5,500	41,000	37,000	34,000	41,000
Lead	32	6.7	39	29	24	39
Magnesium	220 J[1]	240 J[1]	1,300	1,100	1,000	1,300
Manganese	740	1,000	3,700	11,000	8,700	11,000
Mercury	0.20 U	0.13 U	0.059 UJ	0.21 UJ	0.038 UJ	0.21 UJ
Nickel	1.0 J[1]	0.88 J[1]	6.2 J[1]	6.3 J[1]	5.7 J[1]	6.3 J[1]
Potassium	93 J[1]	99 J[1]	900	720 J[1]	670 J[1]	900
Sodium	6.4 J[1]	20 J[1]	43 J[1]	50 J[1]	53 J[1]	53 J[1]
Thallium	0.28 J[1]	0.54 J[1]	0.77 UJ	1.4 UJ	0.95 UJ	0.54 J[1]
Vanadium	16 J-	7.5 J-	62 J-	51 J-	48 J-	62 J-
Zinc	19	16	72	83	76	83

TABLE 18
EXPANDED SITE INSPECTION
ROCKY CREEK
INORGANIC ANALYTICAL RESULTS FOR BACKGROUND SEDIMENT SAMPLES

Notes:

[1]	The background value listed is either the highest detection or, if the analyte was not detected in any background sample, the non-detect with the highest sample quantitation limit.
DUP	Field duplicate
J-	The identification of the analyte is acceptable; the reported value is an estimate with a possible low bias.
J[1]	Concentration reported is less than the lowest standard on the calibration curve.
mg/kg	Milligrams per kilogram
R	The sample results are unusable based on the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
RC	Rocky Creek
SD	Sediment sample
U	The analyte was not detected at or above the minimum reporting limit.
UJ	The analyte was not detected at or above the minimum reporting limit; the reported value is an estimate.

TABLE 19
EXPANDED SITE INSPECTION
ROCKY CREEK
INORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES

Analyte	EPA Region 4 Sediment Screening Value	Highest Background Value[1]	South of Armstrong Remote Landfill RC-404-SD	Downstream from PPE 1 RC-405-SD	At PPE 2 RC-406-SD	Between PPE 2 and PPE 3 RC-407-SD	At PPE 3 RC-408-SD	Downstream from PPE 3 RC-409-SD
Metals (mg/kg)								
Aluminum	NE	13,000	13,000	1,800	5,000	6,500	10,000	12,000
Antimony	12	11 UJ	R	R	7.3 UJ	0.60 J[1]	R	R
Arsenic	7.24	5.8	4.2	0.91 J[1]	1.7	1.8 J[1]	5.0	4.0
Barium	NE	550	300	38	110	170	160	160
Beryllium	NE	0.95	0.92 UJ	0.14 UJ	0.33 J[1]	0.55 UJ	0.59 UJ	0.74 UJ
Cadmium	0.676	1.1 U	0.98 U	0.13 UJ	0.22 UJ	**6.0 J**	**15**	**6.2**
Calcium	NE	1,600	1,300	72 J[1]	450 J[1]	2,400	2,600	1,400
Chromium	52.3	23	21	4.5	11	22	38	30
Cobalt	NE	28	21	1.7 UJ	10 J[1]	9.9 UJ	9.4 UJ	15
Copper	18.7	16	15	3.0 J[1]	4.6	14 J+	39	24
Iron	NE	41,000	35,000	3,800	17,000	17,000	17,000	25,000
Lead	30.2	39	46	12	23	32	77	55
Magnesium	NE	1,300	1,300	130 J[1]	480 J[1]	820 J[1]	800 J[1]	980
Manganese	NE	11,000	5,800	120	2,000	2,900	1,900	2,700
Mercury	0.13	0.21 UJ	0.039 UJ	0.13 UJ	0.11 UJ	**0.94 J**	**1.9**	**0.77**
Nickel	15.9	6.3 J[1]	6.1 J[1]	0.84 J[1]	2.5 J[1]	4.5 J[1]	5.4 J[1]	5.4 J[1]
Potassium	NE	900	750 J[1]	110 J[1]	220 J[1]	270 J[1]	430 J[1]	600 J[1]
Sodium	NE	53 J[1]	43 J[1]	8.9 J[1]	29 J[1]	55 J[1]	61 J[1]	50 J[1]
Thallium	NE	0.54 J[1]	0.78 UJ	3.3 U	1.2 J[1]	1.2 UJ	0.41 UJ	0.33 UJ
Vanadium	NE	62 J-	57 J-	11 J-	30 J-	30 J-	41 J-	49 J-
Zinc	124	83	62	9.8	34	60 J	98	76

TABLE 19
EXPANDED SITE INSPECTION
ROCKY CREEK
INORGANIC ANALYTICAL RESULTS FOR SEDIMENT SAMPLES

Notes:

[1]	The background values listed were obtained from Table 18.
EPA	U.S. Environmental Protection Agency
J	The identification of the analyte is acceptable; the reported value is an estimate.
J+	The identification of the analyte is acceptable; the reported value is an estimate with a possible high bias.
J-	The identification of the analyte is acceptable; the reported value is an estimate with a possible low bias.
J[1]	Concentration reported is less than the lowest standard on the calibration curve.
mg/kg	Milligrams per kilogram
NE	Not established
PPE	Probable point of entry
R	The sample results are unusable based on the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
RC	Rocky Creek
SD	Sediment sample
U	The analyte was not detected at or above the minimum reporting limit.
UJ	The analyte was not detected at or above the minimum reporting limit; the reported value is an estimate.
BOLD	Shaded and bolded values are elevated, meaning that the values are three times the concentration of detected constituents in the background sample or greater than or equal to the non-detect concentration in the background sample; and are above the EPA Region 4 November 2001 Sediment Screening Value.
	Shaded values are above the EPA Region 4 November 2001 Sediment Screening Value.

The sediment screeing values were obtained from the EPA Region 4, Waste Management Division, Sediment Screening Values for Hazardous Waste Sites, last updated November 2001.

APPENDIX C

FIELD LOGBOOK NOTES

(22 Pages)

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5/12/9

1100 Arrive at FML300, on the side of the trail, Collect GPS, 4/pt. Will collect surface + subsurface 0-6" & 12"-24", respectively

VOA weights A 31.041
B 31.064g
C 30.998g

1110 Collect FML-300-SF 0-6"

1120 Collect FML-300-SB 12-24"
A 30.750
B 30.744
C 30.804

-Soil is 0-4" dark organic humus
4-6" sandy
6-12 reddish brown sandy silty clay
12-20 " same
20-24" sandy

1145 Collecting FML-301-SF
A 30.847
B 30.928
C 30.960
Soil is dark brown clayey silt with a high moisture content

5/12/9

1155 VOA FML-301-SB from 12"-24"
A 30.685
B 30.712
C 30.758
soil graduates to sandy loam

1215 FML-310 SF
A 31.035
B 31.057
C 31.039
-Red brown clayey fill 0-6"

1225 FML-310-SB
A 30.745
B 31.066
C 30.961

* NOT COLLECTED *
-Auger refusal at 4 locations near the area. Each at 8"-12" bgs
lots of concrete buried here.

1245 Team at lunch

1315 Back at site. Escorting clearing crew

1545 FML-306-SF brown clay sandy loam 0-6"
A ~~30.943~~ 30.743
B 30.715 ~~30.658~~
C ~~30.968~~ 30.741

5/12

1555 FML-306-SB
A 30.745
B 31.066
C 30.961
12-24" - sandy loam

1615 FML-307-SF (MS/MSD)
A 31.078
B 31.107
C 31.193
D 31.195
E 31.001
F 31.015
→ buff clayey silty sand 0-6"

1630 FML-307-SB 12-24" tan sand
A 30.955
B 30.878
C 30.958

1700 Team off site to deliver samples for processing.

5/14/9

1400 FML-302-SF 0-6" dark organic
A 30.951
B 30.907
C 30.974

1410 FML-302-SB 12-24 8-24" very sandy
A 31.040
B 31.012
C 31.138

1445 FML-303-SF 0-6 dark brown organic
A 31.288
B 31.194
C 31.183

1500 FML-303-SB 12-24
A 30.925
B 30.854
C 31.048

1530 off site.

5-15-9

0830 Arrive @ site Loading up

0915 FML-309-SF 0-6" saturated organic 'muck'

A 31.026
B 31.116
C 31.007

0930 FML-309-SB 18-28" bgs ('compaction' of organics)

A 31.132
B 31.215
C 31.172

0940 FML-309-SF Dup 0-6 from 1' off of 309SF

1010 FML-308-SF (MS/MSD)

A 31.036
B 31.036
C 31.242
D 31.271
E 31.090
F 30.956
G 30.751
H 30.706
I 30.731

- Organic w/ much roots/moss sphagnum type.

5-15-9

1025 FML-308-SB 12-30" (compression)

A 30.965
B 30.921
C 30.875

Saturated gray ~~muck~~ mud

1120 ~~ES~~ FML-304-SF 0-6" mud

A 31.173
B 31.211
C 31.303

1130 FML-304-SB 12-24" mud

A 31.163
B 30.952
C 30.973

1200 FML-305-SF 0-6" mud

A 31.219
B 31.216
C 31.304

1215 FML-305-SB 12-24" gray mud

A 31.174
B 31.112
C 31.287

1245 ▽ cam offsite

5/15/09 L. Shaver

1345 START Russell ~~of~~ Shaver to DD 574; GPS coordinates collected Surface water sample, water has shown unable to access point on map due to wetlands, but sediment ~~at~~ surface water sample from Drainage ditch, North of pyp Sample point on map

40ML vials
A - 30.954g
B - 30.882g
C - 30.980

soil is: dark to medium brown silty sludge - 0-3 in BGS

1445 START locates DD 572 - sediment sample collected - slightly silty ~~slightly~~ clayey sand A - 31.268(g) 0-6in BGS
B - 31.184
C - 31.124

Area is a dry drainage ditch

1506 Sample DD 571-SD is collected from wet drainage ditch; soil is sand 0-3 in BGS
A - 31.192
B - 30.895
C - 30.962
} vial tare weight (g)

05/16/09 Sunday

1500 - START arrives @ station location FML-312-MW (RUST MW-7) after careful maneouvering through wetlands after rain. (Sidenote) START had to refill air in tire on one of the ATVs after lunch as well as refuel both ATVs.

DTW - 3'
TWD - 9.1'
Purge Volume - 3 gal

1520 - Begin purging

Time	Temp	pH	Cond	D.O.	Turbidity
1533	19.86°C	6.76	245 µs/cm	4.20 mg/L	>999

1545 well seems to be running dry. START waits for well to recharge. START claims well dry, will collect sample @ 1.5 gal (½ Volume)

FML-312-MW sampled @ 1550.

Well runs dry at mid-sample, wait for recharge to collect the rest.

1615 START unable to Collect complete sample for FML-312-MW, will attempt to re-collect tomorrow.

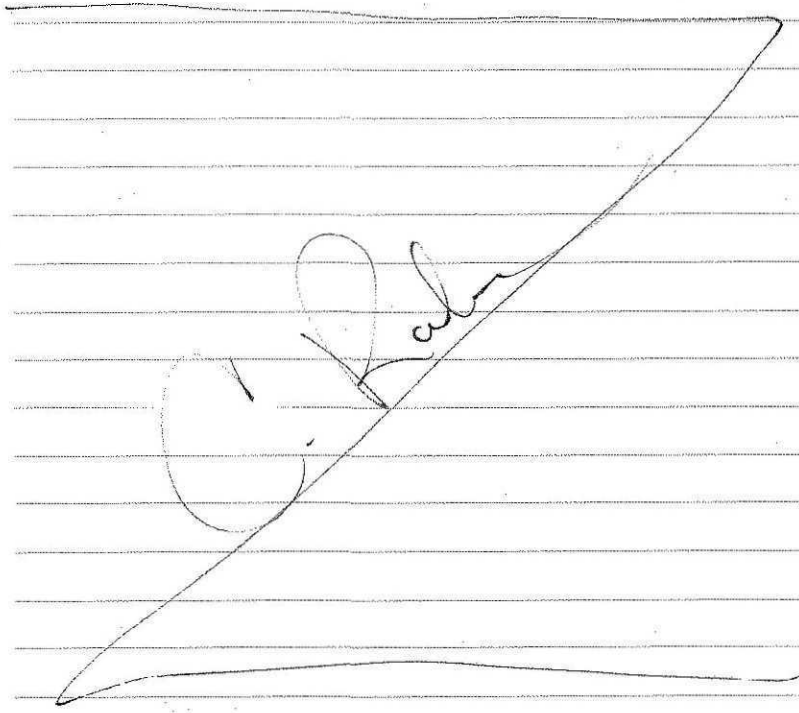
1645 - START gets one of the ATVs stuck in mud. Effort to pull at ATV unsuccessful. 2nd ATV attempts to retrieve rope from van to pull out first ATV but also gets stuck on the

05/16/09 Sunday

ride back to the van due to heavy rains traveling from the SW to the NE in an easterly direction. START decides to abort efforts to collect the rest of sample FML-312-MW, VOCs ~~were~~ are the only bottles collected for this sample.

1730 - START walks back to van and decides to make better efforts of pulling at ATVs tomorrow. It is now beginning to thunder and lightning.

1815 - START leaves site for the day.



05/19/09 Tuesday

1530 - START. Jones and Roden arrive @ Monitoring Well -19, FMNL-315-MW Due to inaccessibility to well, bailer will be used instead of pump.

DTW - 3.25'

TDW - 16.1'

Purge Volume - 6 gal

1545 - START Jones starts bailing water

Time	Temp	pH	Cond.	DO	Turbidity
1553	17.95°C	6.33	103 µs/cm	4.28 mg/L	810
1558	17.62°C	5.53	73 µs/cm	4.64 mg/L	790
1604	17.47°C	5.23	60 µs/cm	4.10 mg/L	760

FML-315-MW collected @ 1610

1630 - 1650 - START loads canoe onto ATV and carries it to Blair Storage.

1715 - START drops off canoe and heads to collect two additional MWs for the day.

1740 - ATV gets stuck on the way to collect FML313 and FML314.

1810 - After several attempts to get ATV out of thick sludge, START aborts efforts and walks back to the van located near Blair storage

1840 - START off-site.

C. Roden

05/20/09 Wednesday

0800 - START Jones and Roden arrive on-site with a 'come-along' device rented from 'Grant and Cook' to pull ATV out of sludge.

0940 - Prepare equipment to sample FML 314.

1005 - Arrive @ station location FML 314 (MW10).
DTW - 2.85'
TWD - 8.3'
Purge Volume - 2.7 gal

1010 - START Jones starts bailing water from well

Time	Temp	pH	Cond.	D.O.	Turbidity
1013	18.99°C	6.07	2.44 µS/cm	2.7 mg/L	
1018	18.11°C	6.07	290 µs/cm	2.66 mg/L	
1023	17.74°C	6.04	290 µs/cm	2.21 mg/L	

FML ~~FMNL~~ 314 - MW (MW-10) sampled @ 1028

1210 Arrive @ station location FMNL-313 after trekking through thick sludge to get to MW-~~10~~ 09
DTW - 2.95'
TWD - 8'
Purge Volume - 3 gal

1215 - START Jones begins to bail water from well. No readings collected @ this location. YSI 556 unavailable

@ ~~FMNL~~ FML -313 - MW (MW-09) collected @ 1230

C. Rod

05/20/09 Wednesday

1240 - START goes back to ~~FMNL~~ FML-314 to see if well has recharged and collect rest of sample.

1320 - START Roden leaves site to get lunch and START Jones goes back to FML-314 to collect rest of sample after letting well recharge.

1345 - START Roden back on-site
START Jones complete w/ FML 313 + FML 314

1505 - START arrives @ station location FML 311 (MW-3). Wasp nest inside of well casing. Live wasp observed, START Jones places latex glove over flip-top part of casing to prevent a bio-hazard. Glove rips, live wasps crawl out of opening. ~~Jones~~ START aborts attempt to sample FML-311 due to reasons of safety.

1630 - START Roden and Jones demobilize from site.

C. Rod

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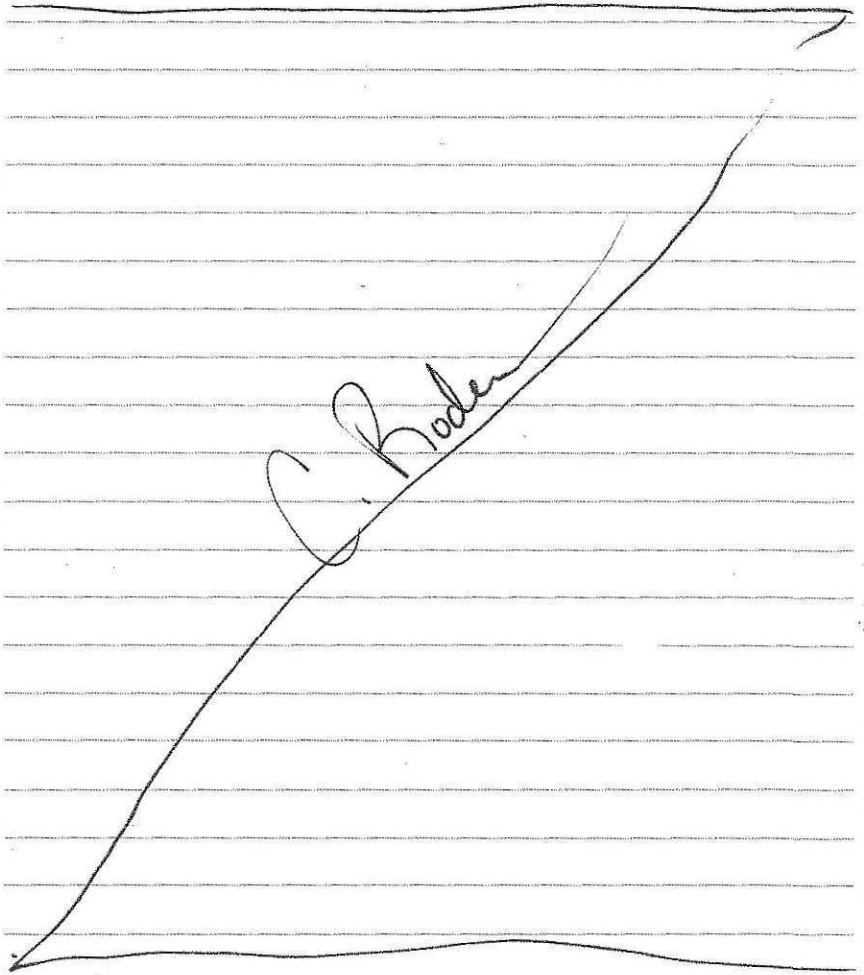
05/11/09 Monday

1415 - START sampling team prepares to Sample Armstrong World Industries and PM Kelly encounters issues w/ access agreement AWI says we don't have access to sample AWIs property. START PM Kelly works to deal w/issue.



5/13/9

0900 START members C. Berg and D. van Burek meet with Bill Hahn at Armstrong + go through safety Briefing. Glen Hawkins also in attendance.

0955 Collect AWI-213-SF
A 30.776
B 30.661 Split 1-802
C 30.792
Sandy loam 0-6"

1015 Collect AWI-213-SB
A 31.119
B 31.110 Split 1-802
C 31.193
12-24" buff sandy loam

1035 AWI-214-SF grey sandy loam 0"
A 31.177
B 31.207
C 31.067
-debris Split 1 802

1050 AWI-214-SB
Have to move over 1' from SF due to Auger refusal 12-24 same soil
A 31.013
B 30.998
C 30.876

5-13

1120 AW1-215-SF 0-6" sandy loam w/ intermixed debris
A 30.723
B 30.727
C 30.753
1135 AW1-215-SB (MSMSD)
A. 30.930
B - 30.987
C - 30.990
D - 31.258
E 31.189
F 31.164
- Sandy loam grades into debris at ≈ 20". Hole pushed to ≈18" due to compaction.
1200 AW1-216-SF 0-6"
A 30.809
B 30.745
C 30.842
dark sandy loam
1215 AW1-216-SB
A 30.920
B 30.925
C 30.942
1245 team eat lunch

Cear

5/13

1315 Offsite to drop off samples at hotel.
1430 Return to site, obtaining extra equipment from other teams.
1505 AWI-208-SF 0-6" Split 1-4oz tan/grey sandy loam
1510 AWI-208-SB 12-24" Split 1-4oz sandy tan grey ~~loam~~ clayey silt
1530 AWI-211-SF 0-6" clayey silty loam
1535 AWI-211-SB refusal @ 1st hole 3' away re-bored.
12-18" ~~same~~ debris (wood chips + bark, black color)
18+ silty clayey sand
1 ~~80~~ 5 4oz split
12-20" borehole
1605 AWI-212-SF 0-6 sandy loamy soil split 1-4oz
1610 AWI-212-SB 12-24 sand
- AWI reps say it's probably very fine perlite
~~12~~ split 1-4oz

Cear

5-13

1430/1600 AWI-209-SF 0-6 split 4oz

1440/1610 AWI-209-SB REFUSAL NOT collected

1650 AWI-210-SF 0-6" silty sand Split 1-4oz

1655 AWI-210-SB 12-24" increasing rockiness split 1-4oz

1710 AWI-207-SF 0-6 sandy silty loam Split 1-4oz

1715 AWI-207-SB 12-24" Light tan silty sand (Perlite)

1720 Done for day at AWI site. Heading back to load up

5-14-09

0830 Enter AWI. set up truck

0850 AWI-DD-500 from drainage ditch prior to AWI release point SD. 4oz split

0915 AWI-200 Surf Water sample 2 1L Ambers NO split w/AWI

0925 AWI-~~200~~-SD from moved location split 4oz w/AWI.

0935 AWI-~~205~~-SF 0-6" 3" sandy soil/organic 3-6" ~~sandy~~ clayey sand

0945 AWI-205-SB 12-24 ~~sandy~~ silty clayey sand

0950 AWI-205-SFD duplicate 0-6 NO Split

0955 AWI 205-SBD duplicate 12-24 NO split

1005 AWI-204-SF 0-6" light brn sandy soil split ~~0-4~~ 1-4oz

1015 AWI-204-SB-12-24 brownish red clayey silt, 1-4oz split

1020 AWI-203-SF 0-6 split 1 4oz

1030 AWI-203-SB 12-24 split 1-4oz

1045 AWI-202-SF 0-6" 1-4oz split

1100 AWI-202-SB 12-~~24~~ 18" refusal at 18" split 1-4oz

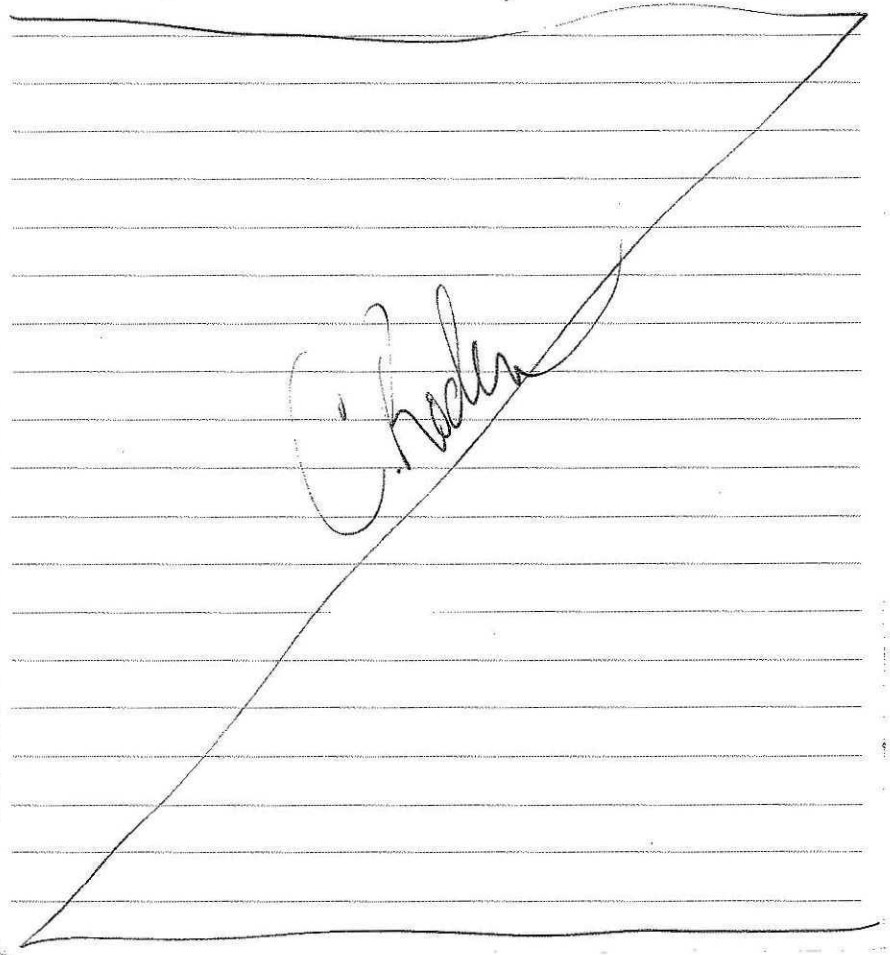
1110 AWI-201-SF 0-6" 1-4oz split

8

5-14-9

1120 AWI-201-5B 12-18"
VERY thick - tight clay w/
wood chips layered - trash
1-4oz split

1125 AWI-206-5D from outfall
ditch 0-6" split 1-4oz



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05/12/09 Tuesday

0712 - START leaves hotel headed for site.

0740 - START arrives on-site and prepares sampling equipment and supplies for days work.

0900 - START Team sampling Rocky Creek (START Russell and Roden) head out for first sampling point RC-409.

1000 - Path cannot be found to RC-409 so START will walk path along railroad to Rock Creek and walk upstream to station location RC-409

1015 - START Russell observes an abundance of wetland plants: stinging nettle, sycamore & Poplar. START also notices minnows in creek.

1100 - START unable to get to area of RC-409 as located on sample map. Sample taken at South bank on a bend approx 500 ft west of the railroad tracks.

1150 - START arrives back @ ATV and heads back to base to break for lunch.

1230 - START off-site for lunch.

1345 - START back on-site.

1430 - RC sampling team park ATV on trail and walk along drainage ditch to access RC-408. Wetland plants + animals noticed are maiden cane, sugar maple, red bud, Crayfish, small clams, tulip poplar

C. Roden

RC-407 05/19/09 1330 RC-407-SW & SD 0-3"

Rocky Creek Sampling Log:

Station Location	Date	Time	Sample ID	SD Depth
RC-400	05/18/09	1345	RC-400-SW & SD	0-3"
RC-409	05/12/09	1100	RC-409-SW	N/A
RC-409	05/12/09	1110	RC-409-SD	0-3"
RC-408	05/12/09	1600	RC-408-SW	
RC-408	05/12/09	1630	RC-408-SD	0-3"
DD-513	05/13/09	1410	DD-~~SW~~ 513-SW	
DD-513	05/13/09	1415	DD-513-SD	0-3"
DD-519	05/14/09	1010	DD-519-SD	0-3"
DD-518	05/14/09	1100	DD-518-SD	0-6"
DD-515	05/14/09	1350	DD-515-SD	0-3"
DD-517	05/14/09	1145	DD-517-SD	0-4"
DD-516	05/14/09	1440	DD-516-SD	0-3"
DD-516	05/14/09	1445	DD-516-SD-Dup	0-3"
DD-518	05/14/09	1100	DD-518-SD-ms/msd	0-3"
RC-405	05/15/09	0935	~~RC~~ RC-405-SW	
RC-405	05/15/09	0940	RC-405-SD	0-3"
DD-510	05/15/09	1135	DD-510-SD	0-3"
RC-404	05/15/09	1335	RC-404-SW ms/msd	
RC-404	05/15/09	1340	RC-404-SD ms/msd	0-3"
RC-403	05/15/09	1430	RC-403-SW	
RC-403	05/15/09	1435	RC-403-SD	0-3"
RC-406	05/18/09	1020	RC-406-SW & SD	0-4"
RC-401	05/18/09	1235	RC-401-SW & SD ms/msd	0-3"

C. Roden

05/12/09 Tuesday

1600- START Roden takes surface water sample @ station location ~~408~~ RC-408.

1630- START Roden takes sediment sample in the middle of creek @ confluence of drainage ditch and Rocky Creek, station loc. RC-408

1800 Rocky Creek sampling team arrives back @ base location and leaves site for the day.

1830 Sampling team arrives back @ hotel.

C. Roden

05/13/09 Wednesday

0753- Rocky Creek sampling team leaves hotel headed for site.

0820- RC sampling team arrives on-site and prepares sampling equipment for the day's samples.

0910- RC team parks ATV and walks to (or attempts to walk to) station location RC-407.

1030- START Cannot find an accessible path to RC-407 or RC-406.

1100- Back at base to meet w/ START Jones to help w/ pump to filter water samples RC-409 & RC-408 from non-preserved poly.

1145- START Roden & Russell leave site for lunch.

1215- START back on-site and filters water samples for metal analysis.

1400- START prepares to sample DD-513. RC-407, 406, 411 and 410 are inaccessible and therefore cannot be sampled.

1415- Surface water and sediment samples taken @ DD-513. Sediment sample taken on north bank of drainage ditch.

1445- START Roden and Russell arrive back at the van (ie. base) and filter water for metal analysis.

1515- START Roden & Russell leaves site headed back to hotel to process samples.

C. Roden

05/14/09 Thursday

0730 - START Roden and Russell leave hotel headed for site.

0800 - Arrive on-site and prepare for samples

0845 - START arrives @ station location DD-519.

1010 - START has trouble obtaining satellite reception so ~~waits~~ START collects sediment sample at a location that retrieved satellite communication. START did not observe any running water in the vicinity of point collected, only shallow pools of stagnant water observed. START determined there wasn't enough water to collect a surface water sample. Sediment sample collected on the west side of where the drainage ditch appeared on the map. The ground was too ~~inudta~~ inundated w/ water to continue searching for running water.

1100 - START Roden and Russell collect sediment sample DD-518-SD on the south side of cleared path on the drainage ditch. No water or moisture observed. An ~~MS/MSD~~ MS/MSD Collected at this station location.

Terra Weights of VOAs for sample: DD-518-SD

A: 30.950g B: 31.152g C: 31.059g

Courtney Roden

05/14/09 Thursday

Terra Weight for DD-519-SD

A: 30.899g B: 31.016g C: 31.025g

Terra Weight for MS/MSD DD-518-SD (triple volume)

1) A: 30.952g B: 31.049g C: 30.967g

2) A: 31.012g B: 30.999g C: 30.901g

1145 START takes sediment sample @ Station location DD-517. Sample taken on the South side of culvert. No water observed. slight moisture in soil. Terra Weight for VOAs:

A) 30.962g B) 31.093g C) 31.029g

1200 START heads back to base for lunch.

1215 START offsite for lunch

1315 START back on site

1350 START Roden and Russell Collect sediment sample @ station location DD-515. Sample point is in field a diversion channel rather than a drainage ditch. No water or moisture observed. Terra weight for VOAs

A) 31.204g B) 31.014g C) 30.943g

1430 - START arrives @ station location DD-516 to collect sediment sample DD-516-SD + DD-516-SD-Dup. Terra weight for

DD-516-SD: A) 30.910g B) 30.970g C) 30.918g

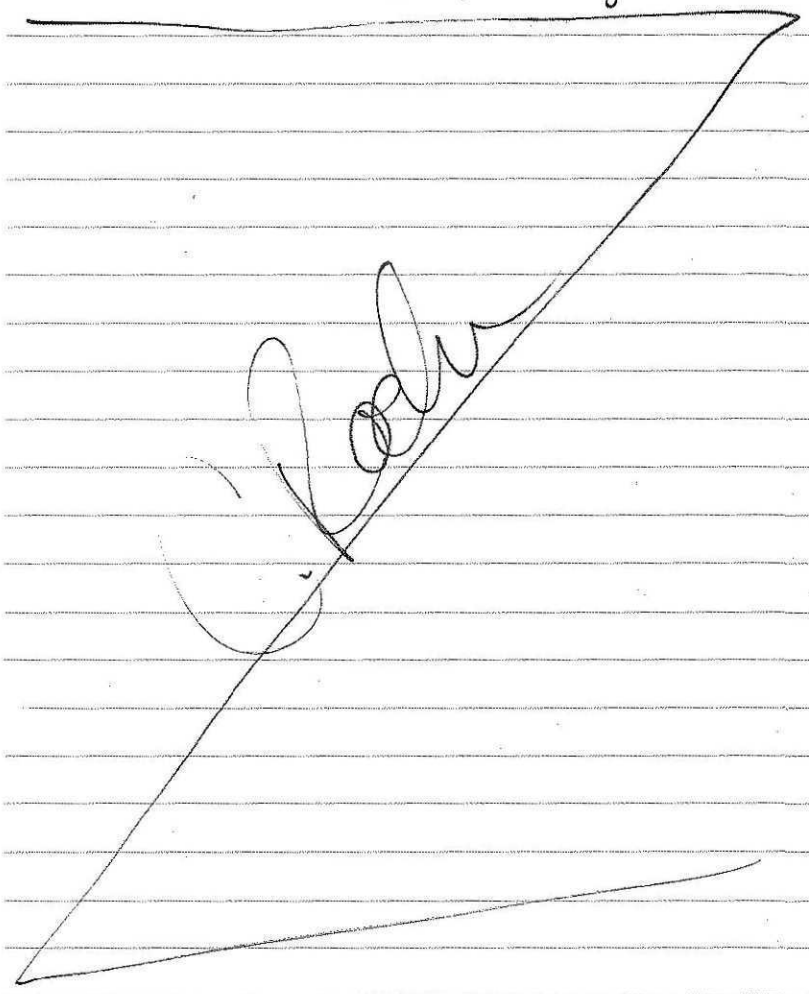
DD-516-SD-Dup: A) 30.926g B) 31.036g C) 30.997g

C. Roden

8 05/14/09

1510- START Roden and Russell arrive back @ van /base and return ATV to be stored @ Blair Storing.

1520- START off-site ~~to~~ headed back to hotel to aid w/ sample processing.



9

05/15/09 Friday

0730- START Roden and Jones depart hotel for site.

0800- Arrive @ site and prepare for day's samples.

0930 - START collects samples @ station location RC-405. RC-405-SW collected @ 0935 and RC-405-SD collected @ 0940. Sediment sample taken on NW corner of the drainage ditch and Rocky Creek confluence.

1135- START takes sample DD-510-SD on western bank of drainage ditch.

1230- START meets w/ Steven to rent canoe to collect samples on Rocky Creek

1335- START Roden and Jones collect samples @ station location RC-404. RC-404-SW collected @ 1335 and RC-404-SD collected @ ~~1340~~ 1340. A ms/msp was collected for both surface water and sediment at RC-404. Sediment sample taken on the South Side of Rocky Creek, just off the creek approx 5".

1430- RC-403-SW collected @ 1430
RC-403-SD - Collected @ 1435

C Roden

05/18/09 Monday

0800- START Jones and Roden arrive on-site to meet w/ Canoe rental representative Steven Adams

0830- Prepare for sampling RC-406, 400 and 401. Weather is cloudy and 57°F.

1000- START Roden and Jones arrive @ station location RC-406. Rains from yesterday and last night have made the water level rise at least a couple of feet. Sediment sample taken on NW corner of Rocky Creek and drainge ditch confluence. Sediment depth 0-4"

Sample collected @ 1020

Tara weights - A - 30.923
B - 31.043
C - 30.927

~~1220- START~~

1220- START tries to find location to sample RC-401 station location. Due to recent heavy rains, area is flooded and making it difficult to find dry land to collect sediment sample. ~~START will collect sediment from a trunk of a fallen tree, the only dry sediment in vicinity of RC-401~~

Dry Sediment found on high ground in flooded area. START will collect sediment from here. (Refer to photograph)

C. Roden

05/18/09 Monday

1230- START arrives @ station location RC-401. Sample collected @ 1245 SW & SD. Sediment depth is 0-3", MS/MSD collected.

1315- Headed to find station location RC-400

1335- START arrives @ station location RC-400. Since area is flooded, sediment sample will be taken from a high ground area that is not usually near the shoreline of creek. Sediment sample taken from south side of Rocky Creek approx. 50 yds from Broadway Rd on the east side. Weather is much warmer w/ clear skies. Sample collected @ 1345. Sediment 0-3"

1400- START leaves station location RC-400 headed back to canoe drop-off area.

1550- START off-site headed to hotel to help process samples

* Terra Weights.

RC-401 - A. 31.004g B. 31.214g C. 31.085g
D. 30.980g E. 31.014g F. 30.963g
G. 31.023g H. 30.996g I. 30.945g

RC-400. A 30.979g B. 31.025g C. 31.073g

C. Roden

05/19/09 Tuesday

1130- START on-site.

1230- START Kalen and Jones drop canoe in to collect FML-315-MW and RC-407.

1300- Creek becomes impassible by canoe. START gets at and walks to station location RC-407 Approx. 500 ft away. Weather = , Sunny.

1315- Ground is too inundated w/ water to walk to RC-407 as located on the sample map. START will have to collect RC-407 approx. 350' west of where RC-407 is located on the map

1330- RC-407-SW + RC-407-SD collected @1330 Sediment depth 0-3" taken on the south side of creek. Water level in creeks seems to have gone down approx. 2' since yesterday. MS/MSD collected @ RC-407.

Terra Weights- A. 30.966g B. 30.970g C. 30.912 D. 31.116g E. 31.059 F. 31.009g G. 30.919g H. 30.904g I. 30.995g

09/08/09 Tuesday

- Late note:
  - Tetra Tech collected surface water samples from the surface of the water by partially submerging the sampling container into the water. Surface water samples were filtered in the field using a peristaltic pump and a 0.45 micron filter. Sediment samples were collected from depositional areas at depths ranging from 0 to 5 inches.
- Late entry for May 15, 2009. (p. 9).
  - Sample RC-402-SW was collected at 1530 and RC-402-SD was collected at 1540. Sample was collected on North bank approx 3-5 ft from creek.

APPENDIX D

PHOTOGRAPHIC LOG

(16 Pages)

OFFICIAL PHOTOGRAPH NO. 1
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	West	**Date:**	May 13, 2009
Photographer:	Glen Hawkins, Armstrong World Industries (Armstrong)	**Witness:**	Chuck Berry, Tetra Tech
Subject:	Tetra Tech homogenizes soil sample AWI-213-SF collected from the Armstrong remote landfill.		

OFFICIAL PHOTOGRAPH NO. 2
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	West	**Date:**	May 13, 2009
Photographer:	Glen Hawkins, Armstrong	**Witness:**	Chuck Berry, Tetra Tech

Subject: Monitoring well located near sample station AWI215 on the Armstrong remote landfill property. Note that erosion of soil beneath the well pad has occurred.

OFFICIAL PHOTOGRAPH NO. 3
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	Southeast	**Date:**	May 19, 2009
Photographer:	Courtney Roden, Tetra Tech	**Witness:**	Chris Jones, Tetra Tech
Subject:	Tetra Tech uses a bailer to collect ground water sample FML-315-MW from permanent monitoring well MW-19 located north of Rocky Creek and west of PPE 2.		

OFFICIAL PHOTOGRAPH NO. 4
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Landfill
Orientation:	South	**Date:**	May 20, 2009
Photographer:	Chris Jones, Tetra Tech	**Witness:**	Courtney Roden, Tetra Tech
Subject:	Sample FML-311-MW (MW-3) could not be sampled because a wasp nest was found inside the protective cover of the well.		

OFFICIAL PHOTOGRAPH NO. 5
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	Northeast	**Date:**	May 15, 2009
Photographer:	Chris Jones, Tetra Tech	**Witness:**	Courtney Roden, Tetra Tech
Subject:	Tetra Tech collects sediment sample DD-510-SD from the Armstrong World Industries drainage easement.		

OFFICIAL PHOTOGRAPH NO. 6
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	Not Applicable	**Date:**	May 15, 2009
Photographer:	Courtney Roden, Tetra Tech	**Witness:**	Chris Jones, Tetra Tech

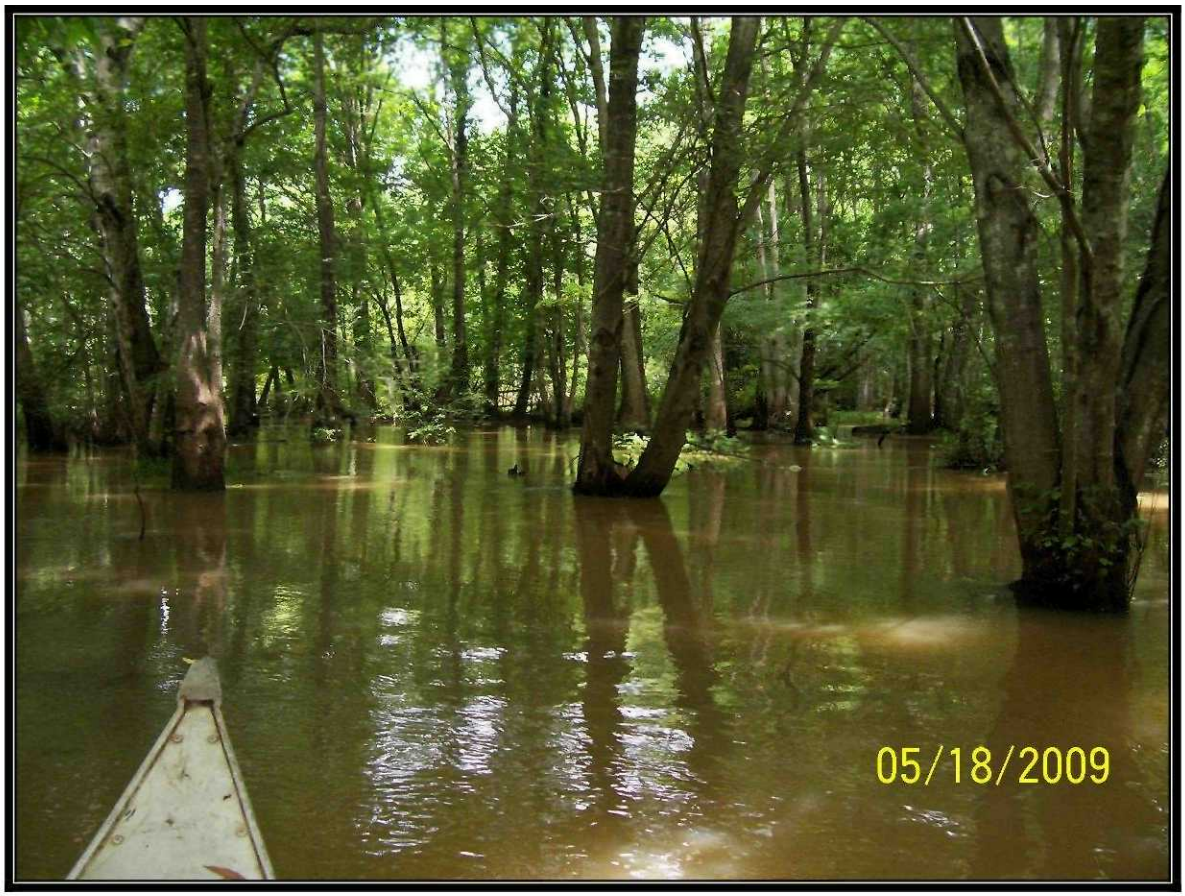
Subject: While the field crew canoed along Rocky Creek, Tetra Tech observed fishing paraphernalia hanging from a tree, west of the Central of Georgia railroad tracks.

OFFICIAL PHOTOGRAPH NO. 7
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	Northwest	**Date:**	May 18, 2009
Photographer:	Courtney Roden, Tetra Tech	**Witness:**	Chris Jones, Tetra Tech
Subject:	Sediment sample RC-401-SD was collected from a small patch of land (the only unsubmerged land in area) located on the north branch of Rocky Creek and east of Broadway.		

OFFICIAL PHOTOGRAPH NO. 8
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	East	**Date:**	May 18, 2009
Photographer:	Courtney Roden, Tetra Tech	**Witness:**	Chris Jones, Tetra Tech
Subject:	Rocky Creek flood waters near sample station RC400 located on the south branch of Rocky Creek and east of Broadway. Note the water level on the trees.		

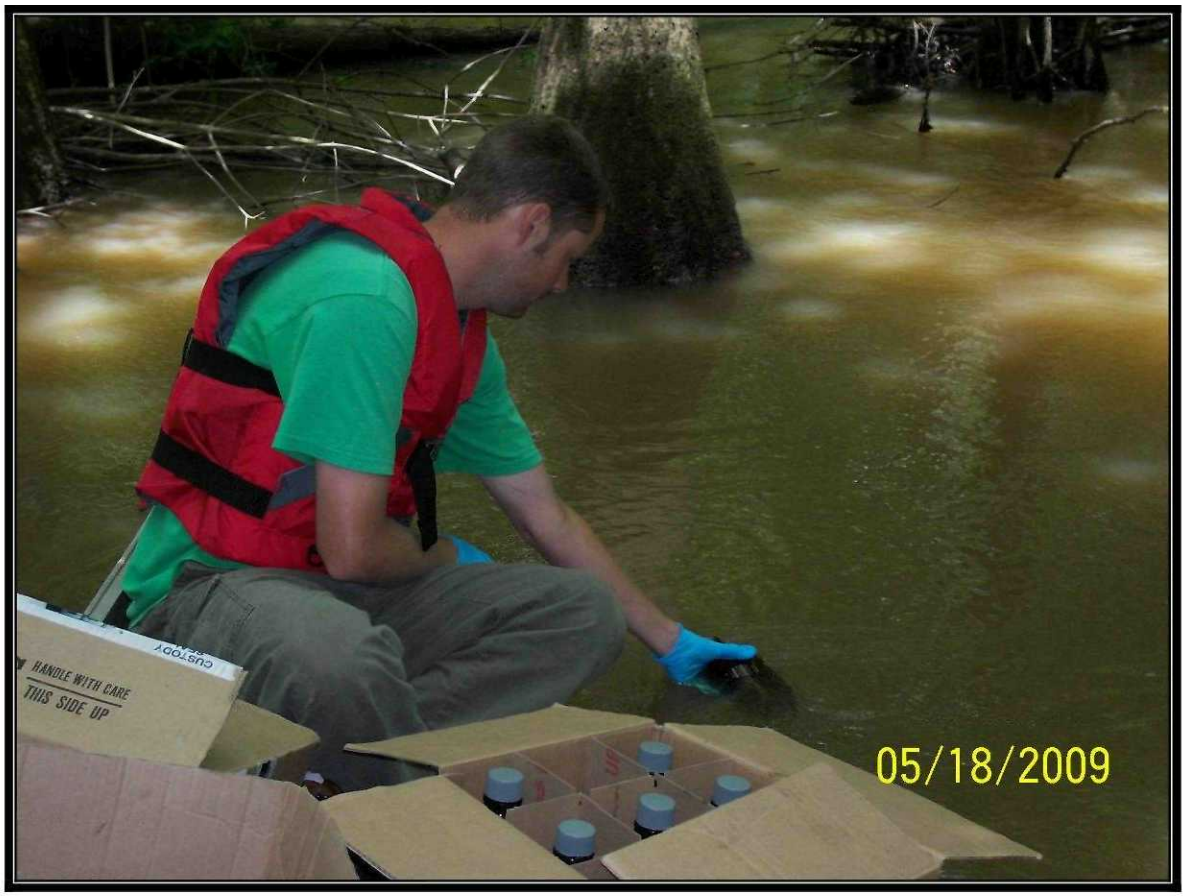


OFFICIAL PHOTOGRAPH NO. 9
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	West	**Date:**	May 18, 2009
Photographer:	Courtney Roden, Tetra Tech	**Witness:**	Chris Jones, Tetra Tech
Subject:	Rocky Creek flood waters near sample station RC401 located on the north branch of Rocky Creek and east of Broadway. Note the water level on the trees.		

OFFICIAL PHOTOGRAPH NO. 10
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	Southwest	**Date:**	May 18, 2009
Photographer:	Chris Jones, Tetra Tech	**Witness:**	Courtney Roden, Tetra Tech
Subject:	Tetra Tech collects Rocky Creek sediment sample RC-400-SD located on the south branch of Rocky Creek and east of Broadway.		



OFFICIAL PHOTOGRAPH NO. 11
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	North	**Date:**	May 18, 2009
Photographer:	Courtney Roden, Tetra Tech	**Witness:**	Chris Jones, Tetra Tech
Subject:	Tetra Tech collects surface water sample RC-401-SW from the south branch of Rocky Creek and east of Broadway .		

OFFICIAL PHOTOGRAPH NO. 12
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	South	**Date:**	May 15, 2009
Photographer:	Courtney Roden, Tetra Tech	**Witness:**	Chris Jones, Tetra Tech
Subject:	Tetra Tech collects surface water sample RC-402-SW from Rocky Creek between Broadway and the Central of Georgia railroad tracks.		

OFFICIAL PHOTOGRAPH NO. 13
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	East-Northeast	**Date:**	May 15, 2009
Photographer:	Courtney Roden, Tetra Tech	**Witness:**	Chris Jones, Tetra Tech
Subject:	Tetra Tech collects sediment sample RC-405-SD from the bank of Rocky Creek, downstream from probable point of entry (PPE) 1.		

OFFICIAL PHOTOGRAPH NO. 14
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	East-Northeast	**Date:**	May 15, 2009
Photographer:	Courtney Roden, Tetra Tech	**Witness:**	Chris Jones, Tetra Tech
Subject:	Tetra Tech collects surface water sample RC-405-SW from Rocky Creek, downstream from PPE 1.		

OFFICIAL PHOTOGRAPH NO. 15
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	Northeast	**Date:**	May 19, 2009
Photographer:	Courtney Roden, Tetra Tech	**Witness:**	Chris Jones, Tetra Tech
Subject:	Tetra Tech collects surface water sample RC-407-SW from Rocky Creek, downstream from PPE 2. Note the down trees.		

OFFICIAL PHOTOGRAPH NO. 16
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TTEMI-05-003-0022	**Location:**	Former Macon Naval Ordnance Landfill
Orientation:	Northwest	**Date:**	May 15, 2009
Photographer:	Chris Jones, Tetra Tech	**Witness:**	Courtney Roden, Tetra Tech
Subject:	Flooding in Rocky Creek near sample station RC404 located east of the Central of Georgia railroad tracks and south of the Armstrong remote landfill.		

APPENDIX E

CONTRACT LABORATORY PROGRAM (CLP) ANALYTICAL DATA SHEETS

(1,788 Sheets)

APPENDIX F

NON-CLP DATA VALIDATION REPORT AND ANALYTICAL DATA SHEETS

(4,076 Sheets)

Reference No. 17
Macon Naval Ordnance Plant
EPA ID No. GAD003302676

United States
Environmental Protection
Agency

Environmental
Sciences Division
P.O. Box 93478
Las Vegas, NV 89193-3478

TS-PIC-9904461S/20004461S
November 1999

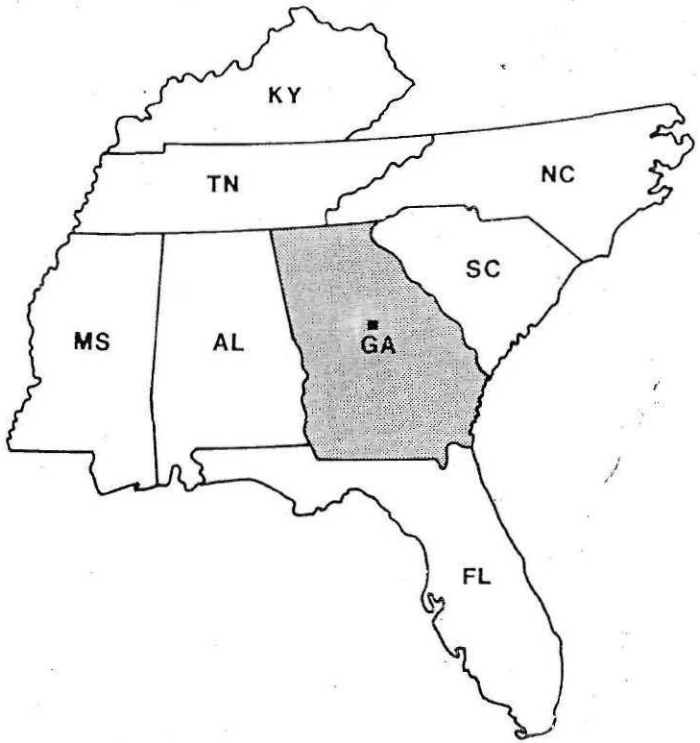
Research and Development

EPA

AERIAL PHOTOGRAPHIC ANALYSIS FORMER MACON NAVAL ORDNANCE PLANT LANDFILL SITE

Macon, Georgia

EPA Region 4



TS-PIC-9904461S/20004461S
November 1999

AERIAL PHOTOGRAPHIC ANALYSIS
FORMER MACON NAVAL ORDNANCE PLANT LANDFILL SITE

Macon, Georgia

by

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Environmental Services Division
Lockheed Environmental Systems & Technologies Co.
Las Vegas, Nevada 89119

Contract No. 68-C5-0065

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ENVIRONMENTAL SCIENCES DIVISION
NATIONAL EXPOSURE RESEARCH LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
LAS VEGAS, NEVADA 89193-3478

NOTICE

This document has undergone a technical and quality control/assurance review and has been approved for publication by personnel of the U.S. Environmental Protection Agency, Office of Research and Development, Environmental Sciences Division, Landscape Ecology Branch at Las Vegas, Nevada. It is for internal Agency use and distribution only.

ABSTRACT

This report presents findings from an analysis of historical photographs of the Former Macon Naval Ordnance Plant Landfill site located in Macon, Bibb County, Georgia. The areal extent of the site is approximately 136 hectares (335 acres). Black-and-white photographs spanning the years from 1938 to 1988 were used to analyze the site. The purpose of this analysis is to document environmentally significant features at this Superfund site and provide operational remote sensing support to U.S. Environmental Protection Agency Region 4 field investigations.

Analysis of the photographs indicated that the Former Macon Naval Ordnance Plant was developed by 1951. From 1951 to 1988 runoff is visible emanating from certain areas of the plant. Possible vegetation stress is noted in certain areas and may be due to intentional or accidental discharging of liquids.

Analysis of the Landfill, located south of the plant, depicted the landfill was developed by 1951. A sand and gravel pit operation located west of the site was possibly dumping waste materials into the landfill. Certain features identified within the landfill include solid wastes, standing liquid, debris, fill, dark-toned materials, and turbid water. Also, numerous seepage areas were observed, some with runoff nearby. By 1988 the majority of the landfill was revegetated and signs of dumping had diminished.

The U.S. Environmental Protection Agency (EPA), Environmental Sciences Division, Landscape Ecology Branch in Las Vegas, Nevada, prepared this report for the EPA Region 4 Hazardous Waste Management Division in Atlanta, Georgia, and the EPA Office of Emergency and Remedial Response in Washington, D.C.

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INTRODUCTION

This report presents findings from an analysis of historical aerial photographs of the Former Macon Naval Ordnance Plant Landfill site (CERCLIS ID# GA0000102178) located in Macon, Bibb County, Georgia (Figures 1 and 2). The site is located approximately 0.5 kilometers (0.3 miles) southeast of South Macon and immediately south of Guy Paine Road. The areal extent of the site is approximately 136 hectares (335 acres). This photographic analysis spans a period of 51 years and includes 9 selected dates of photographs from 1938, 1951, 1955, 1958, 1966, 1972, 1975, 1980, and 1988. The purpose of this analysis is to document environmentally significant features and to provide operational remote sensing support to field investigations in U.S. Environmental Protection Agency Region 4 under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Of particular concern is the identification and documentation of activities related to the manufacture of ordnance and explosives at the plant and the location of areas of waste disposal (EPA 1999).

For photographic resolution and for ease of analysis and description, the site was separated and the photographs were enlarged as two distinct conterminous areas referred to in this report as the Plant area and the Landfill area. Thus, the results of the analyses are grouped and discussed by each location/area.

The Plant area is bordered to the north by Guy Paine Road, to the west by a railroad, to the south by a powerline, and to the east by Mead Road. Results of the historical analysis of the Former Macon Naval Ordnance Plant revealed that in 1938 the entire site consisted of farmlands, wooded areas, and scattered farmsteads. The Plant was developed by 1951. From 1951 to 1988, areas of runoff, possibly from intentional or accidental discharges, are observed emanating from various locations at the Plant. Spillage, cleared area, debris, and numerous areas of ground scarring were also observed. In the later analysis years, building construction activity was visible throughout the site and the removal or leveling of over 40 earth-covered bunkers since 1951 is evident.

The Landfill area is bordered to the north by a powerline (and the southern border of the Plant area), to the west by a railroad, and to the south by Rocky Creek and a wetland area. The photographic analysis of the Landfill located in the southern portion of the overall ordnance plant site revealed that in 1938 this area consisted of farmlands and wetlands. By 1951, a landfill was developed and signs of dumping were evident. A sand and gravel pit operation was located west of the landfill. Probable dumping may have occurred in the landfill from the sand and gravel pit operation. Throughout the analysis years, several access roads connected the sand and gravel pit operation to the plant and to the landfill. By 1955, the landfill had expanded due to the dumping of waste materials. In 1966, southwest of the original landfill and parallel to the railroad track, a second landfill was developed. In 1958, turbid water was visible in the wetlands resulting from possible runoff of sediment from the landfill. An unpaved road led from an off-site industrial facility to the landfill. It is probable that this road was used by the industrial facility to transport waste material to the landfill. In 1972 the second landfill had expanded south and by 1975 had merged with the original landfill to form one large landfill. By 1988 the landfill was overgrown with vegetation and dumping had decreased.

A Glossary, defining features or conditions identified in this report, follows the Photographic Analysis section. Sources for all maps, aerial photographs, and collateral data used in the production of this report are listed in the References section. A list of all aerial photographs that were identified and evaluated for potential application to this study can be obtained by contacting the EPA Work Assignment Manager. Historical aerial photographs used in the analysis of this site have been digitally scanned and printed for use in this report. A transparent overlay with interpretative data is affixed to each of the digital prints. See the Methodology section for a discussion of the scanning and printing procedures.

The U.S. Environmental Protection Agency (EPA), Environmental Sciences Division, Landscape Ecology Branch in Las Vegas, Nevada, prepared this report for the EPA Region 4 Hazardous Waste Management Division in Atlanta, Georgia, and the EPA Office of Emergency and Remedial Response in Washington, D.C.

Figure 1. Study area location map, Georgia (USGS 1972). Approximate scale 1:2,500,000.

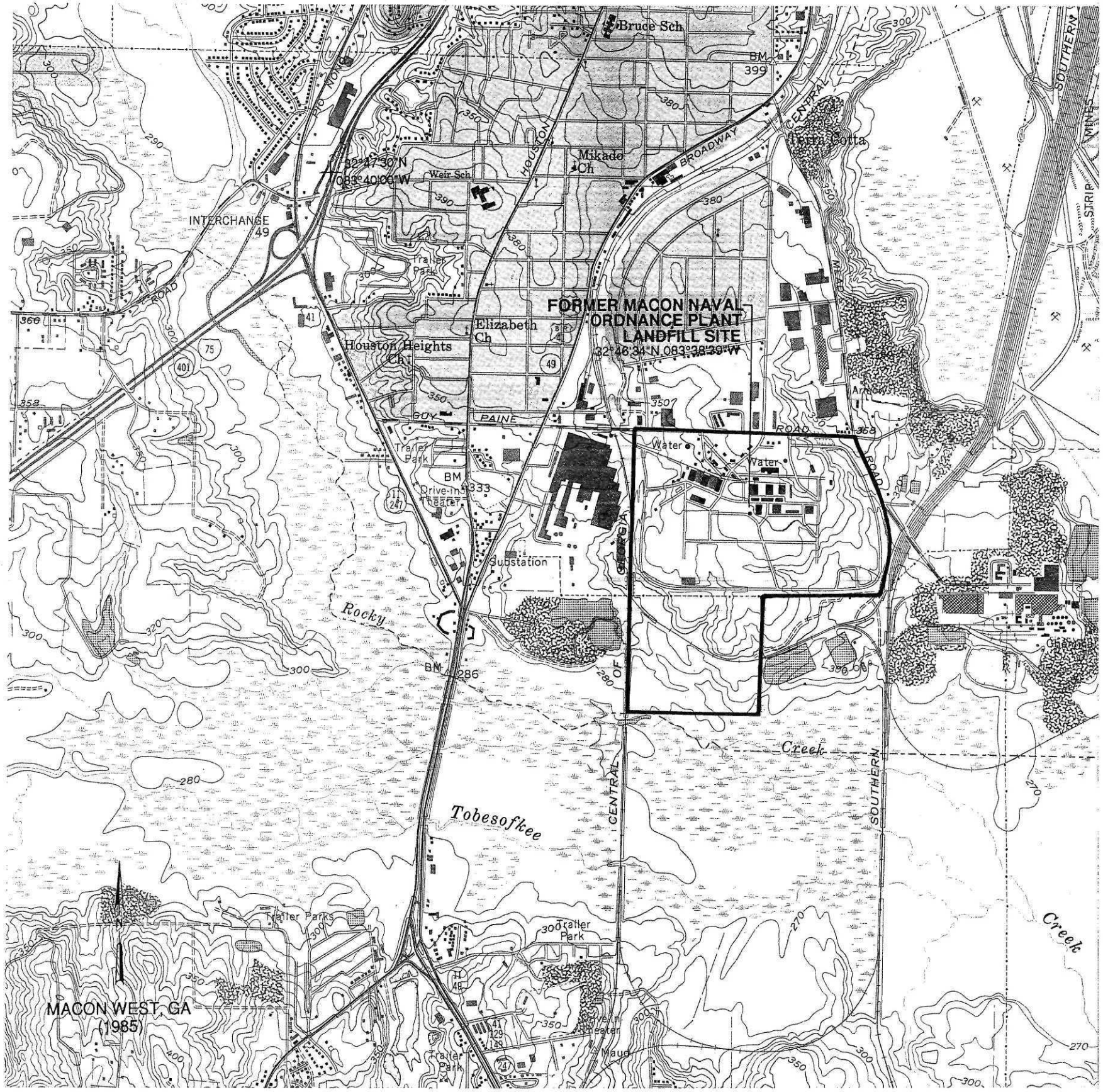


Figure 2. Local study area location map, Macon West, Georgia (USGS 1985). Scale 1:24,000.

METHODOLOGY

This report was prepared using a standard methodology that includes the following steps:

- data identification and acquisition,
- photographic analysis and interpretation, and
- graphics and text preparation.

These steps are described below. Subsections also address details related to specific kinds of analyses that may be required to identify environmental features such as surface drainage and wetlands. All operational steps and processes used to perform this work (including data identification and acquisition, photographic analysis and interpretation, and graphics and text preparation) adhere to strict QA/QC guidelines and standard operating procedures (SOPs). These guidelines and procedures are documented in the Master Quality Assurance Project Plan (QAPP) prepared for Remote Sensing Technical Support Contract No. 68-C5-0065 (LESAT 1999).

Data identification and acquisition included a search of government and commercial sources of historical aerial film for the study area. Photographs with optimal spatial and temporal resolution and image quality were identified for acquisition. In addition, U.S. Geological Survey (USGS) topographic maps were obtained to show the study area location and to provide geographic and topographic context.

To conduct this analysis, the analyst examined diapositives (transparencies) of historical aerial photographs showing the study area. Diapositives are most often used for analysis instead of prints because the diapositives have superior photographic resolution. They show minute details of significant environmental features that may not be discernible on a paper print.

A photographic analyst uses a stereoscope to view adjacent, overlapping pairs of diapositives on a backlit light table. In most cases, the stereoscope

is capable of various magnifications up to 60 power. Stereoscopic viewing involves using the principle of parallax (observing a feature from slightly different positions) to observe a three-dimensional representation of the area of interest. The stereoscope enhances the photo interpretation process by allowing the analyst to observe vertical as well as horizontal spatial relationships of natural and cultural features.

The process of photographic analysis involves the visual examination and comparison of many components of the photographic image. These components include shadow, tone, color, texture, shape, size, pattern, and landscape context of individual elements of a photograph. The photo analyst identifies objects, features, and "signatures" associated with specific environmental conditions or events. The term "signature" refers to a combination of components or characteristics that indicate a specific object, condition, or pattern of environmental significance. The academic and professional training, photo interpretation experience gained through repetitive observations of similar features or activities, and deductive logic of the analyst as well as background information from collateral sources (e.g., site maps, geologic reports, soil surveys) are critical factors employed in the photographic analysis.

The analyst records the results of the analysis by using a standard set of annotations and terminology to identify objects and features observed on the diapositives. Significant findings are annotated on overlays attached to the photographic or computer-reproduced prints in the report and discussed in the accompanying text. Annotations that are self-explanatory may not be discussed in the text. The annotations are defined in the legend that accompanies each print and in the text when first used.

Objects and features are identified in the graphics and text according to the analyst's degree of confidence in the evidence. A distinction is made between certain, probable, and possible identifications. When the analyst believes the identification is unmistakable (certain), no qualifier is used. Probable is used when a limited number of discernible characteristics allow the analyst to be reasonably sure of a particular identification. Possible is used when only a few characteristics are discernible, and the analyst can only infer an identification.

The prints in this report have been reproduced, either by photographic or computer methods, from the original film. Reproductions are made from the original film and may be either contact (the same size) prints or enlargements, depending on the scale of the original film. Any computer-produced prints used in this report are generated from scans of the film at approximately 1,300 dots per inch (dpi) and printed at 720 dpi. Although the reproductions allow effective display of the interpretive annotations, they may have less photographic resolution than the original film. Therefore, some of the objects and features identified in the original image and described in the text may not be as clearly discernible on the prints in this report.

Study area boundaries shown in this report were determined from aerial photographs or collateral data and do not denote legal property lines or ownership.

Surface Drainage

The surface drainage analysis produced for this report identifies the direction and potential path that a liquid spill or surface runoff would follow based on the topography of the terrain and the presence of discernible obstacles to surface flow. The analyst determines the direction of surface drainage by stereoscopic analysis of the aerial photographs and by examining USGS topographic maps. Site-specific surface drainage patterns are annotated on the map or photo overlay. Where the direction of subtle drainage cannot be determined, an indeterminate drainage line symbol is used. Regional surface flow is ascertained from the USGS topographic maps.

INTERPRETATION CODE

x—x—	FENCED SITE BOUNDARY
———	SITE BOUNDARY
x x x x x x	FENCE
←— — —	DRAINAGE
═══	VEHICLE ACCESS
+-+-+-+	RAILWAY
IIIIIIIIIIIIIII	BERM/DIKE
	MOUNDED MATERIAL (EXTENSIVE)
	CULVERT
AB	ADMINISTRATION BUILDING
B	BUILDING
CA	CLEARED AREA
CR	CRATES
D	DEBRIS
DT	DARK-TONED
ECB	EARTH COVERED BUNKER
ESB	EAST STORAGE BUILDING
EX	EXCAVATION
FL	FILL
GS	GROUND SCAR
HT	HORIZONTAL TANK
IM	IMPOUNDMENT
M	MATERIAL
MM	MOUNDED MATERIAL
NB	NEW BUILDING
OF	OUTFALL
RC	RAIL CAR
SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 3. Former Macon Naval Ordnance Plant Landfill site, Plant area, May 10, 1938. Approximate scale 1:6,035.

MAY 10, 1938 (FIGURE 4)

This photograph depicts the southern portion of the landfill area prior to its development. Drainage collects in low-lying areas, drains to the southeast and into the wetland and Rocky Creek.

INTERPRETATION CODE

x—x—	FENCED SITE BOUNDARY
———	SITE BOUNDARY
x x x x x x	FENCE
←— — —	DRAINAGE
═══	VEHICLE ACCESS
+-+-+-+	RAILWAY
IIIIIIIIIIIIIII	BERM/DIKE
	MOUNDED MATERIAL (EXTENSIVE)
	CULVERT
AB	ADMINISTRATION BUILDING
B	BUILDING
CA	CLEARED AREA
CR	CRATES
D	DEBRIS
DT	DARK-TONED
ECB	EARTH COVERED BUNKER
ESB	EAST STORAGE BUILDING
EX	EXCAVATION
FL	FILL
GS	GROUND SCAR
HT	HORIZONTAL TANK
IM	IMPOUNDMENT
M	MATERIAL
MM	MOUNDED MATERIAL
NB	NEW BUILDING
OF	OUTFALL
RC	RAIL CAR
SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 4. Former Macon Naval Ordnance Plant Landfill site, Landfill area, May 10, 1938. Approximate scale 1:4,320.

FEBRUARY 3, 1951 (FIGURE 5)

Due to poor film resolution, features could not be determined with certainty. The Plant area was developed by this year and is enclosed by a fence. There are three access roads leading onto the property from Guy Paine Road. A railroad spur enters from the northwestern corner of the site and leads to the possible West and East Process Areas, which appear to be used for loading and unloading of materials. Dark-toned material (DTM) is observed inside the possible Administration Buildings Area just east of administration building AB-1. A water tower is located north of the dark-toned material.

Eight horizontal tanks (HT) are visible south of the railroad track near the possible West Process Area. These tanks remain throughout most of the analysis years and will continue to be annotated, but will not be discussed unless environmentally significant changes occur. West of the tanks, located within the West Support Buildings Area, is another lone horizontal tank. This tank remains throughout the analysis years and will be annotated, but is not discussed further. Southwest of the West Support Buildings Area is an impoundment (IM) located in a possible water treatment area.

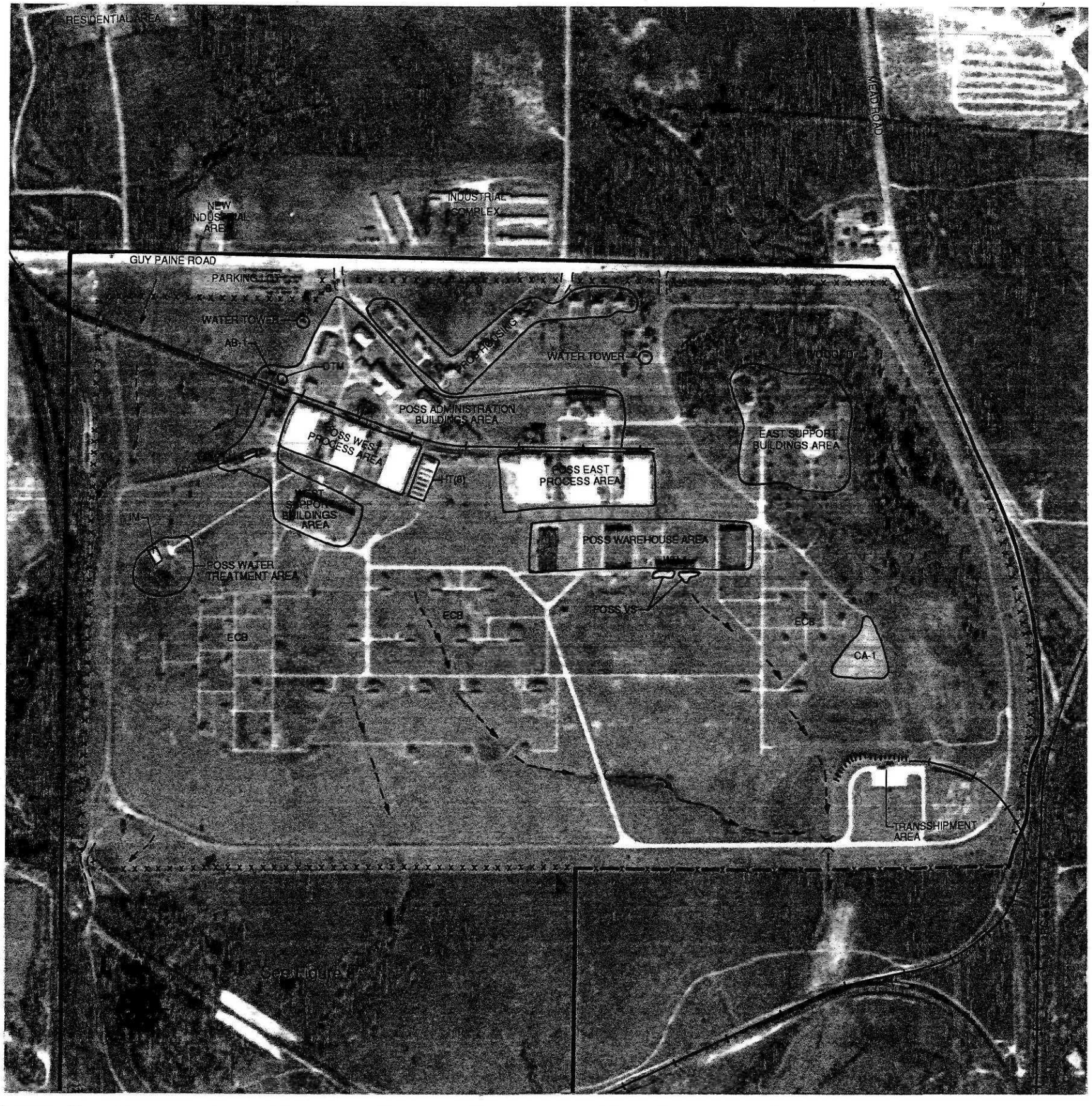
A second water tower is situated in the northeastern portion of the plant. Drainage from the East Support Buildings area flows into the wooded area where it merges with drainage just north of Guy Paine Road and toward the southeast.

Approximately 42 earth-covered bunkers (ECB) are observed throughout the entire southern portion of the site. Situated near the southeastern boundary of the plant is a cleared area (CA-1). A transshipment area is located south of the cleared area which remains visible throughout the analysis years.

Possible vegetation stress (VS) is observed in front of a warehouse (WH-1) located within the possible Warehouse Area.

Surface drainage along the western portion of the property collects within low-lying areas and then flows west into an unnamed tributary. The unnamed tributary flows south through a culvert and empties into the surrounding wetland and into Rocky Creek. Drainage also collects in low-lying areas in the central portion of the site and then flows south toward the Landfill area and into Rocky Creek.

Several industrial complex areas north of the plant have been constructed by this time period. Also, a residential area is located northwest of one of the industrial complexes.



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B	BUILDING
CA	CLEARED AREA
CR	CRATES
D	DEBRIS
DT	DARK-TONED
ECB	EARTH COVERED BUNKER
ESB	EAST STORAGE BUILDING
EX	EXCAVATION
FL	FILL
GS	GROUND SCAR
HT	HORIZONTAL TANK
IM	IMPOUNDMENT
M	MATERIAL
MM	MOUNDED MATERIAL
NB	NEW BUILDING
OF	OUTFALL
RC	RAIL CAR
SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 5. Former Macon Naval Ordnance Plant Landfill site, Plant area, February 3, 1951. Approximate scale 1:6,325.

FEBRUARY 3, 1951 (FIGURE 6)

Due to poor film resolution, features could not be determined with certainty. The landfill area located south of the plant shows evidence of dumping activity.

There appear to be two separate piles of possible solid waste (SW-1 and SW-2) and mounds of material (MM). A connecting access road (not numbered) provides access from the Plant area to the Landfill area. West of the Landfill area is another access road (Access Road-1) which provides access from the newly developed sand and gravel pit operation to the west. South of the sand and gravel pit operation is turbid water/sediment which appears to drain into Rocky Creek. Two additional access roads (Access Road-2 and Access Road-3) are noted along the eastern boundary of the Landfill area. A railroad spur has been developed since 1938 which goes from the northwest corner of the site to the east central boundary where Access Road-2 and Access Road-3 enter.

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ECB	EARTH COVERED BUNKER
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NB	NEW BUILDING
OF	OUTFALL
RC	RAIL CAR
SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 6. Former Macon Naval Ordnance Plant Landfill site, Landfill area, February 3, 1951. Approximate scale 1:4,630.

MARCH 24, 1955 (FIGURE 7)

On the west side of the Plant area, and north of the railroad spur, ground scarring (GS-2) is visible near administration building AB-1. This is also where the dark-toned material was last observed in 1951. Mounds of material (MM-1) are observed in the northern portion of the West Support Buildings area. Two new impoundments (three total) are observed in the possible water treatment area. Numerous piles of neatly arranged rows of fill (FL-2) are observed southwest of the impoundments along the side of a road which leads south to the Landfill area.

Along the east side of administration building AB-2 are piles of probable fill (FL-1). Rail cars are noted just south of this building. South of the rail cars, in the possible East Process Area, crates (CR) are visible. Two new long, narrow buildings are under construction on either end of this East Process Area. Ground scarring (GS-4) is observed west of this East Process Area. Debris (Debris-1) is observed near the east support building ESB-1, situated in the northeastern portion of the Plant area. Ground scarring (GS-1) is noted just northeast of the East Support Buildings area.

Ground scarring (GS-5) is noted near the south side of warehouse WH-2. The possible vegetation stress observed in 1951 adjoining warehouse WH-1 has expanded southward. Two areas of probable stains (ST-1) are noted south and east of warehouse WH-3, while ground scarring (GS-3) is evident near the northeast corner of the warehouse. South of the possible Warehouse Area is an additional area of ground scarring (GS-6). The cleared area CA-1 located to the east of the ECBs has increased greatly in size since 1951. Probable standing liquid (SL-1) is visible within this cleared area.

North of the Plant area boundary and west of Mead Road an industrial facility is under construction. An outfall (OF) is noted south of this facility. Drainage from this outfall flows onto the Plant Area property and in the wooded area in the northeast corner of the Plant area.

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MM	MOUNDED MATERIAL
NB	NEW BUILDING
OF	OUTFALL
RC	RAIL CAR
SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 7. Former Macon Naval Ordnance Plant Landfill site, Plant area, March 24, 1955. Approximate scale 1:6,325.

MARCH 24, 1955 (FIGURE 8)

Due to additional dumping since 1951, the site is developing into a landfill. The mounds of material and possible solid waste (SW-1) observed in 1951 are no longer visible.

Numerous small piles of fill (FL-1) have been placed on the Landfill area northeast of Access Road-1. Just to the east is a partially exposed pipe. South of fill area FL-1 is a deposit of solid waste (SW-2) observed on the edge along with scarring around the developing landfill. A truck (Truck-1) near the edge of the landfill may be dumping waste materials. Truck-1 is situated on an area of what appears to be possible seepage (Seepage-1). Just to the south is another area of probable seepage (Seepage-2). Several sections of cleared areas (CA-1 to CA-3) are visible in the north, northeastern, and eastern portions of the Landfill area.

West of the Landfill area, and south of the sand and gravel pit operation, is an impoundment (IM-1). A breach (Breach-1) in the southwest corner of the impoundment is visible. Liquid is draining from this breach and is flowing south and into Rocky Creek. Additionally, turbid water/sediment is discernible south of the impoundment.

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OF	OUTFALL
RC	RAIL CAR
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ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 8. Former Macon Naval Ordnance Plant Landfill site, Landfill area, March 24, 1955. Approximate scale 1:4,440.

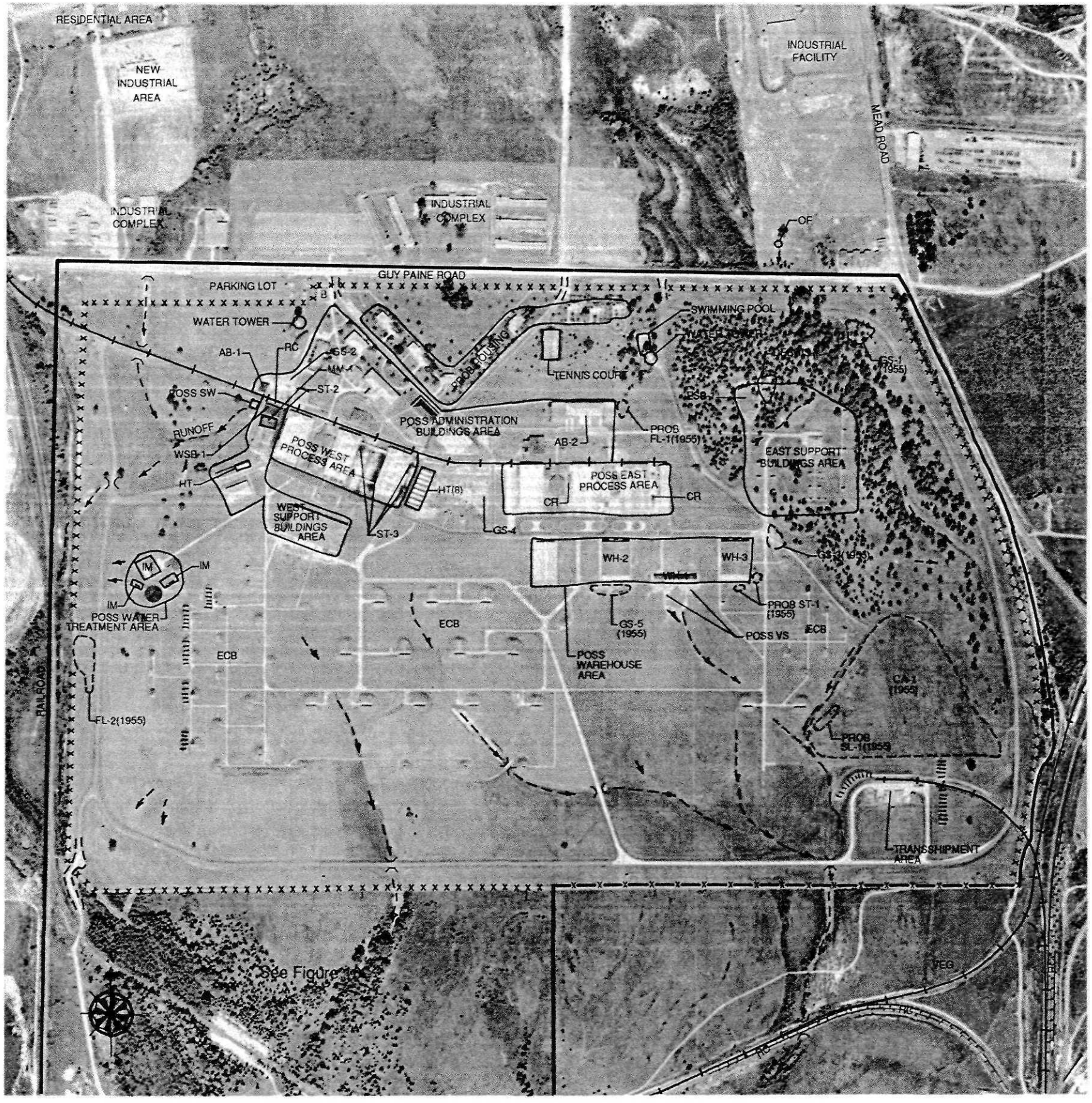
OCTOBER 11, 1958 (FIGURE 9)

The following features observed and annotated in 1955 have been removed or are no longer visible: ground scars GS-1 in the northeast, ground scars GS-3 and GS-5 near the possible warehouse area; probable fill (FL-1) near administration building AB-2; fill (FL-2) on the western boundary; and the probable stains (ST-1) near warehouse WH-3. The cleared area (CA-1) observed since 1951 in the southeast corner of the site and the area of probable standing liquid (SL-1) observed inside it since 1955 are overgrown with vegetation.

Mounds of material (MM-1) located within the West Support Buildings Area are present. A possible deposit of solid waste is visible west of west support building WSB-1. Runoff is also visible in this area, possibly leading from west support building WSB-1.

Near the western border of the possible West Process Area and south of the railroad tracks is a possible stained area (ST-2). More stains (ST-3) are noted west of the eight horizontal tanks in the center of the possible West Process Area. The possible vegetation stress observed south of warehouse WH-1 since 1951 is still present and has increased in area.

The outfall north of the Plant Area is still present. New industrial facilities are under construction northwest of the plant.



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DT	DARK-TONED
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NB	NEW BUILDING
OF	OUTFALL
RC	RAIL CAR
SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 9. Former Macon Naval Ordnance Plant Landfill site, Plant area, October 11, 1958. Approximate scale 1:6,265.

OCTOBER 11, 1958 (FIGURE 10)

Numerous piles of fill (FL-1), observed in 1955 along the northeast edge of the access road, appear to have been graded. However, additional piles of fill (FL-2) are now placed on the previous fill FL-1. A smaller pile of fill (FL-3) is noted nearby. Further north along the connecting access road and to the west are two disturbed areas (DA). Along the connecting access road and south of the railroad track are several possible containers.

Dumping of solid waste (SW-2) along the edge of the landfill continues. Possible heavy seepage (Seepage-3) is noted near the northern edge of the landfill. Near the southeastern extent of the landfill are two additional areas of probable seepage (Seepage-2 and Seepage-4). A possible truck (Truck-2) is noted nearby Seepage-4. To the south, turbid water in the wetland is noticed in two separate areas.

The cleared areas (CA-1, CA-2, and CA-3) noted in 1955 are revegetated.

West and off site of the Landfill area, the impoundment IM-1 now has a second breach (Breach-2) in its northeast corner and appears to be draining into the sand and gravel pit. Breach-1, not depicted in this photograph, has been repaired. Turbid water/sediment remains south of impoundment IM-1.

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B	BUILDING
CA	CLEARED AREA
CR	CRATES
D	DEBRIS
DT	DARK-TONED
ECB	EARTH COVERED BUNKER
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OF	OUTFALL
RC	RAIL CAR
SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

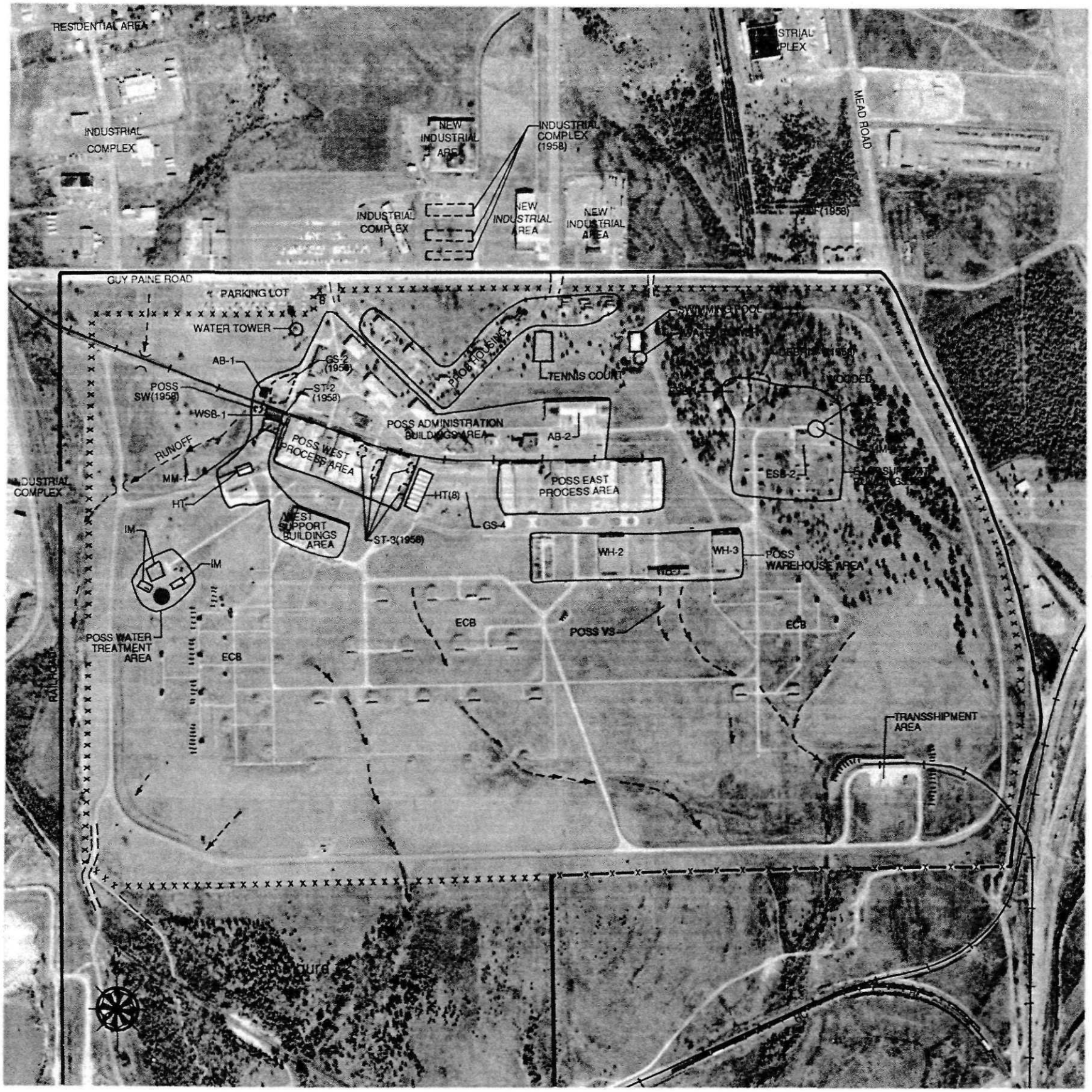
Figure 10. Former Macon Naval Ordnance Plant Landfill site, Landfill area, October 11, 1958. Approximate scale 1:4,310.

FEBRUARY 3, 1966 (FIGURE 11)

The following features observed since 1955 have been removed or are no longer visible: ground scar GS-2 in the northwest, Debris-1 in the northeast, and the off-site outfall to the north. Solid waste and stains (ST-2 and ST-3) observed in 1958 in and around the possible West Process Area have been removed or are no longer visible.

Within the western portion of the site and south of the railroad track, the runoff observed in 1958 is still evident. The area of possible vegetation stress observed south of the possible Warehouse Area since 1951 is beginning to revegetate. In the eastern portion of the site, near the east support building ESB-2 is a cleared area (CA-2) with a possible mound of material (MM-2) within it.

North of the Plant area, new industrial complexes continue to be constructed while other facilities are removed. The residential area in the northwest appears to have expanded since 1958.



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SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 11. Former Macon Naval Ordnance Plant Landfill site, Plant area, February 3, 1966. Approximate scale 1:6,395.

FEBRUARY 3, 1966 (FIGURE 12)

The landfill has continued to expand with an increase in activity since 1958. Possible seepages (Seepage-1 and Seepage-3) observed from 1955 to 1958 have been covered and are no longer visible. Fill areas (FL-2 and FL-3) noted in 1958 appear to have been graded.

Several stains are discernible near solid waste SW-2. Ground scar GS-1 is visible north of cleared area CA-4 which extends east to west near two other newly cleared areas (CA-5 and CA-6). Situated south of cleared area CA-6 is dark-toned material. Dumping continues along the edge of the landfill, where solid waste SW-2 is present.

Runoff is visible and appears to be emanating from probable Seepage-2. Further east, probable Seepage-4 is still present. Turbid water is observed south of solid waste SW-2. This is possibly due to runoff of sediment from the landfill. However, an area of turbid water observed east of probable Seepage-4 is no longer evident.

A second landfill is developing west of the original landfill and parallel to the railroad. Dumping of solid waste (SW-3) is visible in this second landfill. A new access road (Access Road-4) allows vehicles from the sand and gravel pit operation to enter the landfill. Access Road-4 also leads to an industrial complex in the west (not depicted on this photograph) and provides access from that complex to the landfill.

The sand and gravel pit located to the west of the Landfill area has expanded northward. A second area of standing liquid (SL-2) is noted north of standing liquid SL-1. There is a breach (Breach-3) in the berm that separates these two areas of standing liquid, which allows the liquid to flow between them. Breach-2 observed in 1958 is repaired; however, another breach (Breach-4) in the southwest corner of the impoundment IM-1 permits liquid to flow south into Rocky Creek. Turbid water/sediments remain visible south of impoundment IM-1 and is present in the wetland.

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OF	OUTFALL
RC	RAIL CAR
SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 12. Former Macon Naval Ordnance Plant Landfill site, Landfill area, February 3, 1966. Approximate scale 1:4,370.

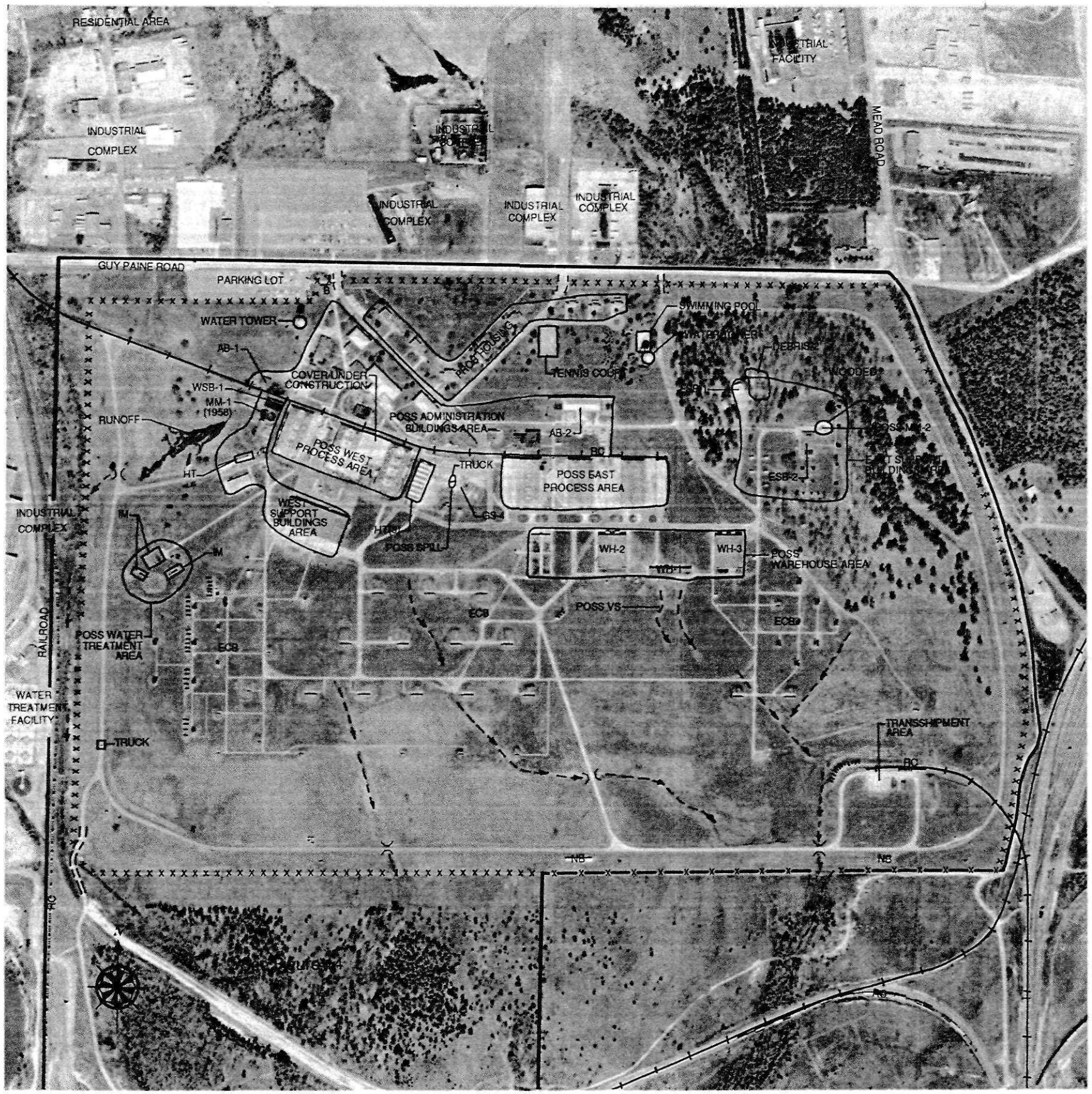
MARCH 9, 1972 (FIGURE 13)

In the western portion of the Plant area heavy runoff is observed south of the railroad track. The runoff appears possibly to be emanating from the west support building WSB-1 or the administration building AB-1. The mounds of material (MM-1) observed from 1955 to 1958 have been removed.

Few changes have occurred in the Plant area as compared to previous years. In the eastern portion of the site, near east support building ESB-1 is a new debris area (Debris-2). This is approximately the same location where Debris-1 was observed in 1955 and 1958. To the east, the mound of material MM-2 and cleared area CA-2 remain since the previous photograph.

East of the eight horizontal tanks is a possible spill from a truck. The ground scarring (GS-4) is still evident nearby. A cover is under construction within the possible West Process Area. Near warehouse WH-1, the possible vegetation stress appears to continue to slowly diminish in size and the area is revegetating.

Additional features around the site include a truck along the western road in the southwest corner of the site; two rail cars north of the possible East Process Area; two additional rail cars in the transshipment area located in the southeastern corner of the plant; and along the southern boundary, two new buildings. West of the Plant area is a water treatment facility.



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SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 13. Former Macon Naval Ordnance Plant Landfill site, Plant area, March 9, 1972. Approximate scale 1:6,325.

MARCH 9, 1972 (FIGURE 14)

The landfill continues to expand. The second landfill has expanded southward and is now larger in areal extent than the original landfill to the east. Scattered debris (D) is noted throughout and along the edge of the second landfill. Two separate deposits of solid waste (SW-4) are observed in this landfill.

In the vicinity of the two landfills, the probable seepage areas (Seepage-2 and Seepage-4) observed from 1955 to 1966 are no longer visible. In addition, the area containing solid waste SW-3, ground scar GS-1, and cleared areas CA-4, CA-5 and CA-6 has revegetated and these features are no longer visible. Dense vegetation prevents a clear observation of the pipe, so it is not annotated here or during the remainder of the analysis years.

Deposits of fill (FL-3) and dark-toned material are observed between the two landfills. Just to the east of the original landfill, possible solid waste (SW-6) is scattered adjacent to the access road. Solid waste (SW-2) remains along the edge of the original landfill. Further east are several pools of standing liquid (SL-3). Near the eastern boundary of the site is a discernible extraction pit.

Turbid water remains in the wetland and now appears to emanate from the southeast side of the second landfill.

Changes to features to the west of the Landfill site include a new unpaved road that parallels the railroad track, and possible solid waste (SW-5) dumped at the southern end of this unpaved road. The impoundment IM-1 appears to have been covered and turbid water/sediment is still present to the south.

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OF	OUTFALL
RC	RAIL CAR
SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

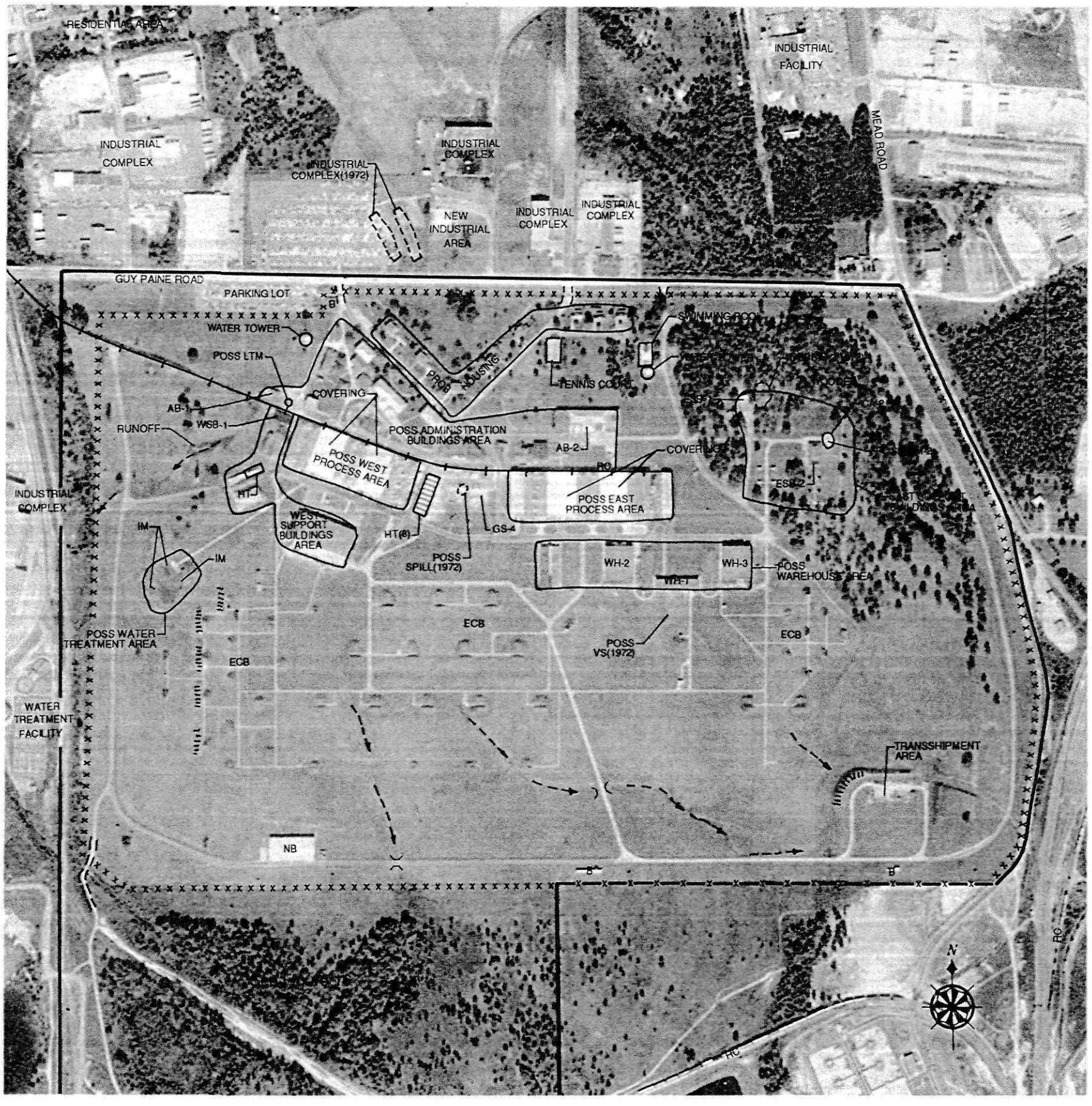
Figure 14. Former Macon Naval Ordnance Plant Landfill site, Landfill area, March 9, 1972. Approximate scale 1:4,500.

OCTOBER 31, 1975 (FIGURE 15)

In the western portion of the property the runoff near administration building AB-1 is still present. A possible light-toned material is noted east of administration building AB-1. Within the possible West and East Process Areas, the construction of coverings appears completed.

The possible spill from a truck in the center of the site and Debris-2 in the northeast observed in 1972 are no longer visible. On the east side of the Plant area, within the east Support Buildings Area, the mound of material MM-2, inside cleared area CA-2, remains visible. To the south, the area of possible vegetation stress observed since 1951 near warehouse WH-1 is overgrown. A new building has been constructed in the southern portion of the property.

Just north of the site, to the east of a parking lot, the remaining buildings of an industrial complex observed in 1972 have been removed. A new industrial complex has been built north of Guy Paine Road. Many other industrial complexes remain along the north and west sides of the site.



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AB	ADMINISTRATION BUILDING
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CA	CLEARED AREA
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DT	DARK-TONED
ECB	EARTH COVERED BUNKER
ESB	EAST STORAGE BUILDING
EX	EXCAVATION
FL	FILL
GS	GROUND SCAR
HT	HORIZONTAL TANK
IM	IMPOUNDMENT
M	MATERIAL
MM	MOUNDED MATERIAL
NB	NEW BUILDING
OF	OUTFALL
RC	RAIL CAR
SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 15. Former Macon Naval Ordnance Plant Landfill site, Plant area, October 31, 1975. Approximate scale 1:6,395.

OCTOBER 31, 1975 (FIGURE 16)

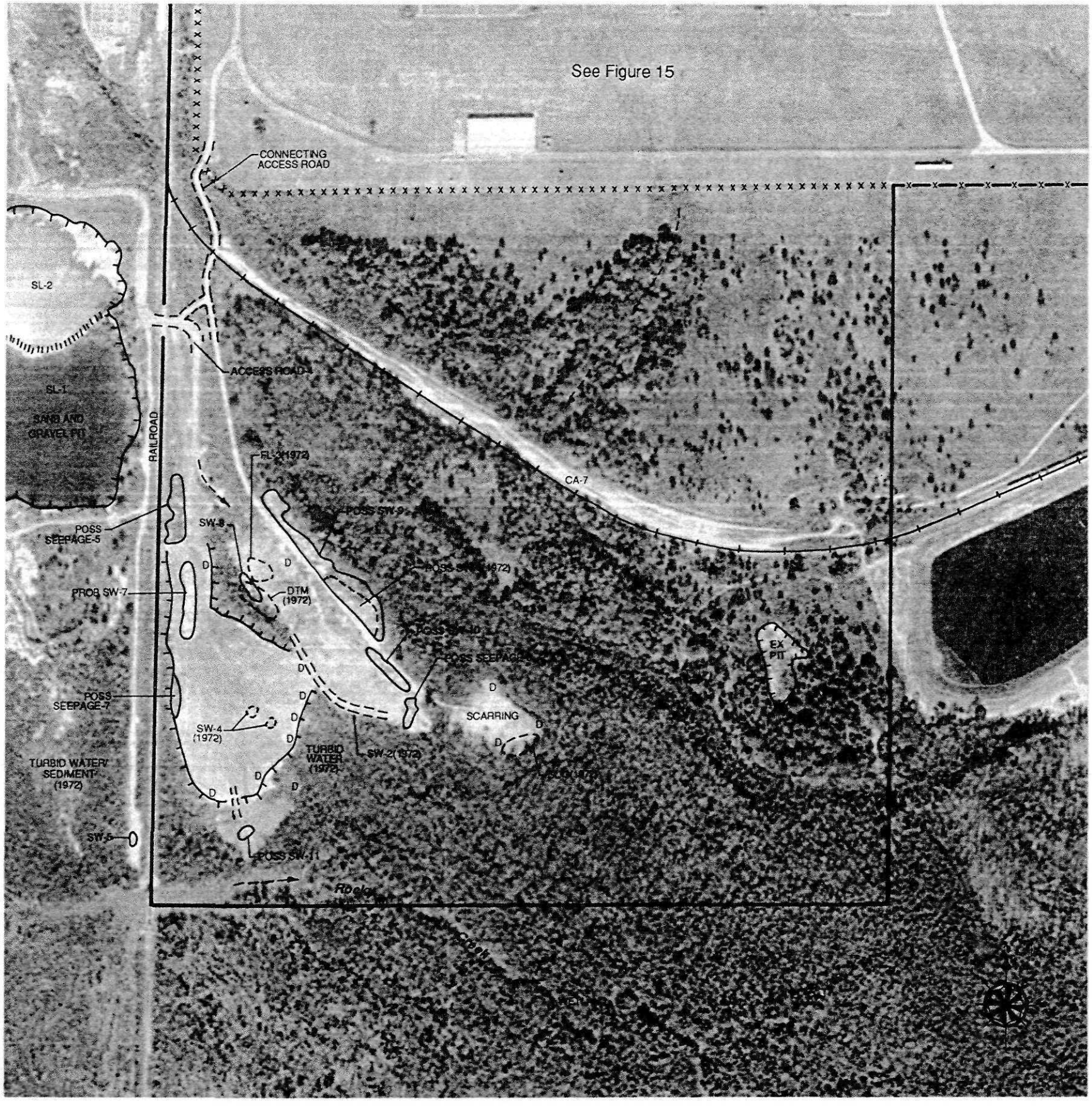
The original landfill and the second landfill have merged to form a single, large landfill. The following features annotated in or near the landfill in 1972 are no longer visible: solid waste SW-4 and SW-6, fill FL-3, dark-toned material, and standing liquid SL-3. Along the edge of the landfill, solid waste SW-2, observed from 1951 to 1972, is no longer visible.

Numerous deposits of solid waste are visible in different locations of the large landfill. On the northeast portion of the landfill, solid waste SW-8 is visible just south of the connecting access road. Possible solid waste SW-9 is visible along the northern shoulder of the connecting access road. Further south and along the connecting access road is solid waste SW-10. Seepage-6 is observed nearby and is possibly associated with solid waste SW-10.

On the western side of the large landfill is a probable deposit of solid waste (SW-7). Two separate locations of possible seepage (Seepage-5 and Seepage-7) are observed just north and south respectively of probable solid waste SW-7. A smaller area of possible solid waste (SW-11) is observed just outside of the southern extent of the landfill.

Numerous areas of debris litter a majority of the landfill. The cleared area (CA-7) along the northern edge of the railroad and the extraction pit located near the eastern boundary are still present. East of the extraction pit and outside the Landfill area boundary is a newly developed impoundment (IM-2).

West of the Landfill area and south of the sand and gravel pit operation, solid waste SW-5 is present.



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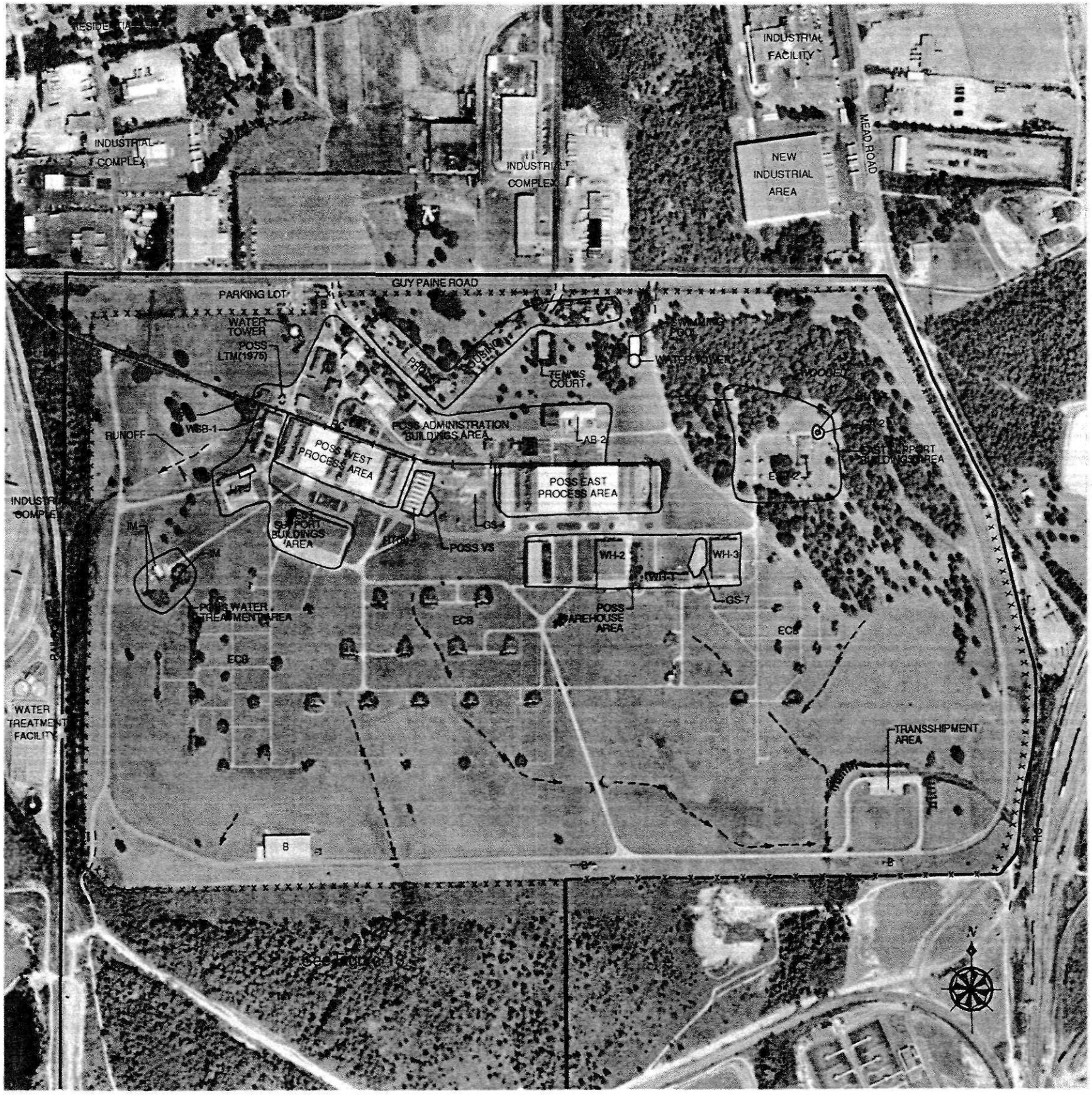
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 16. Former Macon Naval Ordnance Plant Landfill site, Landfill area, October 31, 1975. Approximate scale 1:4,370.

OCTOBER 13, 1980 (FIGURE 17)

Runoff observed west of the West Support Buildings Area since 1958 is still evident. Possible sources of this runoff may be the administration building AB-1 and west support building WSB-1. Also, the possible light-toned material observed in 1975, located east of west support building WSB-1, is no longer visible.

East of the eight horizontal tanks and west of ground scar GS-4 is possible vegetation stress. In the eastern portion of the Plant area the mound of material (MM-2) within cleared area CA-2 remains. Ground scarring (GS-7) is noted between warehouses WH-1 and WH-3.



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NB	NEW BUILDING
OF	OUTFALL
RC	RAIL CAR
SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 17. Former Macon Naval Ordnance Plant Landfill site, Plant area, October 13, 1980. Approximate scale 1:6,395.

OCTOBER 13, 1980 (FIGURE 18)

Vegetation overgrowth covers a majority of the landfill. The following features observed in 1975 are no longer visible: possible areas of seepage (Seepage-5, Seepage-6, and Seepage-7),probable solid waste SW-7, and possible solid waste SW-9, SW-10, and SW-11.

Within the landfill, near the connecting access road, a deposit of solid waste (SW-8) observed in 1975 remains. To its west is a new area of possible solid waste (SW-12). Toward the southeast is another deposit of possible solid waste (SW-13). Fill FL-4 is observed nearby.

Probable seepage (Seepage-8) is visible in the larger portion of the landfill near Access Road-4. Nearby, along the southern edge of the landfill, is another area of possible seepage (Seepage-9).

Cleared area CA-7 remains along the railroad in the north portion of the landfill. However, the extraction pit noted since 1972 may be filled and is overgrown with vegetation.

West of the Landfill area and south of the sand and gravel pit operation, the deposit of solid waste (SW-5),observed in 1975, is still present.

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OF	OUTFALL
RC	RAIL CAR
SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 18. Former Macon Naval Ordnance Plant Landfill site, Landfill area, October 13, 1980. Approximate scale 1:4,440.

FEBRUARY 24, 1988 (FIGURE 19)

Numerous changes have taken place since the previous photograph. The following features were observed from 1951 to 1980 and are no longer visible: all of the approximately 42 earth-covered bunkers (ECB), the two water towers, and a portion of the probable housing area.

The runoff observed on the west side of the site since 1958 is no longer visible and the two buildings that may have contributed to the runoff (WSB-1 and AB-1) have also been removed.

The eight horizontal tanks observed from 1951 to 1980 have been removed; however, the possible vegetation stress that may be associated with these tanks is still evident. Toward the east, the ground scar GS-4 observed since 1951 is incorporated in a cleared area (CA-3). A new parking lot is constructed west of administration building AB-2.

Along the eastern portion of the property, within the East Support Buildings area, the mound of material (MM-2) and the cleared area (CA-2) observed from 1966 to 1980 have been removed and the area has overgrown. To the south, ground scar GS-7 situated between warehouse WH-1 and WH-3 is no longer visible and the area has also overgrown. Southeast of the possible warehouse area, a new road has been developed which extends east to Mead Road. Vegetation overgrowth within the possible water treatment facility on the west side of the site precludes a clear view of two of the three impoundments observed since 1955. Several new buildings are scattered throughout the site and a new business is observed north of Guy Paine Road.

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RC	RAIL CAR
SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 19. Former Macon Naval Ordnance Plant Landfill site, Plant area, February 24, 1988. Approximate scale 1:6,455.

FEBRUARY 24, 1988 (FIGURE 20)

The large landfill has revegetated and dumping activities are less discernible; however, in the northeast portion of the landfill along the connecting access road, additional dumping is increasing the size of solid waste SW-8. Nearby is a pool of standing liquid (SL-4). Further south along the access road is a large deposit of solid waste (SW-14) where solid waste SW-10 was observed in 1975. Nearby, solid waste SW-13 has also increased in size. Fill FL-4 noted in 1980 is now graded.

In the southwest portion of the landfill, near the edge, possible Seepage-9 is reduced in size; however, probable Seepage-8 is no longer visible.

West of the large landfill, off the Landfill area, and south of the sand and gravel pit operation, solid waste SW-5 remains. East of the Landfill area impoundment IM-2 appears to have been filled and a water treatment facility has been constructed in its place. An excavation area is now visible north of this facility.

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SL	STANDING LIQUID
ST	STAIN
SW	SOLID WASTE
VS	VEGETATION STRESS
WH	WAREHOUSE
WSB	WEST STORAGE BUILDING

Figure 20. Former Macon Naval Ordnance Plant Landfill site, Landfill area, February 24, 1988. Approximate scale 1:4,440.

GLOSSARY

Access Road - A paved or unpaved route of vehicular access.

Berm/Dike - An embankment of either natural or man-made materials that impounds liquids, solids or other materials, or controls flood waters.

Cleared Area (CA) - An area from which man has removed trees, shrubs, or other natural vegetative cover.

Dark-, Medium-, or Light-Toned - Tones of features in question are compared with the darkest and lightest tones of gray (if using B&W photography) on the print.

Debris (D) - The remains of anything that can be identified as being broken down, destroyed, demolished, or dismantled.

Excavation Area (EX) - An area where earth or other material is being removed in order to alter the ground level (e.g., building construction).

Fill (FL) - Earth, stones, or other material that is used to build up the level of an area of ground.

Ground Scar (GS) - An area of bare soil, apparently the result of human activity.

Impoundment (IM) - A liquid containment area that appears to be related to activity on a site but does not appear to be used for waste storage, disposal and/or treatment.

Mounded Material (MM) - Piles of raw or waste materials on or in the vicinity of the site.

Outfall (OF) - The place where an effluent is discharged into the environment.

Seepage - Visible liquid from beneath the dikes of lagoons or impoundments.

Stain (ST) - A residue or discoloration resulting from a spill, discharge, or removed/dispersed materials.

Tanks - Vertical tanks (VT), horizontal tanks (HT), pressure tanks (PT), tank farms, and solid waste management units. A large receptacle, container, or structure for holding liquid or gas.

Vegetation Stress (VS) - Describes a condition wherein vegetation has been weakened (but not irreversibly damaged) by lack of water, disease, or exposure to toxic substances.

Wetlands - Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

REFERENCES

MAPS

Source[a]	Figure	Name	Scale	Date
USGS	1	United States	1:2,500,000	1972
USGS	2	Macon West, GA	1:24,000	1985

COLLATERAL INFORMATION

EPA. 1999. Collateral information provided by Region 4, Remote Sensing Services Request Form.

LESAT (Lockheed Environmental Systems & Technologies Co.). 1999. Master Quality Assurance Project Plan. Prepared for EPA Environmental Sciences Division. Contract 68-C5-0065. Las Vegas, Nevada.

AERIAL PHOTOGRAPHS

Photo source[a]	Figure	Date of acquisition	Original scale	Film type[b]	Mission I.D.	Source frame #
NAS	3,4	05-10-38	1:20,000	B&W	ATU-23	43-45
USGS	5,6	02-03-51	1:59,000	B&W	-	6758,6759
ASCS	7,8	03-24-55	1:20,000	B&W	ATU-2P	49-51
ASCS	9,10	10-11-58	1:20,000	B&W	ATU-5W	173,174
ASCS	11,12	02-03-66	1:20,000	B&W	ATU-1GG	189,190
ASCS	13,14	03-09-72	1:20,000	B&W	13021	95,96
ASCS	15,16	10-31-75	1:48,000	B&W	13021	37,38
ASCS	17,18	10-13-80	1:40,000	B&W	13021	73,74
ASCS	19,20	02-24-88	1:40,000	B&W	-	202,203

[a] ASCS U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service, Salt Lake City, Utah
NAS National Air Survey, Bladensburg, Maryland
USGS U.S. Department of Interior, U.S. Geological Survey, Washington, D.C.

[b] B&W Black-and-white

Reference No. 18
Macon Naval Ordnance Plant
EPA ID No. GAD003302676

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FINAL
SITE INVESTIGATION REPORT
FORMER MACON NAVAL ORDNANCE PLANT
LANDFILL SITE
MACON, GEORGIA

September 1997

Prepared for:
SAVANNAH DISTRICT - U.S. ARMY CORPS OF ENGINEERS
USACE Contract DACA 21-93-D-0029
Delivery Order No. 24

Prepared by:
RUST ENVIRONMENT & INFRASTRUCTURE
Atlanta, Georgia

Rust Project No. 33941.000
Rust Document Control 33941-0051

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Lester J. Williams, P.G.
Project Geologist

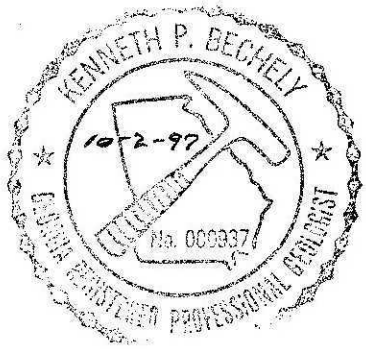
Kenneth P. Bechely, P.G.
Project Manager

CERTIFICATION

SITE INVESTIGATION REPORT
LANDFILL SITE
(FORMER MACON NAVAL ORDNANCE PLANT)
MACON, GEORGIA

PREPARED FOR:
U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT

I certify that I am a qualified groundwater scientist who has received a baccalaureate or post-graduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrogeology and related fields, and demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by myself or by a subordinate working under my direction.



Kenneth P. Bechely, P.G.
Project Director

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LIST OF ACRONYMS

AIP	Allied Industrial Park
AST	Above Ground Storage Tank
ASTM	American Society for Testing and Materials
bls	below land surface
COC	Chain of Custody
CSR	Compliance Status Report
DCE	dichloroethene
DNR	Department of Natural Resources
DPT	Direct Push Technology
EPA	Environmental Protection Agency
ESE	Environmental Science and Engineering, Inc.
ft/min	feet per minute
HSI	Hazardous Site Inventory
HSRA	Hazardous Site Response Act
MBCIA	Macon-Bibb County Industrial Authority
MCL	Maximum Contaminant Level
mgd	million gallons per day
MNOP	Macon Naval Ordnance Plant
msl	mean sea level
OVM	Organic Vapor Meter
PAH	Polynuclear Aromatic Hydrocarbons
PCBs	Polychlorinated biphenyls
PCE	tetrachloroethene
PETN	Pentaerythritoltetranitrate
PPE	Personal Protective Equipment
ppm	part per million
QA	Quality Assurance
QC	Quality Control
QCSR	Quality Control Summary Report
RRS	risk reduction standards
SOP	Standard Operating Procedures
SVOC	Semi-Volatile Organic Chemicals
TCE	Trichloroethene
USACE	U. S. Army Corps of Engineers
USCS	Unified Soil Classification System
USGS	U. S. Geological Survey
UST	Underground Storage Tank
VOC	volatile organic chemicals
WEGS	Westinghouse Environmental and Geotechnical Services

EXECUTIVE SUMMARY

The former Macon Naval Ordnance Plant (MNOP) Landfill site is located in an industrial setting of south Macon, Bibb County, Georgia. Other than the landfilled area, the site is undeveloped. Land use in the area is primarily industrial with some undeveloped areas to the south. The site was originally a part of the MNOP which included the Allied Industrial Park (AIP) property immediately to the north. The MNOP was constructed and operated by Reynolds Corporation prior to World War II. The Navy assumed operations in 1941 and continued operations until 1965 for the production of ordnance. The Georgia Hazardous Site Inventory (HSI) currently lists the former MNOP Landfill site (HSI number 10167) as a Class II site under the Georgia Hazardous Site Response Act (HSRA).

Rust Environment and Infrastructure (Rust) was contracted by the Savannah District of the U.S. Army Corps of Engineers (USACE) to complete parallel site investigations at the former MNOP Landfill site and at the AIP. The AIP study is described under a separate cover. The purpose of the former MNOP Landfill investigation was to collect sufficient information concerning site contamination to prepare a Compliance Status Report (CSR) as required under Section 391-3-19-.06 of the HSRA regulations.

Historical information indicated that potential sources of contamination may include the inactive landfill located on the site, an area noted as having been an explosives demolition area, and an off-site landfill located immediately west of the site. To evaluate these sources and general site conditions, the scope of work included collecting soil samples from on-site borings, field screening groundwater collected from temporary sampling points, installing and sampling groundwater wells, collecting biota samples from a nearby creek, and collecting surface water and sediment samples from on-site and off-site drainage features.

The results of the groundwater sampling indicate that a release of trichloroethene (TCE), and other constituents has occurred. Site groundwater contamination appears to be localized to areas immediately surrounding the landfill. The extent of groundwater contamination has not been determined. The analytical results did not reveal any evidence of contamination for explosive residues, semi-volatiles, pesticides, or polychlorinated biphenyls (PCBs).

The results of soil sampling indicate that elevated levels of metals and PCBs are present throughout the subsoils of the site. The contamination is present adjacent to the source areas and at locations in the floodplain to the south. These contaminants will not likely undergo significant natural degredations, but will strongly sorb to soil. No evidence of explosive residues contamination was identified in the soils sampled.

Surface water and sediment samples collected found no evidence of contamination in Rocky Creek, south of the site. However, surface water samples collected north and southeast of the source areas were found to contain metals and volatile organic compounds (VOCs). Sediment samples from the same areas detected VOCs, semi-volatiles, and metals. Detections in the samples collected to the north indicate the possibility of an off-site source to the north or northwest.

Potential receptors include hunters and fisherman, environmental samplers, and trespassers. Ecological receptors are numerous and include a variety of small and large mammals, birds, and aquatic organisms. The most feasible routes by which exposure to contaminants could occur include ingestion and/or dermal contact with contaminated soil or surface waters, inhalation of soil particulates, and ingestion of contaminated fish or game.

Based on the analytical results, the on-site landfill appears to be a likely source of the contaminants identified. There is no indication of explosives residues in soil or groundwater.

It is concluded that contaminant levels in the shallow groundwater currently exceeds the state of Georgia's risk reduction standards (RRS) as promulgated in the Hazardous Sites Response Act (HSRA). While a large number of constituents were detected in the groundwater samples, only lead, arsenic, TCE, 1,1-DCE, and vinyl chloride were detected at more than one location in concentrations greater than the Type 4 (nonresidential) RRS. The Type 4 RRS for soil were exceeded for only lead and para-cymene.

Based on the results of investigation and current site conditions it is recommended that further definition of the vertical and horizontal extent of soil and groundwater contamination be completed to meet the requirements of a HSRA Compliance Status Report. Further definition of the sources identified in this report will also be necessary. A full description of the project conclusions and recommendations can be found in Section 11 of this report.

1.0 INTRODUCTION

This report documents the site investigation conducted by Rust Environment and Infrastructure at the former Macon Naval Ordnance Plant Landfill (MNOP Landfill) site. The Georgia Hazardous Site Inventory (HSI) currently lists the site (HSI number 10167) as a Class II site under the Georgia Hazardous Site Response Act (HSRA). Historically, the site was part of the Macon Naval Ordnance Plant (MNOP) which was owned by the United States Navy until 1965.

This report was prepared by Rust for the Savannah District of the U.S. Army Corps of Engineers (USACE) in accordance with Contract Number DACA 21-93-D-0029, Delivery Order No. 24. The original intent of the investigation was to collect sufficient information concerning site contamination to prepare a Compliance Status Report (CSR) as required under Section 391-3-19-.06 of the HSRA regulations. Little was known concerning the types, sources, and extent of contamination prior to this site investigation. Due to the lack of knowledge concerning specifics of the potential contamination, the scope of work was designed to provide an understanding of site conditions through a broad scale investigation.

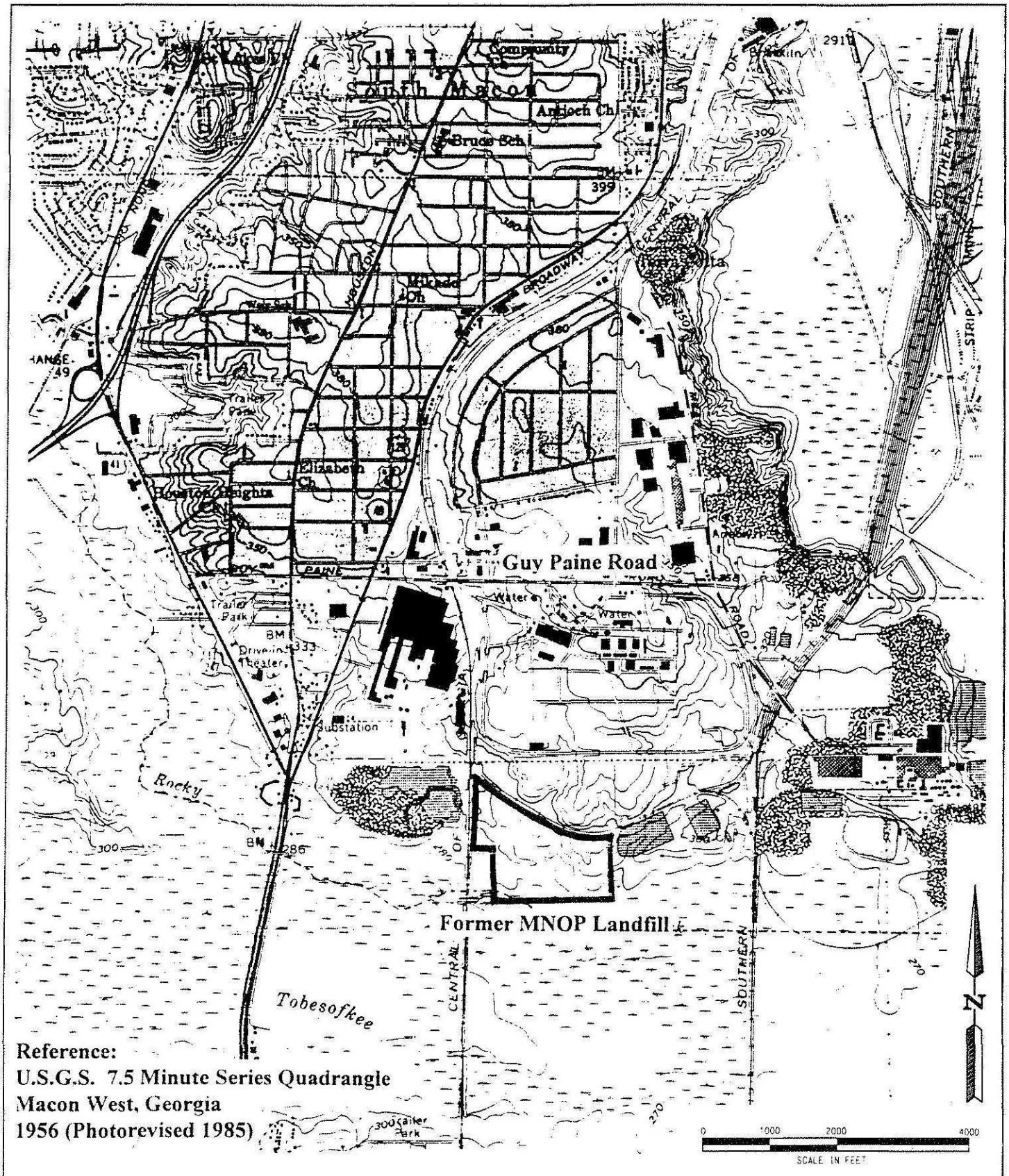
The investigation included the sampling of subsurface and surface soils, groundwater, surface water, and stream sediment from multiple locations across the site. While this investigation has provided a good estimate of the general nature and extent of the contamination, not all of the requirements of a CSR were met (specifically the full delineation of the horizontal and vertical extent of contamination).

The following report is structured to provide information applicable to the creation of a CSR following further study. Therefore, the report includes information concerning the physical setting an evaluation of environmental data collected, an evaluation of potential environmental receptors, a discussion of current and historical property ownership, an evaluation of the site's compliance with the HSRA Risk Reduction Standards, and recommendations for further actions to be taken.

Geologic, hydrogeologic, and chemical data used in this evaluation were obtained by Rust from January through May 1996.

1.1 SITE DESCRIPTION

The landfill site is in Bibb County on the south side of Macon, Georgia (Figure 1-1) on the property formerly occupied by the Macon Naval Ordnance Plant. The topography in this area slopes to the south from approximately 300 feet above mean sea level (msl) to 275 feet msl at Rocky Creek



Reference:
U.S.G.S. 7.5 Minute Series Quadrangle
Macon West, Georgia
1956 (Photorevised 1985)

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 1-1
SITE LOCATION MAP
FORMER MNOP LANDFILL
MACON, GEORGIA
RUST PROJECT 33941.000
33941102 7/96

1a

immediately south of the landfill. Although the exact boundaries and construction of the landfill are not known, it is estimated to be 12 to 15 acres in size and unlined.

Land use in the area around the site is primarily industrial. The landfill is bordered on the south by Rocky Creek. The Rocky Creek Waste Water Treatment Plant, operated by the Macon Water Authority, is located east of the landfill. The Riverwood International plant site is east of the treatment plant. The western side of the property is bordered by the Armstrong Cork Company's (Armstrong Cork) plant site. The property to the north is occupied by the Allied Industrial Park (AIP). The Armstrong Cork plant and the AIP are Class II HSRA sites (HSI site numbers 10131 and 10308, respectively). The Riverwood International site is a Class IV HSRA site (HSI site number 10027).

1.2 BACKGROUND

As stated earlier, the former MNOP Landfill site was once part of the MNOP which included the AIP property to the north. The MNOP was constructed and operated by the Reynolds Corporation prior to World War II. The Navy assumed operations in 1941 and continued operations until 1965 for the production of ordnance. Items manufactured included flares, small primers, detonators, and other triggering mechanisms. The MNOP owned and operated the landfill south of the manufacturing areas.

After being declared surplus by the Navy, the MNOP property was sold in December 1965 to the Maxson Electronics Company of New York. Maxson continued to produce ordnance under contract with the Navy. Maxson subsequently sold the property to Allied Chemical Corporation in 1973 which manufactured automobile seat belts at the site. Allied sold the property in 1980 to the Macon-Bibb County Industrial Authority (MBCIA). The MBCIA deeded the southern portion of the MNOP property containing the landfill to the Macon Water Authority in 1989. The landfill was used by all owners subsequent to the Navy until approximately 1974, at which time the site was closed. However, evidence at the site indicates that intermittent dumping of construction and demolition debris has continued.

The landfill is said to have received explosives and flammable wastes during Navy operations, but in interviews and previous studies (ESE, 1990) the landfill wastes were indicated to be limited primarily to solid waste, used parts, and construction debris. A burn pit was located in the same general area as the landfill. The burn pit was used for explosives testing and the disposal of flammable waste.

In 1989 and 1990, groundwater, soil, and sediment samples were collected and analyzed from the areas upgradient and downgradient of the landfill and on the adjacent property owned by Armstrong Cork. The Armstrong Cork property sampled contained a drum storage area and a pond. Organic and inorganic analytes were detected in each media (ESE, 1990). The analytical results for groundwater and soil are found on Tables 1-1 and 1-2, respectively. Figure 1-2 shows the locations sampled as part of the 1989-90 investigation.

Also during this investigation, groundwater samples were collected from five monitor wells installed around the landfill, including one upgradient of the landfill (MW-1). Various metals were detected in almost all of the samples, however, cyanide, arsenic, and selenium were detected in down gradient samples only. The explosives compounds 1,3-DNB and 2,4-DNT were detected in groundwater samples collected downgradient of the landfill. Pentaerythritoltetranitrate (PETN), a common component of fuses and primers, was detected in a sample collected from only the upgradient well (MW-1). Trichloroethene and vinyl chloride were also detected in groundwater samples collected downgradient of the landfill. Bis(2-ethylhexyl)phthalate was detected in every well and the equipment blank, which probably indicates it is laboratory contamination and is therefore, not considered significant.

Soil samples were collected from the explosives demolition area on the east side of the landfill on two occasions. The only reported detections in these samples were for arsenic, barium, chromium and lead. No background soil data were provided.

Two composite soil samples were collected from the Armstrong property, one from the pond containing the discolored water and one from the soils in the area of the drums (Figure 1-2). The sample from the pond contained a number of polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbons. The sample from the soil around the drums contained several metals, one PAH (benzo(g,h,i)perylene), nitrogen, and petroleum hydrocarbons.

Table 1-1
Summary of Previous Groundwater Analytical Data
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Compound	Sample Identification									Water Quality Criterion	Regulation
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-3-DP	MW-EB	MW-TB	SO-TB		
cyanide (mg/L)	--	0.133	0.005	--	--	--	--	NRQ	NRQ	0.0035	GA
nitrogen NO_2+NO_3 (mg/L as N)	5.45	0.151	0.040	--	--	0.073	0.021	NRQ	NRQ	10	MCL
arsenic, total (mg/L)	--	0.0032	0.0029	--	--	--	--	NRQ	NRQ	0.005	MCL
barium, total (mg/L)	0.0507	0.120	0.0556	0.0418	0.109	0.0569	0.0015	NRQ	NRQ	1.0	MCL
chromium, total (mg/L)	0.0140	0.0259	0.0181	0.0091	--	0.0118	--	NRQ	NRQ	0.05	MCL
iron, total (mg/L)	4.42	19.0	5.91	19.2	17.3	6.04	0.0124	NRQ	NRQ	0.3	MCL
manganese, total (mg/L)	0.428	0.590	0.0970	0.248	0.530	0.100	--	NRQ	NRQ	0.05	MCL
selenium, total (mg/L)	--	--	0.0023	--	--	--	--	NRQ	NRQ	0.01	MCL
sodium, total (mg/L)	20.6	28.7	13.6	8.12	9.30	14.3	0.169	NRQ	NRQ	20	GA Recom
pentaerythritol tetranitrate (μg/L)	68.8	--	--	--	--	33.3	--	NRQ	NRQ	NC	--
1,3-dinitrobenzene (μg/L)	--	--	1.18	--	--	1.23	--	NRQ	NRQ	NC	--
2,4-dinitrotoluene (μg/L)	--	--	1.83	--	--	1.68	--	NRQ	NRQ	1.1	Rosenblatt
trichloroethene (μg/L)	--	7,000	3,800	110	19	3,900	--	--	--	5	MCL
vinyl chloride (μg/L)	--	--	--	170	--	--	--	--	--	2	MCL
bis(2-ethylhexyl)phthalate(μg/L)	1.6	1.7	6.4	2.4	1.2	3.0	1.2	NRQ	NRQ	10,000	WQC

Note: GA = Georgia state standard described in EPA (1988).
GA Recom = recommended Georgia standard - nonenforceable (Personal Communication, Fred Lehman).
MCL= maximum contaminant level specified in the National Primary drinking Water Regulations, 40 CFR 141.11 (July 1, 1986) and the National Secondary Drinking Water Regulations, 40 CFR 143.3 (July 1, 1986).
mg/L = milligrams per liter.
NRQ = not required.
Rosenblatt = criteria suggested by Rosenblatt (1981) for the permissible concentration level for the contaminant in drinking water.
μg/L = micrograms per liter.
WQC = suggested ambient water quality criteria for the protection of human health from the toxic properties or carcinogenic effects of the compound; criteria associated with cancer risk levels (CRLs) of 1 x 10-6 are reported where available; these criteria are summarized in the document Quality Criteria for Water 1986, EPA, May 1, 1986, Washington, DC; criteria were previously announced in 45 FR 79318 (November 28, 1984), 49 FR 5831 (February 15, 1984), and 50 FR 30784 (July 29, 1984).
-- = not detected at method detection limit.

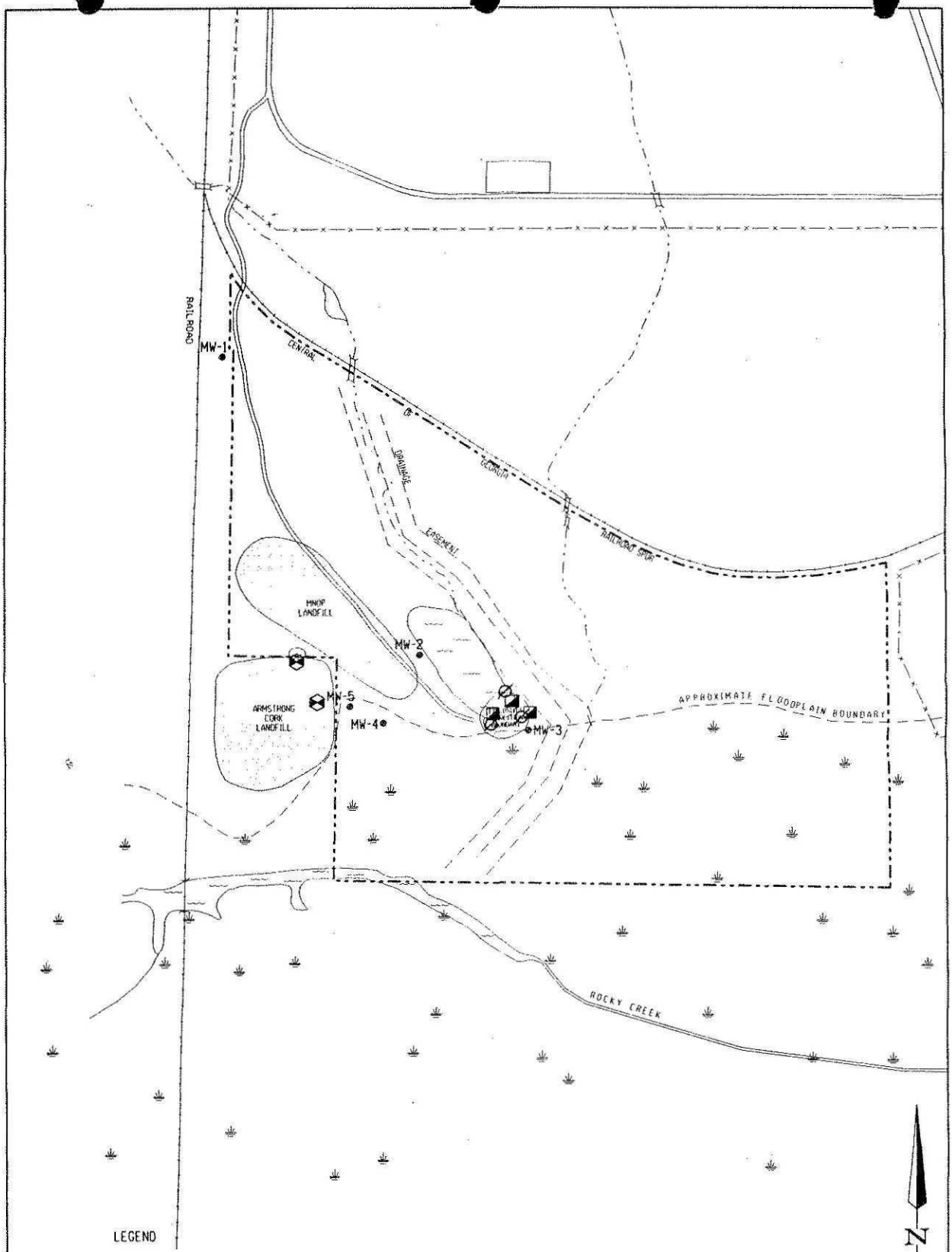
Source: ESE, 1990

Table 1-2
Summary of Previous Soil Analytical Data
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Compound*	Sample Identification					
	SO-1	SO-2	SO-3	SO-4	SO-5	SO-3-DP
moisture (% wet wt.)	9.3	14.2	11.6	44.3	52.6	13.4
arsenic	0.650	1.55	0.574	0.781	4.83	0.502
barium	6.92	11.4	8.71	196	70.5	7.26
chromium	7.02	8.87	5.82	22.1	29.6	3.99
lead	--	5.00	--	41.8	39.3	--
anthracene	--	--	--	--	0.32	--
benzo(a)anthracene	--	--	--	--	1.4	--
benzo(b)fluoranthene	--	--	--	--	0.92	--
benzo(k)fluoranthene	--	--	--	--	0.67	--
benzo(a)pyrene	--	--	--	--	0.69	--
benzo(g,h,i)perylene	--	--	--	1.9	0.72	--
chrysene	--	--	--	--	0.95	--
fluoranthene	--	--	--	--	2.1	--
indeno(1,2,3-cd)pyrene	--	--	--	--	0.75	--
phenanthrene	--	--	--	--	1.0	--
pyrene	--	--	--	--	1.8	--
nitrogen, NO_2+NO_3, sediment (μg/g-dry)	4.3	--	--	196	--	0.71
hydrocarbons, petroleum (μg/g-dry)	--	--	--	1,020	207	--

Note: μg/g-dry = micrograms per gram, dry weight.
-- = not selected at method detection limit.
* = units are in milligrams per kilogram, dry weight (mg/kg-dry) unless otherwise noted.

Source: ESE, 1990



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DRAWN BY M.PEARCE	7/96
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FILE NAME 33941105	

RUST ENVIRONMENT & INFRASTRUCTURE
ATLANTA . GEORGIA

FIGURE 1-2
PREVIOUS ENVIRONMENTAL STUDIES
FORMER MNOP LANDFILL
MACON, GEORGIA

3c

2.0 PHYSICAL SETTING

2.1 SUBSURFACE GEOLOGY

The former MNOP Landfill site is underlain by a thin surficial deposit composed primarily of red-brown silty sands, clayey silts and silty clays at ground surface which in turn is underlain by sands, silts, and clay of the Tuscaloosa formation. The surficial materials from north to south, toward Rocky Creek, becomes increasingly organic rich and, in places, are composed of peat and organic-rich silts/clay.

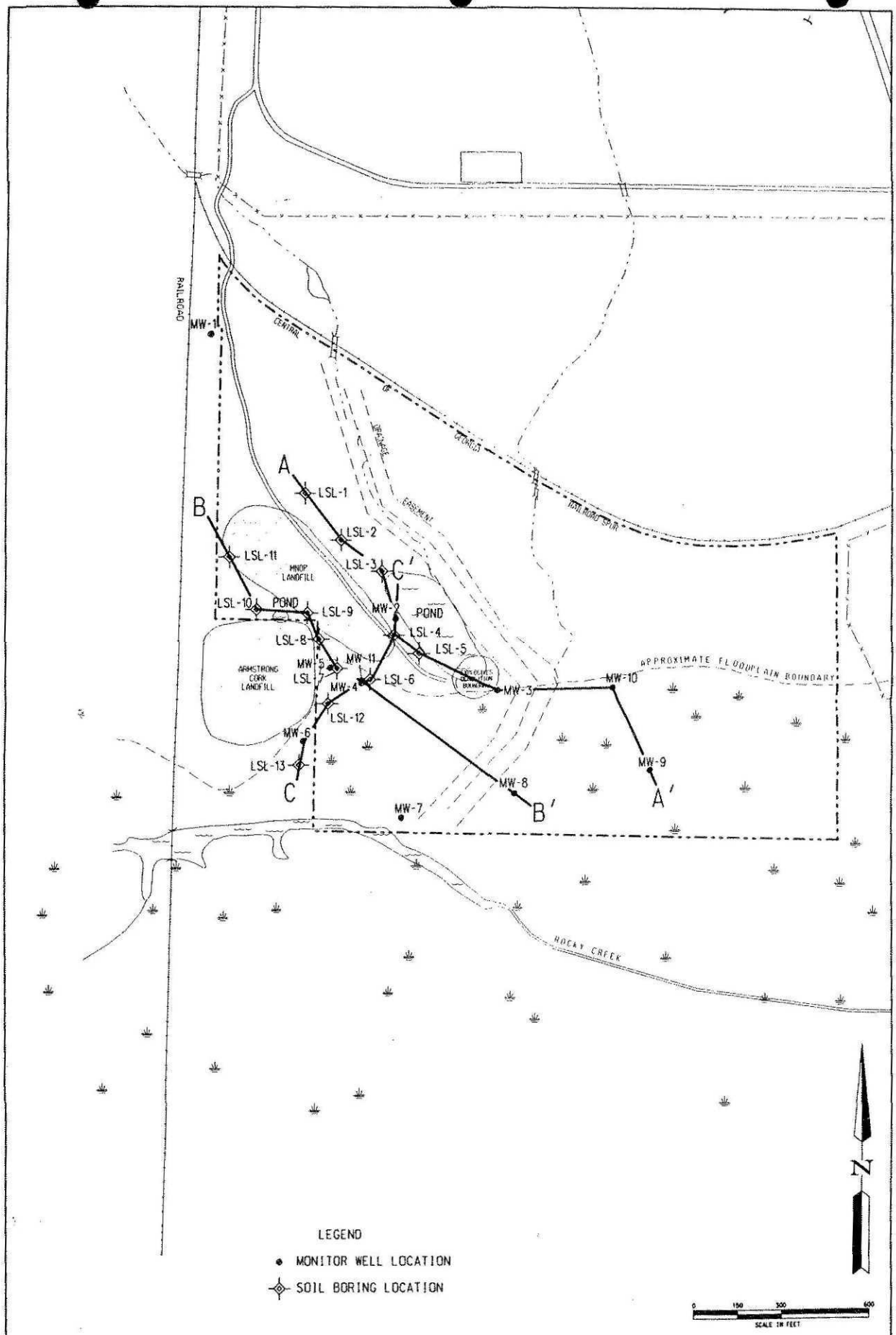
Geologic profiles were generated using data gathered during this and previous investigations. Figure 2-1 is a cross section location map, while the cross sections are represented in Figures 2-2 through 2-4. The boring logs and well construction summaries for the historical data used in this report and those generated as part of the current investigation are found in Appendix A. The cross sections generated define two distinctive (shallow) lithologic units:

- surficial deposits composed of silty sand, clay, peat and organic silts/clay (Quaternary)
- clayey sand, clean sands, clay and silt (Tuscaloosa)

The surficial unit varies in thickness from 4 to 7 feet and is composed of residual soils to the north and organic rich, mostly clayey deposits (Quaternary) to the south. The organic rich deposits were probably laid down as a result of vertical accretion of the flood plain adjacent to Rocky Creek. The base of the surficial unit is estimated to be at elevation 280 feet msl sloping to 272 feet msl near Rocky Creek. Below the surficial materials, the Tuscaloosa is composed of what appears to be predominantly sand and clayey sand with interbeds of clay and silt. The Tuscaloosa has distinctive grey/green-grey silts and clays and white-tan kaolinitic clayey sands.

The surficial materials are saturated throughout the floodplain area, and is sufficiently thick to form a distinctive hydrogeologic unit in these areas. Monitoring wells near the former MNOP Landfill site are predominantly screened into the underlying Tuscaloosa silts, sands, and clays, while monitoring wells near Rocky Creek, such as MW-6, MW-7, MW-8, MW-9 and MW-10 are predominantly screened into the surficial unit.

The deeper stratigraphic and lithologic units are known only from the drillers logs available for many of the deep water-supply wells which surround the site and from review of available literature. The Cretaceous aged Tuscaloosa formation consists of light-colored sand, sandy clay, and discontinuous



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DRAWN BY	M.PEARCE
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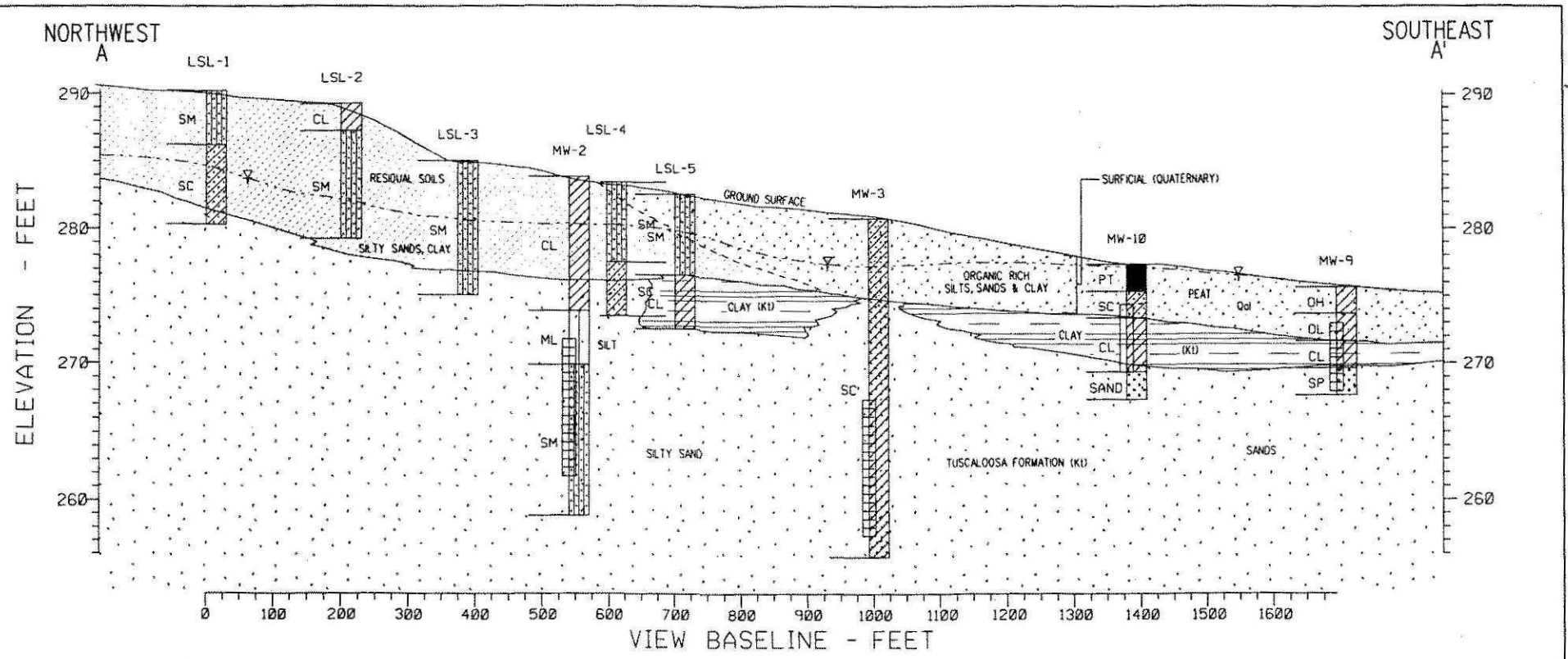
FILE NAME	33941066
DATE	6/96
	6/96

RUST ENVIRONMENT & INFRASTRUCTURE
ATLANTA , GEORGIA

FIGURE 2-1
CROSS SECTION LOCATION MAP
FORMER MNOP LANDFILL
MACON, GEORGIA



LEGEND

LSL-1 — DPT BORING LOCATION

MONITOR WELL SHOWING SCREENED INTERVAL

— APPROXIMATE POTENTIOMETRIC SURFACE BASED UPON 4/25/96 MEASUREMENTS IN EXISTING WELLS

SP - USCS SOIL CLASS CODE

Qal - QUATERNARY

Kt - CRETACEOUS TUSCALOOSA FORMATION

0 75 150 300
HORIZONTAL SCALE IN FEET

0 5 10 20
VERTICAL SCALE IN FEET

NO.	DATE	REVISIONS	BY

RUST PROJECT	33941.000	DATE
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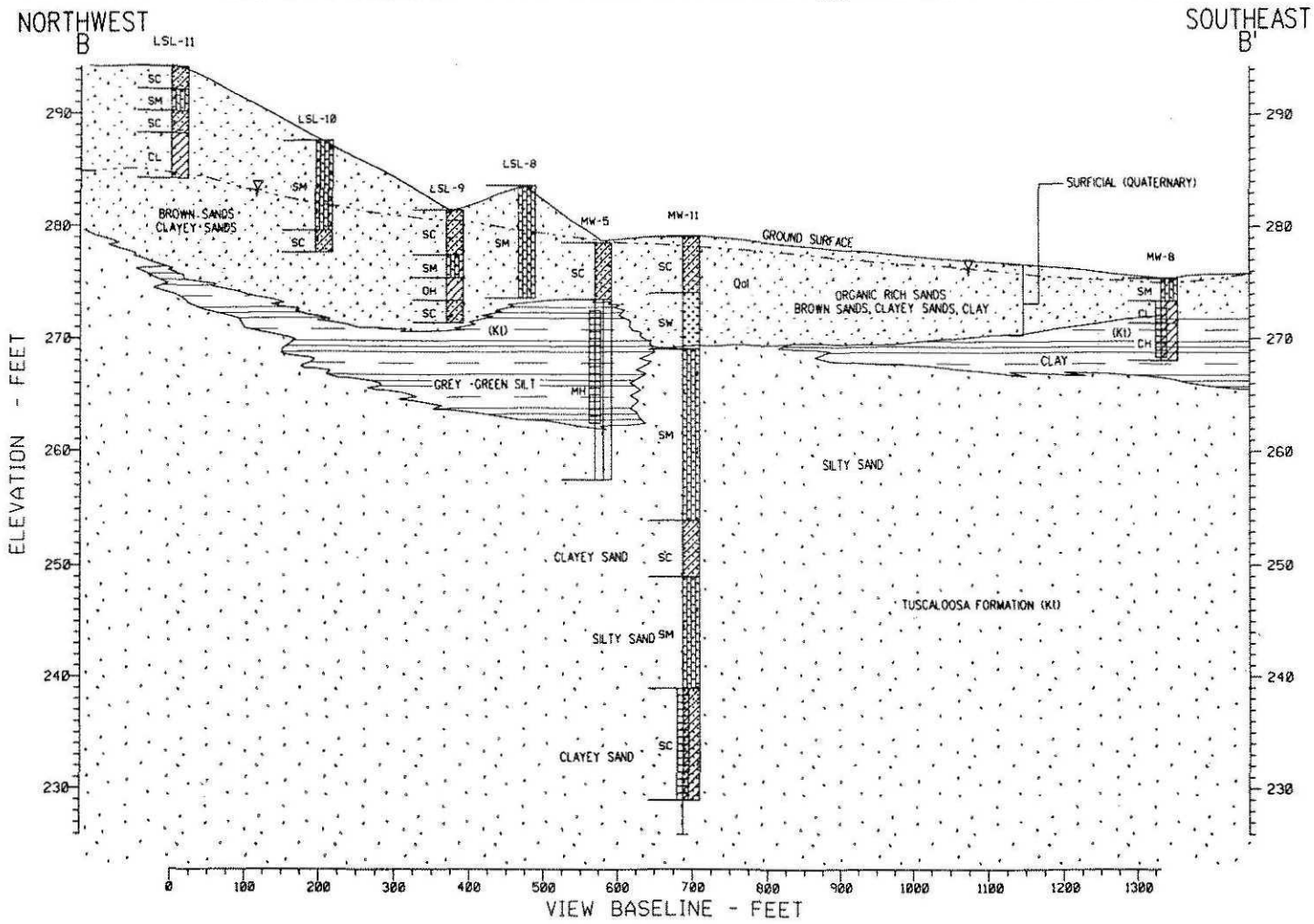
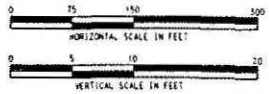
DRAWN BY	M.PEARCE	7/96
CHECKED BY		
FILE NO.	33941091	

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 2-2
CROSS SECTION A-A'
FORMER MNOP LANDFILL
MACON, GEORGIA





LEGEND

LSL-1 — OPT BORING LOCATION

MONITOR WELL SHOWING SCREENED INTERVAL

APPROXIMATE POTENTIOMETRIC SURFACE BASED UPON 4/25/96 MEASUREMENTS IN EXISTING WELLS

SP - USCS SOIL CLASS CODE

Qal - QUATERNARY

Kl - CRETACEOUS TUSCALOOSA FORMATION

NO.	DATE	REVISIONS	BY

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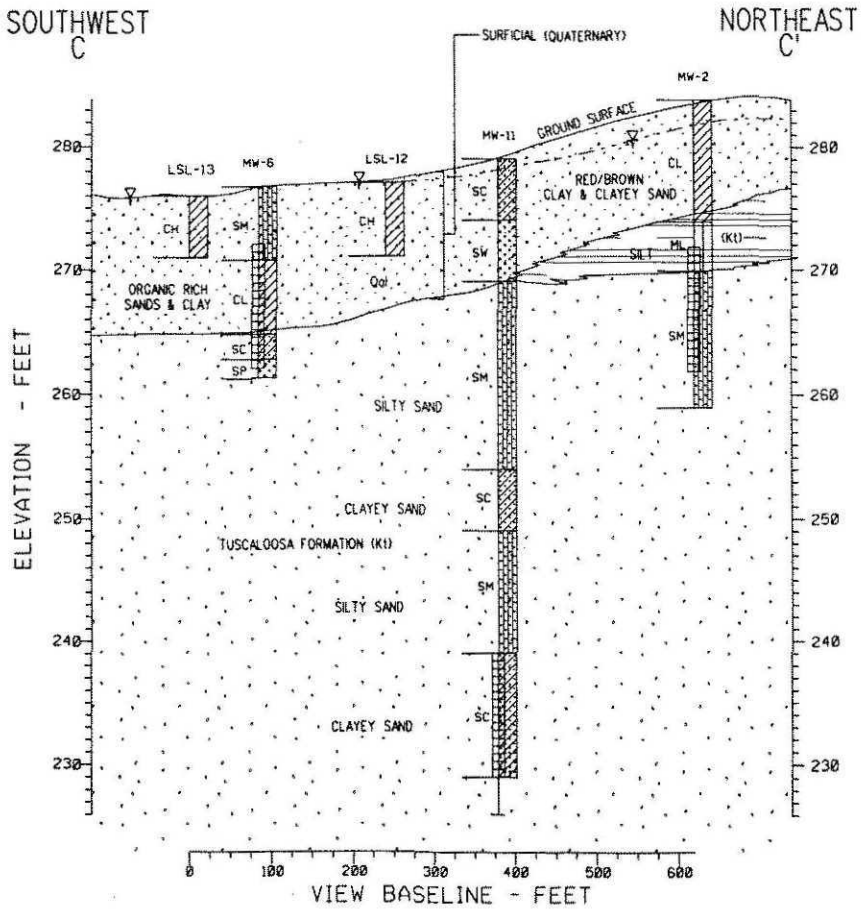
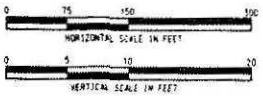
CHECKED BY		
FILE NO.	33941092	

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 2-3
CROSS SECTION B-B'
FORMER MNOP LANDFILL
MACON, GEORGIA





LEGEND

LSL-1 — DPT BORING LOCATION

MONITOR WELL SHOWING SCREENED INTERVAL

APPROXIMATE POTENTIOMETRIC SURFACE BASED UPON 4/25/96 MEASUREMENTS IN EXISTING WELLS

SP - USCS SOIL CLASS CODE

Qal - QUATERNARY

Kt - CRETACEOUS TUSCALOOSA FORMATION

NO.	DATE	REVISIONS	BY

		DATE
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DESIGNED BY	L WILLIAMS	7/96
DRAWN BY	M.PEARCE	7/96
CHECKED BY		
FILE NO	33941093	

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 2-4
CROSS SECTION C-C'
FORMER MNOP LANDFILL
MACON, GEORGIA

clay (LeGrand, 1962). Sand beds within the Tuscaloosa formation are exceptionally productive and form an ample source of fresh, high quality water used for industrial and potable purposes. The Tuscaloosa is approximately 280 to 285 feet thick (260 to 265 feet thick below former MNOP Landfill site) and directly overlies what is described in drillers logs as "granite", "marl", or "limestone". In several of the drilled wells, 10 to 20 feet of marl or limestone is described to overlie granite but is not always present.

In each of the drilled wells reviewed from Armstrong Cork (seven deep wells located west and north of MNOP landfill), Riverwood International Corp (3 deep wells located east), and Keebler (one deep well to the north of AIP), a consistent stratigraphic sequence can be observed. At an elevation of approximately 248 feet msl a white and pink clay unit is encountered. This clay, which appears to be discontinuous across the area, is roughly 12 feet thick where present. In Armstrong well No. 7, which is the closest well to the former MNOP landfill, this clay appears to be absent and may be represented by what is described as a coarse sand with streaks of white clay. This unit is interpreted to be the base of the shallow water-table aquifer making the shallow aquifer approximately 30 feet thick assuming the water-table is at 280 feet msl.

Between the "shallow aquifer" and the first significant water bearing sand aquifer is a sequence of interbedded sand and clay (predominantly sand with clay and clay interbeds) that measures roughly 59 feet thick. In the Armstrong No.7 well this unit is approximately 62 feet thick. Below the interbedded sands and clay, between approximately 95 and 120 feet bls, is a medium to coarse grained water producing sand. Almost all water-supply wells in the area are screened across this 25 foot thick sand. Two or more water bearing sands or sequences of sands and clays are encountered between 120 feet bls and the base of the Tuscaloosa formation. Distinctive clay units are encountered between about 160 and 180 feet bls and between 200 and 220 feet bls.

2.2 HYDROGEOLOGY

Based upon literature review, evaluation of geologic logs both on-site and from deep water-supply wells, the following hydrogeologic units are defined:

- *shallow water-table aquifer*: the shallow aquifer extends from the water-table to approximately 30 feet bls. The shallow aquifer is comprised primarily of clayey sands, clean sands, and silty sands with frequent but discontinuous silt-clay intervals. The shallow aquifer also includes saturated portions of the surficial clay, silty sand and organic rich silt/clay deposits. Rocky Creek forms a discharge boundary for the shallow aquifer.

- *interbedded sand and clay units*: This unit is characterized by a distinctive red-white 12-foot thick clay unit overlying an approximately 60-foot thick sequence of interbedded sand and clay. Note that near the MNOP landfill, the distinctive red-white clay appears to be absent based upon logs from nearby water-supply wells. The "interbedded" unit is encountered between 35 and 95 feet bls. The clay and interbedded sand and clay units may form a confining unit or leaky confining unit to the deeper water producing aquifer zones.

- *Tuscaloosa sand aquifer(s)*: the Tuscaloosa sand aquifers consist of three or more primary water bearing sands or sequences of interbedded sand and clay separated by clay. This includes a shallow interval, from approximately 95 to 120 feet bls at Armstrong No. 7 well, and deeper aquifers between approximately 135 bls and the base of the Tuscaloosa at approximately 265 feet bls.

The following discussion on groundwater flow primarily deals with the *shallow aquifer* under study. Table 2-1 provides a summary of well construction details which groundwater flow and measurement data are based upon. All monitor wells are screened into the shallow aquifer except for MW-11 which is interpreted to be screened into the "interbedded" unit.

The groundwater flow direction for the shallow aquifer at the former MNOP Landfill site is generally in a south direction toward Rocky Creek, based on water levels taken on April 25, 1996. The potentiometric surface map (Figure 2-5) shows a predominant flow direction to the south except for in the vicinity of the pond where the potentiometric surface appears to be slightly mounded, possibly due to recharge from this surface water feature.

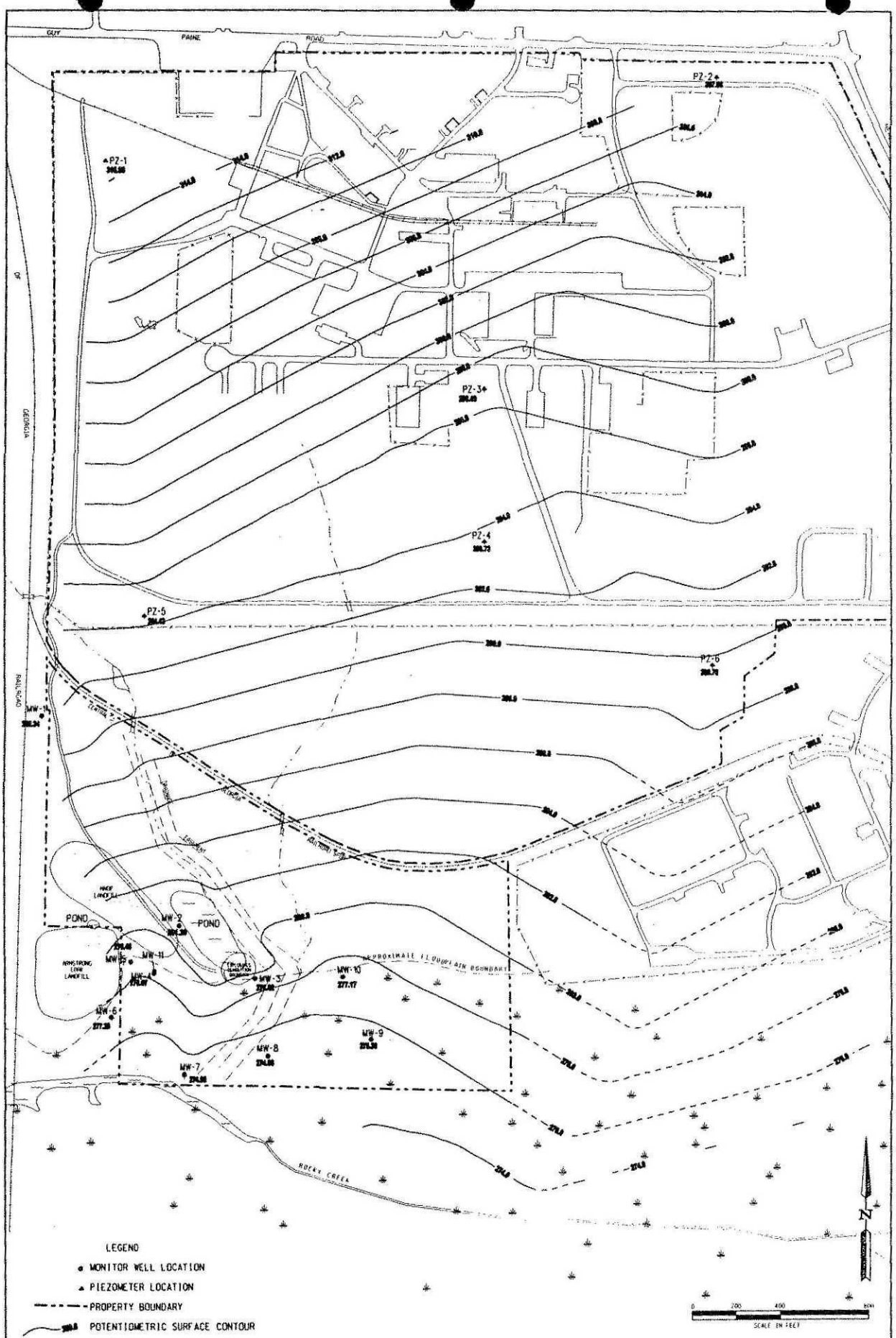
Depth to groundwater varies from about 14 feet bls at MW-1 to less than 2 feet bls in the area of the former MNOP Landfill site (Table 2-2). Saturated ground surface conditions exist all through the floodplain areas south of the former MNOP landfill. Static water levels correlated to elevations msl ranged from 292.34 feet msl at MW-1 to approximately 275 feet msl at monitoring wells MW-7 and MW-8 near Rocky Creek.

Rust conducted a study of the former MNOP which included the installation of piezometers on the AIP property, north of the former MNOP Landfill site (Rust, 1994). The hydraulic conductivity of the shallow aquifer was estimated by conducting hydraulic slug tests on the piezometers installed. Because no slug testing has been conducted on monitoring wells at the former MNOP Landfill, the results obtained from the AIP are included here as estimated conductivity values for the similar types of materials observed at the Landfill site. These results are expected to be representative of the Tuscaloosa sands, silts and clay units.

Table 2-1
Well Construction Summary
Macon Naval Ordnance Plant
Macon, Georgia
Rust Project No. 33941.000

Well No.	Northing Coordinate	Easting Coordinate	Ground Elev. ft-msl	Top of Casing Elevation ft-msl	Top Screen ft-bls	Bottom Screen ft-bls	Bottom Well ft-bls	Top Seal ft-bls	Bottom Seal ft-bls	Well Material	Date Installed
MW-1	1008453.52	658704.01	306.4	308.87	24.2	34.2	34.2	17.5	21.0	2"-PVC	9/12/89
MW-2	1007495.06	659335.07	283.9	286.06	12.1	22.1	22.1	2.0	4.0	2"-PVC	9/13/89
MW-3	1007249.66	659675.89	280.8	283.04	13.4	23.4	23.4	8.1	10.8	2"-PVC	9/14/89
MW-4	1007276.37	659217.75	278.9	281.12	5.4	15.4	15.4	1.4	3.7	2"-PVC	9/14/89
MW-5	1007329.30	659110.10	278.5	280.69	6.0	16.0	16.0	2.2	4.4	2"-PVC	9/15/89
MW-6	1007074.45	659019.61	276.8	279.3	4.8	14.8	15.3	0.5	1.5	2"-PVC	1/29/96
MW-7	1006814.08	659355.04	276.9	278.2	3.8	8.8	9.1	0.0	3.8	2"-PVC	2/6/96
MW-8	1006893.75	659730.93	275.4	277.87	2.0	7.0	7.3	0.0	2.0	2"-PVC	2/8/96
MW-9	1006972.18	660189.45	275.7	278.20	2.7	7.7	8.0	0.0	2.7	2"-PVC	2/7/96
MW-10	1007259.72	660061.84	277.4	279.92	3.0	8.0	8.3	0.0	3.0	2"-PVC	2/6/96
MW-11	1007284.82	659218.67	279.0	281.52	40.0	50.0	50.5	28.6	32.6	2"-PVC	1/26/96
PZ-1	1010971.39	658986.27	322.6	325.17	21.0	31.0	31.5	11.0	17.0	2"-PVC	10/11/94
PZ-2	1011352.85	661746.59	351.0	350.70	39.5	49.5	50.0	31.0	37.0	2"-PVC	10/6/94
PZ-3	1009930.01	660709.40	343.8	346.12	44.5	54.5	55.0	36.0	42.0	2"-PVC	10/13/94
PZ-4	1009238.56	660710.80	333.0	335.11	39.5	49.5	50.0	32.0	37.0	2"-PVC	10/5/94
PZ-5	1008907.39	659173.21	308.2	310.48	14.5	24.5	25.0	5.5	10.5	2"-PVC	10/6/94
PZ-6	1008681.53	661729.58	304.9	307.21	19.5	29.5	30.0	10.7	16.0	2"-PVC	10/7/94

ft-msl = feet mean sea level
ft-bls = feet below land surface



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RUST ENVIRONMENT & INFRASTRUCTURE
ATLANTA , GEORGIA

FIGURE 2-5
POTENTIOMETRIC SURFACE MAP
ALLIED INDUSTRIAL PARK & FORMER MNOP LANDFILL
MACON, GEORGIA

Table 2-2
Groundwater Elevation Summary
Macon Naval Ordnance Plant
Macon, Georgia
Rust Project No. 33941.000

Well No.	Northing Coordinate	Easting Coordinate	Ground Surface Elevation ft. msl	Top of Casing Elevation ft. msl	Depth to Water ft. TOC	Water Elevation ft. msl
MW-1	1008453.52	658704.01	306.4	308.87	16.53	292.34
MW-2	1007495.06	659335.07	283.9	286.06	4.86	281.20
MW-3	1007249.66	659675.89	280.8	283.04	4.22	278.82
MW-4	1007276.37	659217.75	278.9	281.12	3.05	278.07
MW-5	1007329.30	659110.10	278.5	280.69	2.23	278.46
MW-6	1007074.45	659019.61	276.8	279.3	1.96	277.29
MW-7	1006814.08	659355.04	276.9	278.2	3.25	274.93
MW-8	1006893.75	659730.93	275.4	277.90	3.24	274.66
MW-9	1006972.18	660189.45	275.7	278.20	2.82	275.38
MW-10	1007259.72	660061.84	277.4	279.90	2.73	277.17
MW-11	1007284.82	659218.67	279.0	281.50	7.15	274.35
PZ-1	1010971.39	658986.27	322.6	325.17	8.19	316.98
PZ-2	1011352.85	661746.59	351.0	350.70	43.04	307.66
PZ-3	1009930.01	660709.40	343.8	346.12	49.72	296.40
PZ-4	1009238.56	660710.80	333.0	335.11	41.38	293.73
PZ-5	1008907.39	659173.21	308.2	310.48	16.05	294.43
PZ-6	1008681.53	661729.58	304.9	307.21	17.45	289.76

ft. msl = feet mean sea level
ft. bls = feet below land surface
ft. TOC = feet below top of casing
Note: all measurements taken 4/25/96
MW-1 through MW-11 at former MNOP Landfill
PZ-1 through PZ-6 at AIP

6c

Hydraulic conductivity is a measure of a fluid's ability to move through a porous media under a unit gradient and is an important variable in evaluating groundwater flow velocities. Calculations indicate the average hydraulic conductivity for the six piezometers tested to be 2.1×10^{-3} feet per minute (ft/min) while the highest calculated value was 6.3×10^{-3} ft/min.

The horizontal average linear groundwater flow velocities were calculated for the former MNOP Landfill site using the Darcy equation (Fetter, 1988). The results indicate groundwater flow in the shallow aquifer is estimated to be 32 feet per year using the average hydraulic conductivity value reported and a high of 100 feet per year using the high hydraulic conductivity reported. The average hydraulic gradient used in these calculations was 0.0074 (see calculations in Appendix A).

Information on the vertical flow gradients between the two aquifers is only known from the observed gradients between monitoring wells MW-4 and MW-11 which are nested together and screened across the shallow aquifer, and deeper (interbedded) aquifer respectively. Vertical gradient was calculated by dividing the groundwater head difference between nested wells by the vertical elevation difference from screen interval midpoints. Positive gradients indicate upward flow, and negative gradients indicate downward flow. The head difference between MW-4 and MW-11 for April 25, 1996 was a -3.72 feet over a 34.4 foot vertical distance giving a gradient of -0.108 ft/ft. Based upon differing water levels in this well nest, a strong downward gradient appears to exist between the shallow aquifer and the underlying interbedded water bearing unit. It is interesting to note that the groundwater elevation at MW-11 (274.35 msl) is almost half a foot lower than groundwater elevations measured in shallow monitor wells near Rocky Creek. This may be a general indication that the water-supply wells adjacent to the site may have locally reversed the natural hydraulic gradient in this interbedded unit and underlying aquifers.

Groundwater within the shallow aquifer is expected to move from north to south and discharge to Rocky Creek and/or it's poorly defined tributaries which drain the floodplain area between the former MNOP landfill and the creek. The shallow aquifer may also recharge deeper aquifers by downward infiltration through underlying geologic units.

2.3 WATER USE

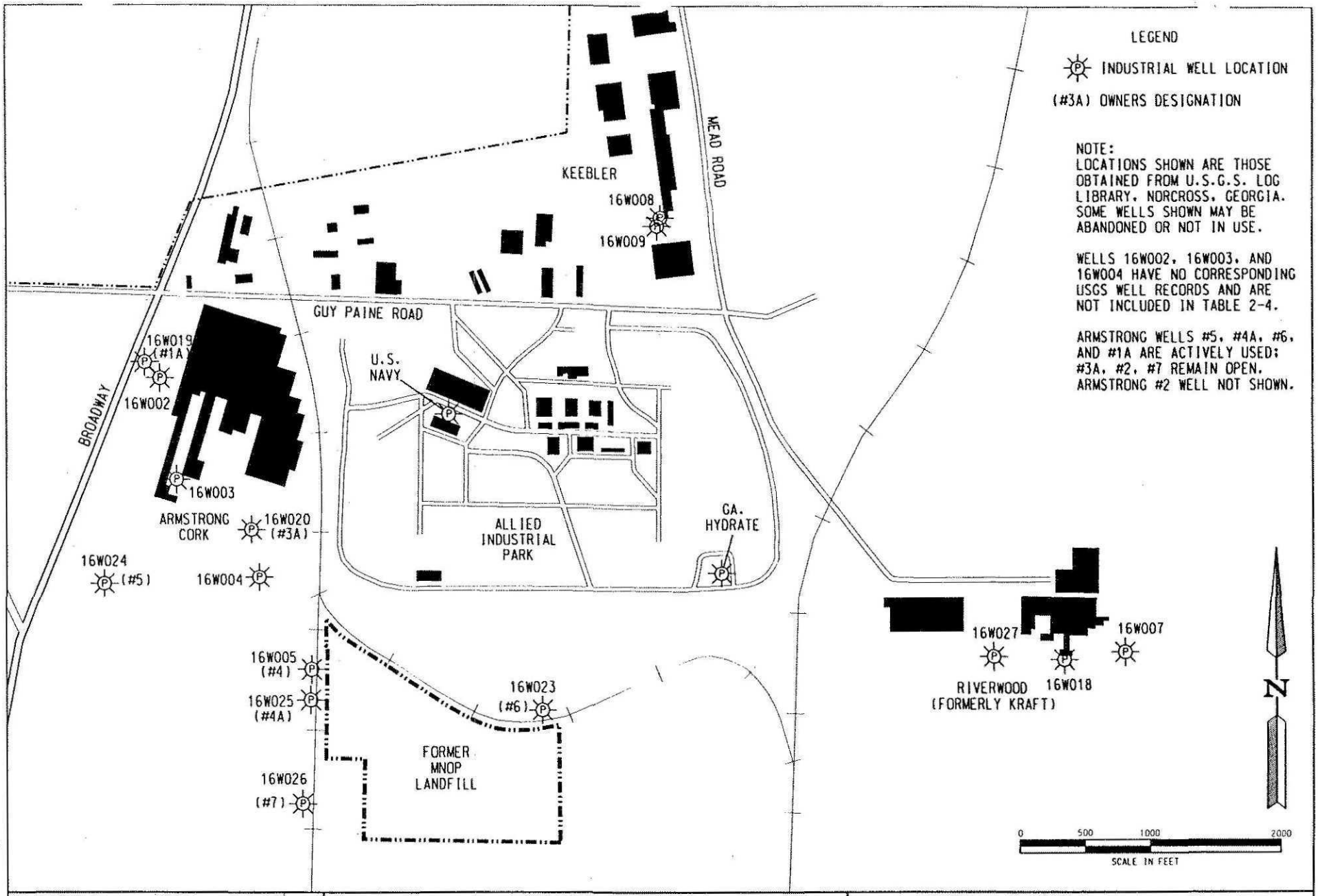
According to LeGrand (1962), all municipalities within the vicinity of the study area use water from wells except for the city of Macon, which treats water from the Ocmulgee River. The Macon-Bibb county water system indicates that all water is collected at one intake on the Ocmulgee River near the intersection of interstates I-75 and I-16. Industrial groundwater use is more frequent south of Macon. Local irrigation using well-water is practiced, but the overall use is small.

Three water-supply wells currently exist on the AIP property and a number of other supply wells operate to the east, west and north (Figure 2-6). Table 2-3 summarizes available well construction details for well records on file at the USGS Log Library. One of the wells at the AIP site, a 287-foot deep water well installed during Navy ownership, provided non-potable water for use in plant operations. According to site personnel, the pumping apparatus is still in place, but is nonfunctional. It is unclear when the well was last used. No well construction details on this well were available from the USGS. Another non-potable water-supply well (16W023 on Figure 2-6) is located on the southern portion of the AIP property, between the southern perimeter road and the Central of Georgia railroad spur. This 243 foot well is owned by Armstrong Cork and is currently active. A third water-supply well was drilled on the AIP property at the same time as the initial 1994 Rust investigation. The well is owned by the Georgia Hydrate Corporation, which recently acquired property from the Macon-Bibb County Industrial Authority. The well is located in the southeastern corner of the AIP property, near the railroad spur used during past site operations. The well was drilled to 290 feet by Green's Water Well Company of Gray, Georgia. It is understood from discussions with Georgia Hydrate Corporation personnel that the well is now active and it is used for both process and potable water-supply (Ashley Vickers, personal communication, February 1996).

Nine water-supply wells exist on the Armstrong Cork Property, located west of the AIP (Figure 2-6). Also, as described above, one Armstrong Cork well is located on the AIP property. According to Armstrong Cork personnel, the plant operates four primary wells which are designated as Well No. 1, 4, 5, and 6. Well No. 2 has not been used for years but remains open, well No. 3 has not been used for approximately 3 years, and well No. 7 is used occasionally (Bill Hahan, personal communication). Armstrong Cork indicates that average groundwater use is a combined 1.1 million gallons per day (mgd) with a maximum of 1.3 mgd from active water-supply wells. All groundwater supplies are used as make-up water for the process. Potable water for the Armstrong Cork plant is obtained from the Macon-Bibb county water system. According to USGS well records, Armstrong Cork's supply-wells are screened across multiple intervals from approximately 100 feet bls to approximately 250 feet bls.

The Keebler Company, located north of the AIP property, currently has one active supply well. According to site personnel this well is used for lawn irrigation, and process make-up water (Geraldine Jones, personal communication). Keebler personnel were unable to provide any records on groundwater withdrawals from the supply-well. USGS well records indicate this well is screened across multiple intervals from 150 feet bls to 290 feet bls.

The Riverwood International Corporation (formerly Kraft) operates 3 wells east of the AIP property. Riverwood personnel indicated that these three wells are used for process make-up waters and that



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RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 2-6
INDUSTRIAL WELL LOCATION MAP
FORMER MNOP LANDFILL
MACON, GEORGIA

Table 2-3
Summary of Well Constuction Details Obtained From USGS Records
Wells Located Near MNOP and AIP Sites
Rust Project No. 33941.000

USGS ID	Well ID	Company	Date Comp.	GS Elev.[1]	Total Depth	Screen 1	Screen 2	Screen 3	Screen 4	Screen 5	Yield	Spec Capacity	Use	Status
16W024	Armstrong #5	Armstrong Cork	11/23/64	320	243	100 to 105	133 to 153	168 to 173	228 to 243	N/A	465	4.1	Industrial Supply	Active
16W025	Armstrong #4A	Armstrong Cork	11/24/69	290	240	120 to 155	225 to 240	N/A	N/A	N/A	524	7.2	Industrial Supply	Active
16W026	Armstrong #7	Armstrong Cork	3/18/68	270	210	80 to 120	128 to 133	195 to 210	N/A	N/A	305	6.3	Industrial Supply	Active
16W020	Armstrong #3A	Armstrong Cork	5/20/64	320	256	128 to 148	155 to 160	186 to 191	230 to 235	251 to 256	360	2.8	Industrial Supply	Active
16W023	Armstrong #6	Armstrong Cork	10/5/66	303	260	140 to 160	240 to 260	N/A	N/A	N/A	510	7.1	Industrial Supply	Active
16W019	Armstrong #1A	Armstrong Cork	4/15/64	340	238	120 to 145	223 to 238	N/A	N/A	N/A	448	4.9	Industrial Supply	Active
16W005	Armstrong #4	Armstrong Cork	1/19/60	290	285	130 to 140	165 to 180	235 to 245	260 to 265	N/A	632	N/G	Industrial Supply	Abandoned
16W009	16W009	Keebler	10/9/89	N/G	300	150 to 165	175 to 195	250 to 265	280 to 290	N/A	270	11.25	Industrial Supply	Active
16W008	Keebler #1	Keebler	9/1/53	370	N/G	N/G	N/G	N/G	N/G	N/G	N/G	N/G	Industrial Supply	Abandoned (?)
16W018	Kraft #1	Riverwood	3/27/46	310	244	60 to 70	160 to 170	212 to 217	N/A	N/A	411	8.93	Industrial Supply	Active
16W007	Kraft #2	Riverwood	9/30/68	354	183	100 to 120	135 to 160	178 to 183	N/A	N/A	285	8.63	Industrial Supply	Active
16W027	Kraft #3	Riverwood	9/10/79	315	290	150 to 190	200 to 210	270 to 280	N/A	N/A	250	2.84	Industrial Supply	Active

1: Groundsurface elevations are approximate
N/G: Not Given
N/A: Not Applicable
All screen depths given below land surface.
Specific Capacity in gallons per minute per foot drawdown
Yield in gallons per minute

98

all potable water is obtained from Macon-Bibb water authority. Riverwood has indicated that approximately the same amount of water is withdrawn from these wells as under previous ownership by Kraft (Marion Bard, personal communication). USGS records indicate that during the previous ownership by Kraft two wells were operated and produced a combined flow of 0.537 mgd during the period of August 1976 and January 1978. The Riverwood International wells are screened similar to other industrial wells in the area.

Public water supply wells are indicated to be within 0.5 to 1.0 miles from the site (HSI, 1995), however the locations of these wells was not specified. Access to the Department of Natural Resources (DNR) Drinking Water Program databases indicates at least one public water system potentially within 0.5 miles from the site. The presence and geographic location of the public water systems has not yet been verified in the field, as suggested by the Drinking Water Program when using the public access databases.

2.4 SURFACE WATER FEATURES AND HYDROLOGY

The former MNOP Landfill site lies within the drainage basin of the Ocmulgee River. The Ocmulgee is located approximately 2.6 miles east of the site, flowing through eastern Bibb County. The floodplain of the Ocmulgee is generally about 2 miles wide. All streams flowing into the Ocmulgee have a predominantly southeast course. Almost all small tributaries flow southward to join the larger creeks at an acute angle (LeGrand, 1962).

Within the vicinity of the site, the dominant drainage feature is Rocky Creek, which defines the southern boundary of the former MNOP Landfill site. This stream exhibits a well developed floodplain and enters Tobesofkee Creek about 1 mile southeast of the site. Tobesofkee Creek in turn forms a confluence with the Ocmulgee River 5 miles farther to the southeast.

Surface water run-off, at the former MNOP Landfill site, generally follows the land topography which slopes gently southward across the site. There are two primary tributaries which drain southward; one enters into a surface water pond northwest of the landfill and the other continues onto the floodplain of Rocky Creek. South of the landfill and pond areas, the soil is saturated. This floodplain area does not have any defined surface water or tributary drainage areas. During periods of heavy rainfall and flooding, the floodplain areas are often submerged.

3.0 POTENTIAL SOURCE AREAS

3.1 FORMER MNOP LANDFILL

The landfill is considered to be the primary probable source of subsurface contamination on the site. The exact boundaries and construction of the landfill are not known, but it is estimated to be 12 to 15 acres in size and unlined. The approximate landfill location is shown on Figure 3-1. Based on interviews and previous studies, the waste disposed of in the landfill was limited to solid waste, used parts, and construction debris. However, no documentation of disposal activities has been identified and it is uncertain what waste streams generated by the MNOP or later property owners may have been disposed of at the site (ESE, 1990; Rust, 1994).

Based on the information available, the scope of potential contaminants from this area is unknown.

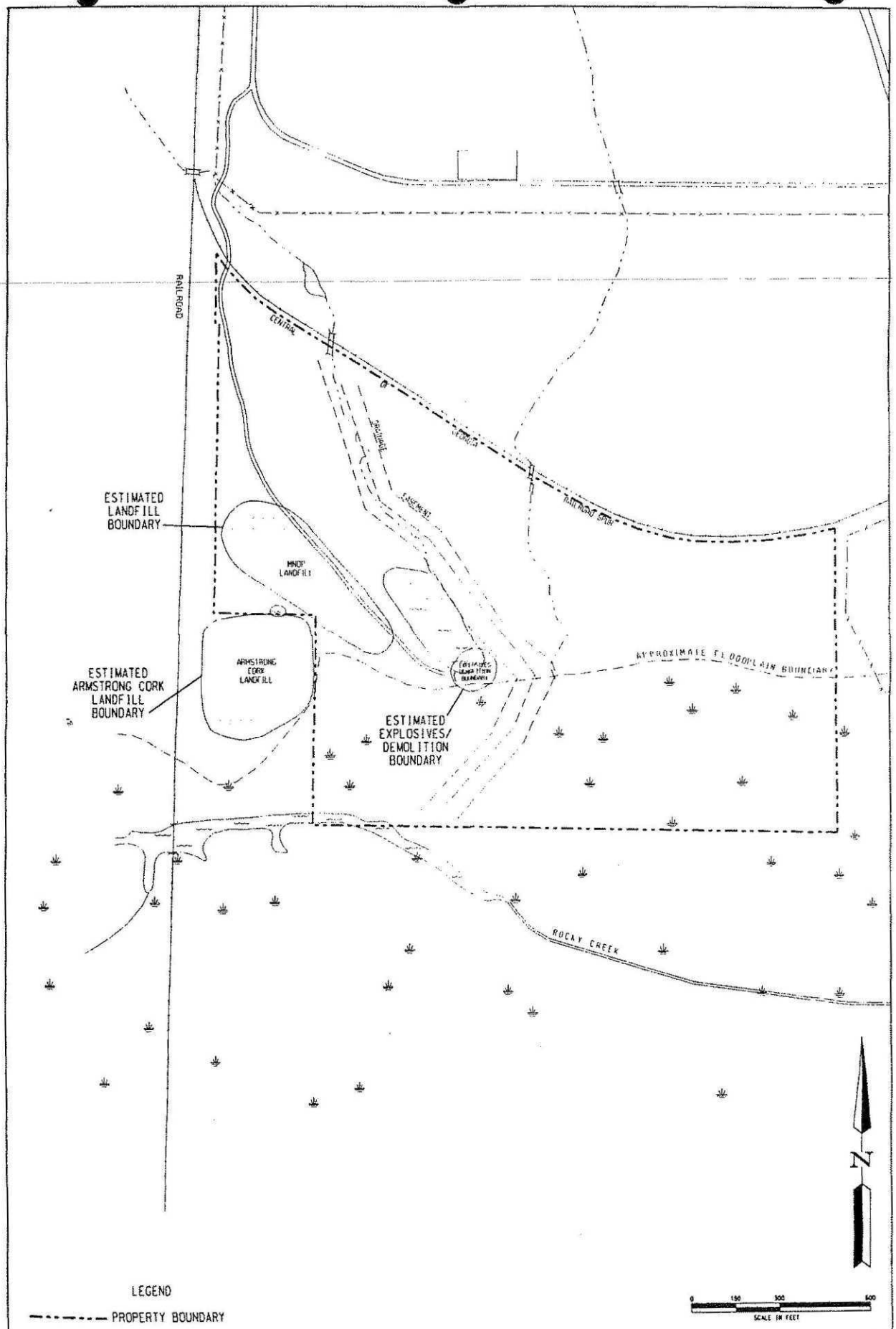
3.2 EXPLOSIVE DEMOLITION AREA

The explosive demolition area is located at the southeastern side of the landfill. This area was used for the testing and demolition of explosives manufactured at the MNOP, primarily detonators, flares and primers. Also, a pit used to burn flammable wastes was located in this area (ESE, 1990). The explosive demolition area is shown on Figure 3-1. Currently, the northern portion of the area is submerged by ponded water. The pond was not discussed nor indicated on maps in the 1990 ESE report. However, the report does describe the area as marshy. Based on this information it appears that the pond is recent in origin. Evidence of beaver activity near the pond was observed and may account for its existence.

Based on available information the explosive demolition area could be the source of explosive residues and chemical by-products of the flammable liquids burned there.

3.3 OFF-SITE SOURCES

An inactive landfill exists immediately west of the MNOP Landfill on property owned by the Armstrong Cork (Figure 3-1). During the period from approximately 1948 to 1970, wastes generated at the facility were disposed of in the remote landfill site according to the site investigation report prepared by ERM Southeast, Inc. (ERM) in 1994. Historically, the processes conducted at Armstrong included the pulping of wood and newsprint, mixing of the pulp with additives including perlite, mineral wool, clay, and starch. The wastes disposed of in the landfill include wood fiber, paper, scrap metal, construction debris, and filler materials used in the manufacture of ceiling tiles. According to Environmental Science and Engineering (ESE) the remote landfill area also contained



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RUST ENVIRONMENT & INFRASTRUCTURE
ATLANTA, GEORGIA

FIGURE 3-1
SOURCE AREA MAP
FORMER MNOP LANDFILL
MACON, GEORGIA

a drum storage area (ESE, 1990). The ESE report also indicated that fill material appears to extend up to the western edge of the former MNOP landfill property boundary.

The Armstrong landfill property has been listed on the HSI based on lead levels detected in groundwater and is classified as a Class II HSRA site. Soil samples collected as part of the initial study of the Armstrong landfill by ERM detected trace amounts of VOCs in the subsoils including trichlorofluoromethane, methylene chloride, 1,2-dichloroethane, 1,2 dichloropropane, ethyl benzene, and toluene. Analysis also detected bis(2-ethylhexyl) phthalate and metals in the subsoils. ERM reported total petroleum hydrocarbons in the soils ranging from 7 mg/Kg to 4,100 mg/Kg. Results of sampling seven on-site monitoring wells indicated no presence of priority pollutant VOCs, BNAs, pesticides, or PCBs in the collected groundwater samples. Detectable concentrations of beryllium (0.001 to 0.003 mg/L), cadmium (0.0006 to 0.0015 mg/L), chromium (0.01 to 0.100 mg/L), copper (0.01 to 0.11 mg/L), mercury (0.0002 to 0.0007 mg/L), nickel (0.02 to 0.07 mg/L), lead (0.004 to 0.15 mg/L), and zinc (0.02 to 0.4 mg/L) were, however, reported in groundwater samples (ERM, 1994).

The regulatory status of the Armstrong HSI landfill site is not known at this time, however, the site has recently been secured with a chain-link fence to limit access. Due to the close proximity of the Armstrong landfill to the former MNOP Landfill site it is considered a potential source of the groundwater contamination on the former MNOP Landfill site.

4.0 SOIL CONTAMINATION

4.1 GENERAL APPROACH USED

Sampling and analysis of subsurface soils was used to determine whether the MNOP Landfill has impacted the site subsoils. The majority of boring locations were placed around the outer limits of the landfill boundary, or in marshy areas downgradient from the landfill (Figure 4-1). These borings were believed to be the best locations to assess potential soils contamination from the landfill. Two borings also serve as property boundary sampling points (LSL-12 and LSL-13) which were placed specifically to evaluate the Armstrong off-site landfill source. Routine soil sampling was also conducted at each of the installed monitor wells to evaluate soils in the floodplain areas. Borings were drilled and sampled using standard hollow-stem auger techniques where access permitted. Borings located in marshy and dense wooded areas were hand-augered.

Quality control (QC) samples, consisting of replicates and trip blanks, were collected. In addition, replicate quality assurance (QA) samples were sent to the USACE, South Atlantic Division (SAD) Laboratory.

4.2 ANALYTICAL PARAMETERS

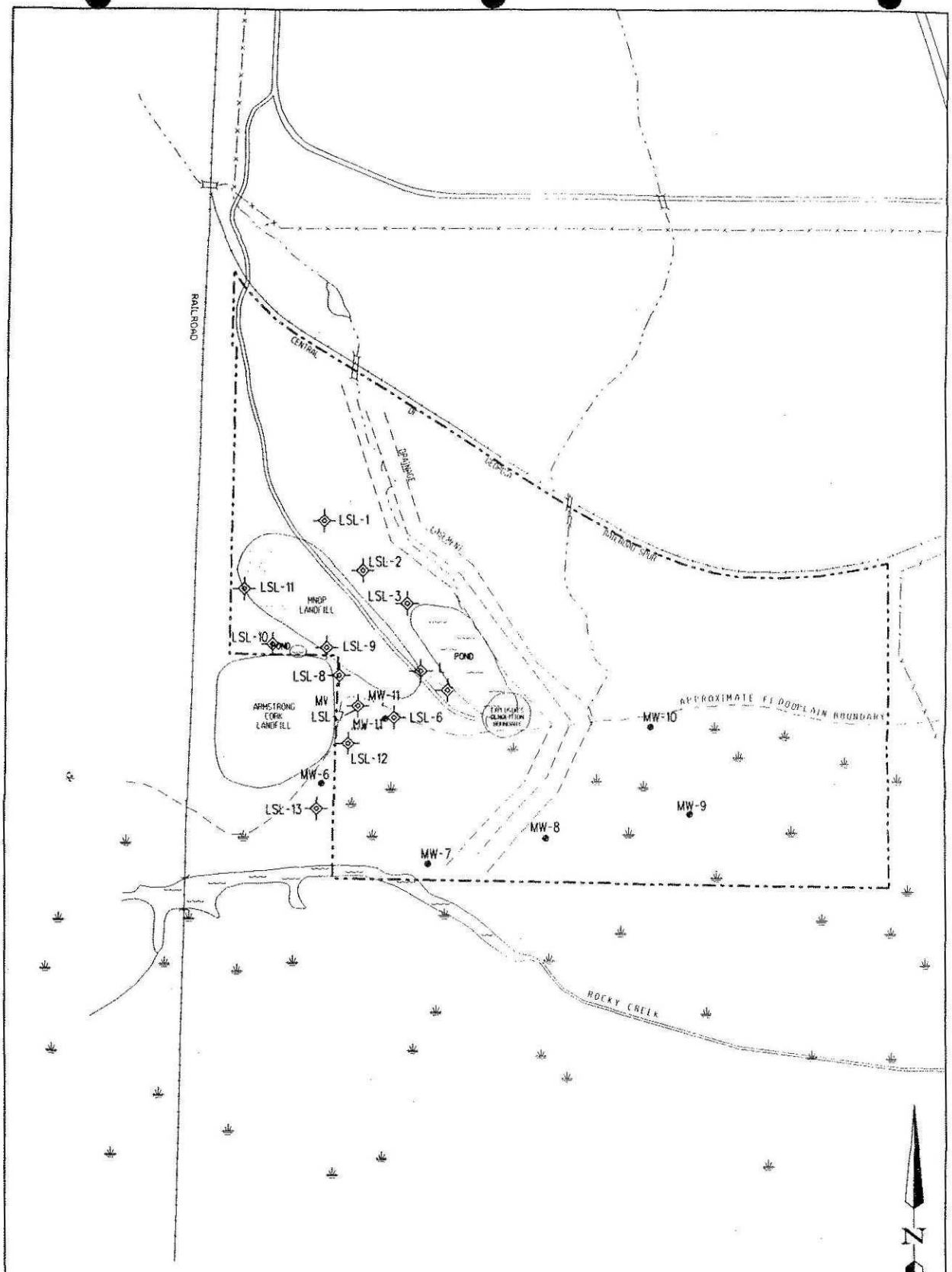
Based on the suspected contaminants and historical activities at the landfill, the analytical parameters for site soils included:

- volatile organic chemicals (VOC)
- semivolatile organic chemicals (SVOC)
- priority pollutant metals
- pesticides and polychlorinated biphenyls (PCB)
- explosive residues

Table 4-1 summarizes the sampling and analytical requirements for this work. The table includes the analytical methods used, the sample preservation and holding times, and the number of quality control and quality assurance samples to be collected.

4.3 LOCATION OF SAMPLING POINTS

Soil samples were collected from 13 soil borings and 5 monitor well installations. The locations of the soil borings were based on historical data and a visual inspection of the landfill. Two (2) soil samples were collected from each boring and one (1) sample collected from each monitor well



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ATLANTA , GEORGIA

FIGURE 4-1
SOIL BORING SAMPLE LOCATIONS
FORMER MNOP LANDFILL
MACON, GEORGIA

12a

Table 4-1
Soil Sampling and Analytical Requirements
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Matrix	Field Samples	QC Samples	QA Samples	Trip Blanks	Total Samples	Analysis	Protocol	Analytical Procedures	Holding Time	Preservation Requirements	Sample (1) Containers	Total Containers
Soil from soil borings (landfill and property line)	26	3	3	0	32	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C	1-125 mL glass septa vial	32
	26	3	3	0	32	SVOC/PAH BNA	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	1-8 oz glass	32
	26	3	3	0	32	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days, 28 days for mercury	Ice to 4 degrees C	1-8 oz glass	32
	26	3	3	0	32	Pesticides/ PCBs	SW-846	EPA 8080	7/40 days	Ice to 4 degrees C	1-8 oz glass	32
Soil from monitor well installation	5	1	1	0	7	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C	1-125 mL glass septa vial	7
	5	1	1	0	7	SVOC/PAH BNA	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	1-8 oz glass	7
	5	1	1	0	7	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days, 28 days for mercury	Ice to 4 degrees C	1-8 oz glass	7
	5	1	1	0	7	Pesticides/ PCBs	SW-846	EPA 8080	7/40 days	Ice to 4 degrees C	1-8 oz glass	7

(1) Per EM-200-1-3, Table I-1, 31 March 95

boring. The soil boring locations are designated LSL-1 through LSL-13 and shown on Figure 4-1. Soil samples collected from borings were designated as "LSL" followed by the boring number and the depth interval sampled. Soils collected from monitoring well locations MW-6 through MW-10 (Figure 4-1) were designated as "MW" followed by the well number and the depth interval sampled. Replicate samples were designated with the parent name followed by an "A". Replicates were collected from borings LSL-2, LSL-3, LSL-9 and MW-6.

4.4 SAMPLING AND ANALYSIS PROCEDURES

4.4.1 Sampling Equipment

Samples were collected from standard split spoon samplers in those borings drilled with hollow-stem augers. Several other borings were completed using hand augers. In these borings, the samples were collected directly from the hand auger.

4.4.2 Collection Techniques

Two soil samples for laboratory chemical analyses were collected from each of the "LSL" borings. One sample was taken between 0-2 feet bls and one at the depths of probable contamination as determined by headspace monitoring of the collected soils using an PID/OVM.

Eleven of the 13 "LSL" borings and the boring for MW-6 were completed using 3.25-inch inside diameter (ID), hollow stem augers (HSA). Continuous split-spoons were collected as in accordance with American Society for Testing and Materials (ASTM) D1586-67. ASTM methods designate that the split-spoon be driven 18 inches into the soil, however, in order to achieve the soil sample volumes required for this project the split spoons were driven a maximum of 24 inches. Each soil sample was collected in accordance with the following procedures:

- The 3.25-inch ID hollow-stem augers were advanced to the desired depth. A 140-pound automatic hammer free falling 30 inches was used to drive the split spoon approximately 24 inches.

- The split-spoon was removed from borehole, opened, and the recovered soil sample described in the test boring log using the Unified Soil Classification System (USCS).

- A portion of the soil was immediately packed into a clean, glass sample container with a teflon-lined cap and set aside for possible chemical analysis. This sample, to

be analyzed for VOC 8260 parameters, was placed in the sample container in a manner to minimize headspace.

- The remaining soil sample from the split-spoon sampler was containerized in a plastic bag and sealed. The sealed bag was allowed to sit for a minimum of five minutes at which time the headspace was screened with a PID/OVM. At each borehole location, the soil sample with the highest headspace readings and a near surface sample was sent for chemical analysis.

- The soil samples chosen for laboratory chemical analyses consisted of the bagged sample showing the highest headspace reading and the corresponding bottled VOC sample. Soil from the bagged sample was removed from the sealed bag, placed in a clean stainless-steel or glass bowl, and mixed using the sampling spoon. The sample was then carefully placed in appropriate sample containers using the stainless-steel spoon or a spatula.

- Upon completion of sample collection, the sample container was labeled, the sample identification entered in field log book, and the Chain-of-Custody record completed.

- The sample was placed in a cooler at 4°C and prepared for shipping.

Two of the soil borings sites (LSL-12 and LSL-13) adjacent to the western property boundary and borings for monitor wells MW-7 through MW-10 were inaccessible using a truck mounted rig. At these locations, soil samples were collected by hand augering down to the designated depth or until refusal.

Each hand auger sample was collected in accordance with the following procedures:

- The hand auger was advanced to the full depth of the auger head.

- The hand auger was removed from the borehole and the soil from the auger head emptied onto a clean sheet of aluminum foil. The recovered soil sample was described using the Unified Soil Classification System (USCS).

- The remaining sampling procedures are the same as those listed previously for the split spoon samples.

4.4.3 Field Screening Techniques

Once the soil sample descriptions were recorded, and the VOC sample bottle was filled, the remaining soil from the sampler was placed in a plastic bag and sealed. After waiting at least 5 minutes, a Thermo Environmental Instruments, Inc. Model 580B Organic Vapor Meter (OVM) was used to measure the headspace reading.

4.4.4 Sample Handling

Sample bottles were cleaned prior to delivery to the field by the laboratory. Once collected, the samples were placed in a cooler to maintain a temperature of approximately 4°C. Coolers were prepared for shipping when full or at the end of each day. Sample volumes and holding times are presented in Table 4-1.

4.4.5 Decontamination Procedures

Equipment decontamination was performed within a decontamination pad, designed to contain cleaning fluids. The drill rig was decontaminated upon mobilization to the site and prior to leaving the site. The sample collection equipment and downhole tools were steam cleaned with high pressure steam within the decontamination area. Persistent dirt and other foreign materials were removed with a scrub brush. The sample collection equipment and downhole tools were decontaminated upon mobilization to the site and between each borehole.

Sampling and monitoring equipment, including spoons, bowls, and the split spoon sampler were decontaminated according to EPA Region IV SOP and Quality Assurance (QA) manual (see Section 8.4 of EPA, 1991) prior to each sampling location.

4.4.6 Chain of Custody Procedures

Information regarding the sample analyses was recorded on the Chain of Custody (COC) form. This information included:

- sample identification
- sampling time and date
- location of sampling point
- sampling personnel
- analytical parameters

The original COC form was packed with the samples and copies maintained in the project files. Sample security was accomplished by placing custody seals on individual sample containers and across the lid of the cooler after securely taping the cooler. The sample coolers were shipped via overnight express carrier to the laboratory. A copy of the shipping bill has been retained by Rust to become part of the sample custody documentation.

4.4.7 Laboratory Analytical Techniques

Soil samples were shipped to HydroLogic Laboratories Inc., in Brighton, Colorado for analyses of organic and inorganic analytes. The analytical methods used are described in EPA's *Test Methods for Evaluating Solid Waste* (SW-846), third edition. Specific methods and analytes used for this project are listed in Table 4-1.

Data quality objectives were set for the analytical methods by specifying control limits for QC samples internal to the laboratory. Quality control (QC) samples included laboratory control samples, laboratory duplicates, and method blanks. Control limits used to evaluate the QC sample results included percent recovery and percent difference and are functions of the analytical method and sample matrix.

HydroLogic performed regular inspection, maintenance, cleaning, calibration, and servicing of all laboratory equipment according to the manufacturers' recommendations. Calibration and maintenance logs are kept for each piece of laboratory and field instrumentation, detailing any malfunction and the steps taken to correct the problem.

4.5 BACKGROUND SOIL SAMPLING

No specific background soil sampling was performed as part of this study. However, background soil samples collected from the AIP serve as background soils to the MNOP landfill site. A total of four background soil samples were taken from two borings located along the northern border of the AIP property. The results of background soil sampling are provided in Table 4-2.

4.6 DATA SUMMARY

4.6.1 Field Data

Soils were screened in the field with an OVM to evaluate the presence of volatile organic compounds (VOC). The results of screening, which are presented on boring logs contained in Appendix A, generally indicated that soils in the area of the MNOP landfill exhibited moderate to

Table 4-2
Former MNOP Landfill
Background Samples Collected at Allied Industrial Park
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	ISL-18 (1'-2')	ISL-18 (55'-56')	ISL-19 (1'-2')	ISL-19 (70'-71')
Inorganics					
antimony	mg/kg	< 2.6	< 2.5	< 2.6	< 2.5
beryllium	mg/kg	.29 J	.028 J	.34 J	.024 J
cadmium	mg/kg	< .22	< .21	.28 J	< .21
chromium	mg/kg	18.3	5.68	24.3	1.56
copper	mg/kg	6.2	1.37	8.67	< .82
lead	mg/kg	9.4	2.44	10.3	4.89
mercury	mg/kg	.13	< .028	.14	< .028
nickel	mg/kg	5.23	4.1	7.12	< .062
selenium	mg/kg	< .086	< .082	< .086	.678
silver	mg/kg	< .23	< .22	< .23	< .22
thallium	mg/kg	< .092	< .088	< .093	< .088
zinc	mg/kg	15.2	3.04	20.7	1.2 J
Volatile Organics					
cis-1,2-dichloroethene	mg/kg	< .0021	< .002	< .0021	< .002
ethylbenzene	mg/kg	< .00088 J	< .00083	< .00088	< .00083
hexachlorobutadiene	mg/kg	< .0013	< .0012	< .0013	< .0012
m+p-xylene	mg/kg	< .0027 J	< .0026	< .0027	< .0026
naphthalene	mg/kg	< .0012	< .0012	< .0012	< .0012
o-xylene	mg/kg	< .0017	< .0016	< .0017	< .0016
tetrachloroethene	mg/kg	< .00057	< .00054	< .00057	< .00054
toluene	mg/kg	< .00099	< .00094	< .00099	< .00094
trans-1,2-dichloroethene	mg/kg	< .00064	< .0006	< .00064	< .00061
trichloroethene	mg/kg	< .00049	< .00047	< .00049	< .00047
Semivolatile Organics					
benzo(b)fluoranthene	mg/kg	< .096	< .091	< .096	< .091
bis(2-ethylhexyl)phthalate	mg/kg	< 1	< .97	< 1	< .97
di-n-butyl phthalate	mg/kg	< .18	< .17	< .18	< .17
fluoranthene	mg/kg	< .18	< .17	< .18	< .17
phenanthrene	mg/kg	< .11	< .1	< .11	< .1
pyrene	mg/kg	< .15	< .14	< .15	< .14
Explosive Residues					
2,4-dinitrotoluene	mg/kg	< .024	R	< .024	< .024
nitrobenzene	mg/kg	< .057	R	< .057	< .057
Pesticides/PCBs					
4,4'-DDD	mg/kg	NA	NA	NA	NA
4,4'-DDE	mg/kg	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA
endrin	mg/kg	NA	NA	NA	NA

mg/kg = milligrams per kilogram
NA = not analyzed
J = indicates an estimated value
R = indicates data rejected during validation as unsuable

high VOC readings. However, some of these elevated headspace readings are believed to have been due to the presence of organic debris and humus found throughout the surficial deposits of the floodplain area. Therefore, no correlation has been attempted between elevated OVM headspace readings and presence of VOC soils contamination.

4.6.2 Laboratory Results

A summary of soil analytical results is presented in Table 4-3. Analytical data quality evaluations were performed on all data by both the analytical laboratory and Rust. A summary of the data quality review is included as part of the Quality Control Summary Report (QCSR) in Appendix B. The results of analyses indicate that elevated levels of heavy metals (compared to background values, Table 4-2) are present throughout the site subsoils; primarily for antimony, cadmium, chromium, copper, lead, and zinc. Antimony was detected at it's highest levels in LSL-8 at concentrations of 18.7 milligrams per kilogram (mg/Kg) (0-2 feet) and 10.9 mg/Kg (4-5 feet). Antimony was not detected in background soil samples. Cadmium was detected in samples ranging from less than 0.5 mg/Kg up to 370 mg/Kg. The highest concentrations of cadmium were observed in samples collected from borings LSL-7, LSL-8, and LSL-9, which are located adjacent to the MNOP Landfill (Figure 4-2). Cadmium was detected in only one background soil sample at a concentration of 0.28 mg/Kg.

Chromium, copper, and lead were detected in every soil sample collected at the landfill area. Chromium concentrations ranged from 4.33 mg/Kg to 224 mg/Kg (LSL-8, 4-5 feet). Four other detected concentrations were greater than 100 mg/Kg. Chromium was detected in the background samples at concentrations up to 24.3 mg/Kg. Copper concentrations ranged from 1.71 mg/Kg to 1730 mg/Kg at LSL-6 (0-2 feet). Background samples detected copper at values up to 8.67 mg/Kg. Lead concentrations in the landfill soil samples ranged from 3.18 mg/Kg to 1020 mg/Kg at LSL-3-A (0-2 feet). Lead had a maximum background concentration of 10.3 mg/Kg. Zinc was not detected in three landfill soil samples, but was detected in the other samples at concentrations up to 1730 mg/Kg at LSL-8 (4-5 feet). Zinc was detected in the background samples at a maximum concentration of 20.7 mg/Kg.

Volatile organic compounds were detected generally at trace or low level concentrations in only a few of the samples collected. The deep sample at LSL-2 (6-8 feet) exhibited the presence of a number of compounds including isomers of trimethylbenzene (1,2,4 and 1,3,5), isopropylbenzene, n-butylbenzene, n-propylbenzene, naphthalene, sec-butylbenzene, tert-butylbenzene, para-cymene, and o-xylene. The deep sample at LSL-5 (8 to 10 feet) also exhibited the presence of trimethylbenzene and n-butylbenzene, ethyl benzene, m-xylene/p-xylene and napthalene. These two samples account for most of the volatile organic compound detections. The soil sample from MW-9

Table 4-3
Former Macon Naval Ordnance Landfill
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	LSL-1 (0'-2')	LSL-1 (6'-8')	LSL-2 (0'-2')	LSL-2 (6'-8')	LSL-2-A (0'-2')	LSL-3 (0'-2')	LSL-3 (6'-8')
Inorganics								
antimony	mg/kg	< 2.5	< 2.5	< 2.6	< 2.5	< 2.6	< 2.5	< 2.6
beryllium	mg/kg	.15 J	.018 J	.13 J	.048 J	.14 J	.12 J	.15 J
cadmium	mg/kg	2.42	< .2	6.59	.29 J	10.5	9.23	2.23
chromium	mg/kg	26.6	4.33	17.1	10.6	75.5	15.5	9.32
copper	mg/kg	15.1	1.71	76.1	4.19	138	95.9	28.9
lead	mg/kg	17.7	3.18	471	46.9	442	178	117
mercury	mg/kg	< .028	< .027	< .029	< .028	< .029	< .028	< .029
nickel	mg/kg	4.43	1.2 J	6.26	3.17	18.1	7.57	3.38
selenium	mg/kg	.579	< .081	1.19	.29 J	1.27	.32 J	.39 J
silver	mg/kg	< .22	< .21	< .23	< .22	1.1 J	< .21	< .22
thallium	mg/kg	< .09	< .087	< .092	< .09	< .091	< .087	< .091
zinc	mg/kg	24.7	< 4.1 J	296	< 16.4	556	162	60.1
Volatile Organics								
1,2,4-trimethylbenzene	mg/kg	< .00063	< .00061	< .00065	.74	< .00064	< .00061	< .00064
1,3,5-trimethylbenzene	mg/kg	< .00062	< .0006	< .00064	.13	< .00063	< .00061	< .00063
cis-1,2-dichloroethene	mg/kg	< .002	< .0019	< .002	< .002	< .002	< .0019	< .002
ethylbenzene	mg/kg	< .00085	< .00082	< .00087	< .00085	< .00087	< .00083	< .00086
isopropylbenzene	mg/kg	< .00061	< .00059	< .00063	.012	< .00062	< .0006	< .00062
m+p-xylene	mg/kg	< .0026	< .0025	< .0027	< .0026	< .0027	< .0026	< .0027
n-butylbenzene	mg/kg	< .00068	< .00065	< .00069	.036	< .00069	< .00066	< .00068
n-propylbenzene	mg/kg	< .0007	< .00068	< .00072	.066	< .00072	< .00069	< .00071
naphthalene	mg/kg	< .0012	< .0011	< .0012	.0036 J	< .0012	< .0012	< .0012
o-xylene	mg/kg	< .0016	< .0016	< .0017	.0026 J	< .0016	< .0016	< .0016
paracymene	mg/kg	< .00072	< .0007	< .00074	.072	< .00073	< .0007	< .00073
sec-butylbenzene	mg/kg	< .00071	< .00069	< .00073	.03	< .00072	< .00069	< .00072
tert-butylbenzene	mg/kg	< .00066	< .00064	< .00068	.051	< .00067	< .00065	< .00067
toluene	mg/kg	< .00096	< .00093	< .00098	< .00096	< .00097	< .00094	< .00097
trichloroethene	mg/kg	< .00048	< .00046	< .00049	< .00048	< .00048	< .00047	< .00048
Semivolatile Organics								
2-methyl naphthalene	mg/kg	< .089	< .086	< .091	< .088	< .09	< .086	< .09
acenaphthene	mg/kg	< .16	< .15	< .16	< .16	< .16	< .16	< .16
acenaphthylene	mg/kg	< .12	< .12	< .13	< .12	< .13	< .12	< .13
anthracene	mg/kg	< .11	< .11	< .12	< .11	< .11	< .11	< .11
benzo(a)anthracene	mg/kg	< .12	< .11	< .12	< .12	< .12	< .12	< .12
benzo(a)pyrene	mg/kg	< .15	< .14	< .15	< .15	< .15	.83	.21
benzo(b)fluoranthene	mg/kg	< .093	< .09	< .095	< .093	< .095	.79	.24
benzo(g,h,i)perylene	mg/kg	< .14	< .13	< .14	< .14	< .14	.97	.18 J
benzo(k)fluoranthene	mg/kg	< .16	< .15	< .16	< .16	< .16	.24	< .16
bis(2-ethylhexyl)phthalate	mg/kg	< .99	< .95	< 1	< .99	< 1	< .96	< 1
chrysene	mg/kg	< .18	< .18	< .19	< .18	< .18	.56	< .18
di-n-butyl phthalate	mg/kg	< .17	.16 J	< .17	.18 J	< .17	< .17	< .17
dibenz(a,h)anthracene	mg/kg	< .15	< .14	< .15	< .15	< .15	< .14	< .15
dibenzofuran	mg/kg	< .14	< .13	< .14	< .14	< .14	< .13	< .14
fluoranthene	mg/kg	< .17	< .16	< .17	< .17	< .17	.48	.24
fluorene	mg/kg	< .14	< .13	< .14	< .14	< .14	< .13	< .14
indeno(1,2,3-cd)pyrene	mg/kg	< .14	< .13	< .14	< .14	< .14	.52	.14 J
naphthalene	mg/kg	< .094	< .091	< .097	< .094	< .096	< .092	< .095
phenanthrene	mg/kg	< .1	< .1	< .11	< .1	< .1	.25	.11 J
pyrene	mg/kg	< .15	< .14	< .15	< .15	< .15	.51	.23
Pesticides/PCBs								
4,4'-DDD	mg/kg	< .0029	< .0028	< .03	< .0029	< .012	< .014	.0172
4,4'-DDE	mg/kg	.0331	< .00061	.062	< .00063	.0323	.0428 J	.0209
4,4'-DDT	mg/kg	.012	< .0011	.233	< .0012	.106	.0631 J	.00847
aroclor 1248	mg/kg	< .0041	< .004	< .0042	< .0041	< .004	9.23 J	.408
aroclor 1260	mg/kg	< .0041	< .004	.089	< .0041	.092	< .4	.107
methoxychlor	mg/kg	< .0019	< .0018	< .019	< .0019	< .0076	< .0091	< .0019

mg/kg = milligrams per kilogram
R = indicates data rejected during validation as unusable
J = indicates an estimated value

Table 4-3 (continued)
Former Macon Naval Ordnance Landfill
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	LSL-3-A (0'-2')	LSL-4 (0'-2')	LSL-4 (4'-6')	LSL-5 (0'-2')	LSL-5 (8'-10')	LSL-6 (0'-2')	LSL-6 (6'-8')
Inorganics								
antimony	mg/kg	< 2.5	< 2.6	< 2.6	< 2.5	< 2.7	3.6 J	< 2.6
beryllium	mg/kg	.085 J	.22 J	.039 J	.041 J	.093 J	.45 J	.13 J
cadmium	mg/kg	6.52	1.79	.41 J	1.32	.681	81.3	23
chromium	mg/kg	11.2	8.82	4.99	8.04	11.4	101	26.1
copper	mg/kg	66.7	88.3	3.88	4.99	8.75	1730	151
lead	mg/kg	1020	25.2	4.2	6.12	13.8	282	122
mercury	mg/kg	< .028	< .029	< .028	< .028	< .031	.125	< .029
nickel	mg/kg	5.4	4.1	1.5 J	< 1.4 J	2.56	63.8	35.4
selenium	mg/kg	.38 J	< .087	< .084	< .083	< .09	.941	.822
silver	mg/kg	< .22	< .23	< .22	< .22	< .24	2.38	.29 J
thallium	mg/kg	< .088	< .093	< .09	< .089	< .096	< .097	< .091
zinc	mg/kg	131	47.2	< 6.58	10.1	14.2	1270	147
Volatile Organics								
1,2,4-trimethylbenzene	mg/kg	< .00062	< .00065	< .00063	< .00063	.048 J	< .00068	< .00064
1,3,5-trimethylbenzene	mg/kg	< .00061	< .00065	< .00063	< .00062	.028	< .00067	< .00064
cis-1,2-dichloroethene	mg/kg	< .002	< .0021	< .002	< .002	< .011	< .0022	< .002
ethylbenzene	mg/kg	< .00083	< .00088	< .00085	< .00085	.0095	< .00092	< .00087
isopropylbenzene	mg/kg	< .0006	< .00064	< .00061	< .00061	< .0033	< .00066	< .00063
m+p-xylene	mg/kg	< .0026	< .0027	< .0026	< .0026	.029	< .0028	< .0027
n-butylbenzene	mg/kg	< .00066	< .0007	< .00068	< .00067	.048	< .00073	< .00069
n-propylbenzene	mg/kg	< .00069	< .00073	< .0007	< .0007	< .0038	< .00076	< .00072
naphthalene	mg/kg	< .0012	< .0012	< .0012	.062	55	< .0013	< .0012
o-xylene	mg/kg	< .0016	< .0017	< .0016	< .0016	< .0087	< .0017	< .0016
paracymene	mg/kg	< .0007	< .00075	< .00072	< .00072	< .0039	< .00078	< .00073
sec-butylbenzene	mg/kg	< .00069	< .00074	< .00071	< .00071	< .0038	< .00076	< .00072
tert-butylbenzene	mg/kg	< .00065	< .00069	< .00066	< .00066	< .0036	< .00072	< .00068
toluene	mg/kg	< .00094	< .001	< .00096	< .00096	< .0052	< .001	< .00098
trichloroethene	mg/kg	< .00047	< .0005	< .00048	< .00048	< .0026	< .00051	< .00049
Semivolatile Organics								
2-methyl naphthalene	mg/kg	< .087	< .092	< .089	< .088	6.3	< .095	< .09
acenaphthene	mg/kg	< .16	< .17	< .16	< .16	9.8	< .17	< .16
acenaphthylene	mg/kg	< .12	< .13	< .13	< .12	.28	< .13	< .13
anthracene	mg/kg	< .11	< .12	< .11	< .11	5	< .12	< .11
benzo(a)anthracene	mg/kg	< .12	< .12	< .12	< .12	3.1	< .13	< .12
benzo(a)pyrene	mg/kg	.67	< .15	< .15	< .15	1.1	< .16	< .15
benzo(b)fluoranthene	mg/kg	.71 J	< .097	< .093	< .093	2.6	< .1	< .095
benzo(g,h,i)perylene	mg/kg	.81	< .14	< .14	< .14	< .15	< .15	< .14
benzo(k)fluoranthene	mg/kg	.17	< .17	< .16	< .16	1.1	< .17	< .16
bis(2-ethylhexyl)phthalate	mg/kg	< .97	< 1	< .99	< .99	< 1.1	< 1.1	< 1
chrysene	mg/kg	.53	< .19	< .18	< .18	4.3	< .2	< .19
di-n-butyl phthalate	mg/kg	.19 J	< .18	< .17	.17 J	.29 J	.18 J	.21 J
dibenz(a,h)anthracene	mg/kg	< .14	< .15	< .15	< .15	< .16	< .16	< .15
dibenzofuran	mg/kg	< .13	< .14	< .14	< .14	5.9	< .15	< .14
fluoranthene	mg/kg	.51	< .18	< .17	< .17	17	< .18	< .17
fluorene	mg/kg	< .13	< .14	< .14	< .14	8.1	< .15	< .14
indeno(1,2,3-cd)pyrene	mg/kg	.36	< .14	< .14	< .14	< .15	< .15	< .14
naphthalene	mg/kg	< .092	< .098	< .094	.11 J	10	< .1	< .096
phenanthrene	mg/kg	.33	< .11	< .1	.36	32	< .11	< .11
pyrene	mg/kg	.49	< .15	< .15	< .15	13	< .16	< .15
Pesticides/PCBs								
4,4'-DDD	mg/kg	< .014	< .0031	< .0029	< .0029	< .0032	< .0063	.0091
4,4'-DDE	mg/kg	.0377	< .00065	< .00063	.00388	< .00067	.0102	.0054 J
4,4'-DDT	mg/kg	.0844	.0057	< .0012	.0051	< .0013	.0342	.0139
aroclor 1248	mg/kg	5.86	< .0043	< .0041	.129	< .0044	.53	.44
aroclor 1260	mg/kg	< .2	< .0043	< .0041 J	< .0041	< .0044	.56	.41
methoxychlor	mg/kg	< .0092	< .0019	< .0019	< .0019	< .002	< .004	< .0038

mg/kg = milligrams per kilogram
R = indicates data rejected during validation as unusable
J = indicates an estimated value

Table 4-3 (continued)
Former Macon Naval Ordnance Landfill
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	LSL-7 (0'-2')	LSL-7 (6'-8')	LSL-8 (0'-2')	LSL-8 (4'-5')	LSL-9 (0'-2')	LSL-9 (6'-8')	LSL-9-A (0'-2')
Inorganics								
antimony	mg/kg	5.1 J	8.3 J	18.7	10.9	< 2.5	< 2.8	< 2.5
beryllium	mg/kg	.38 J	.929	.69	.77	.23 J	.49 J	.24 J
cadmium	mg/kg	100	1.52	119	370	180	223	170
chromium	mg/kg	111	35.4	108	224	86.7	102	128
copper	mg/kg	931	46.8	504	1610	219	204	713
lead	mg/kg	707	119	579	628	124	991	139
mercury	mg/kg	.052 J	.041 J	.101 J	.351	< .028	< .031	.118
nickel	mg/kg	42.6	6.4	52.4	193	15.8	22.5	20
selenium	mg/kg	.42 J	< .1	.52 J	.76	.585	.49 J	.36 J
silver	mg/kg	1.77	< .28	1.39	1.95	.34 J	.43 J	.47 J
thallium	mg/kg	< .095	< .11	< .097	< .1	< .089	< .099	< .089
zinc	mg/kg	1000	91.5	1210	1730	304	229	392
Volatile Organics								
1,2,4-trimethylbenzene	mg/kg	< .00067	.0046 J	< .00068	< .00072	< .00062	< .0007	< .00062
1,3,5-trimethylbenzene	mg/kg	< .0021	< .00078	< .00068	< .00071	< .00062	< .00069	< .00062
cis-1,2-dichloroethene	mg/kg	< .0021	< .0025	< .0022	< .0023	< .002	< .0022	< .002
ethylbenzene	mg/kg	< .0009	< .0011	< .00092	< .00097	< .00084	< .00094	< .00084
isopropylbenzene	mg/kg	< .00065	< .00077	< .00066	< .0007	< .00061	< .00068	< .00061
m+p-xylene	mg/kg	< .0028	< .0033	< .0028	< .003	< .0026	< .0029	< .0026
n-butylbenzene	mg/kg	< .00071	< .00085	< .00073	< .00077	< .00067	< .00075	< .00067
n-propylbenzene	mg/kg	< .00074	< .00088	< .00076	< .0008	< .0007	< .00078	< .0007
naphthalene	mg/kg	< .0012	< .0015	< .0013	.0035 J	< .0012	< .0013	< .0012
o-xylene	mg/kg	< .0017	< .002	< .0017	< .0018	< .0016	< .0018	< .0016
paracymene	mg/kg	< .00076	< .00091	< .00078	< .00082	< .00071	< .0008	< .00071
sec-butylbenzene	mg/kg	< .00075	< .00089	< .00077	< .00081	< .0007	< .00078	< .0007
tert-butylbenzene	mg/kg	< .0007	< .00083	< .00072	< .00075	< .00066	< .00073	< .00066
toluene	mg/kg	< .001	< .0012	< .001	< .0011	< .00095	.0044	< .00095
trichloroethene	mg/kg	< .0005	< .0006	< .00052	< .00054	< .00047	< .00053	< .00047
Semivolatile Organics								
2-methyl naphthalene	mg/kg	< .094	< .11	< .48	< .1	< .088	< .098	< .088
acenaphthene	mg/kg	< .17	< .2	< .86	< .18	< .16	< .18	< .16
acenaphthylene	mg/kg	< .13	< .16	< .68	< .14	< .12	< .14	< .12
anthracene	mg/kg	< .12	< .14	< .61	.5	< .11	< .12	< .11
benzo(a)anthracene	mg/kg	.26	< .15	< .64	< .13	< .12	< .13	< .12
benzo(a)pyrene	mg/kg	.2	.3	< .8	2.1	< .15	< .16	< .15
benzo(b)fluoranthene	mg/kg	.78	.12 J	< .5	3.9	< .092	< .1	< .092
benzo(g,h,i)perylene	mg/kg	< .14	.31	< .74	1.3	< .13	< .15	< .13
benzo(k)fluoranthene	mg/kg	.26	< .2	< .86	1.1	< .16	< .18	< .16
bis(2-ethylhexyl)phthalate	mg/kg	< 1	< 1.2	< 5.3	< 1.1	< .98	< 1.1	< .98
chrysene	mg/kg	.52	< .23	< .98	2.3	< .18	< .2	< .18
di-n-butyl phthalate	mg/kg	.23 J	.23 J	< .92	< .19	< .17	< .19	< .17
dibenz(a,h)anthracene	mg/kg	< .16	< .19	< .8	.34	< .15	< .16	< .15
dibenzofuran	mg/kg	< .14	< .17	< .74	< .15	< .13	< .15	< .13
fluoranthene	mg/kg	.58	< .21	< .92	3.1	< .17	< .19	< .17
fluorene	mg/kg	< .14	< .17	< .74	< .15	< .13	< .15	< .13
indeno(1,2,3-cd)pyrene	mg/kg	.14 J	< .17	< .74	1.3	< .13	< .15	< .13
naphthalene	mg/kg	< .1	< .12	< .51	< .11	< .093	< .1	< .093
phenanthrene	mg/kg	.32	< .13	< .56	1.9	< .1	< .11	< .1
pyrene	mg/kg	.61	.23 J	< .8	2.6	< .15	< .16	< .15
Pesticides/PCBs								
4,4'-DDD	mg/kg	< .031	< .018	.0442	.0115	< .029	.642 J	< .029
4,4'-DDE	mg/kg	.0676	.0713	.0281	.00885	.295	.118 J	.26
4,4'-DDT	mg/kg	.317	< .0073	.0355	.0253	.261	.0838 J	.236
aroclor 1248	mg/kg	< .088	7.51	.819	< .019	< .041	< .045 J	< .041
aroclor 1260	mg/kg	2.4	< .26	.576	.546	1.03	1.38 J	.902
methoxychlor	mg/kg	< .02	< .012	< .002	< .0021	< .019	< .0083 J	< .019

mg/kg = milligrams per kilogram
R = indicates data rejected during validation as unusable
J = indicates an estimated value

Table 4-3 (continued)
Former Macon Naval Ordnance Landfill
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	LSL-10 (0'-2')	LSL-10 (8'-10')	LSL-11 (0'-2')	LSL-11 (4'-6')	LSL-12 (1'-2')	LSL-12 (3'-4')	LSL-13 (1'-2')
Inorganics								
antimony	mg/kg	3.7 J	4.5 J	3.1 J	< 2.7	< 6.3	< 3.3	< 3.2
beryllium	mg/kg	.711	.887	.22 J	.43 J	.42 J	.831	1.26
cadmium	mg/kg	29.6	.68 J	2.31	2.32	68.9	.61 J	2.88
chromium	mg/kg	52.2	13.7	23.1	28.3	53	25.9	29.3
copper	mg/kg	408	39.1	11	22	43.4	6.35	20
lead	mg/kg	65.1	28.1	12.6	17.6	62.3	20.4	27.8
mercury	mg/kg	< .036	< .047	< .029	< .03	1.34	.074 J	.098 J
nickel	mg/kg	20.9	5.08	4.62	6.44	10.2	5.59	12.2
selenium	mg/kg	.5 J	.45 J	.649	.41 J	< .21	.59 J	1.3 J
silver	mg/kg	.36 J	< .37	< .23	< .23	< .54	< .29	< .27
thallium	mg/kg	< .11	< .15	< .093	< .094	< .22	.4 J	.73
zinc	mg/kg	353	63	32.9	154	92.3	45.4	67.3
Volatile Organics								
1,2,4-trimethylbenzene	mg/kg	.0024 J	< .001	< .00065	< .00066 J	< .0016	< .00082	< .00078
1,3,5-trimethylbenzene	mg/kg	< .00079	< .001	< .00065	< .00066 J	< .0015	< .00081	< .00077
cis-1,2-dichloroethene	mg/kg	< .0025	< .0033	< .0021	< .0021 J	< .0049	< .0026	< .0025
ethylbenzene	mg/kg	< .0011	< .0014	< .00088	< .0009 J	< .0021	< .0011	< .0011
isopropylbenzene	mg/kg	< .00077	< .001	< .00064	< .00065 J	< .0015	< .0008	< .00076
m+p-xylene	mg/kg	< .0033	< .0044	< .0027	< .0028 J	< .0065	< .0034	< .0032
n-butylbenzene	mg/kg	< .00085	< .0011	< .0007	< .00071 J	< .0017	< .00088	< .00084
n-propylbenzene	mg/kg	< .00089	< .0012	< .00073	< .00074 J	< .0017	< .00092	< .00087
naphthalene	mg/kg	.13 J	.015 J	< .0012	.94 J	< .0029	< .0015	< .0015
o-xylene	mg/kg	< .002	< .0027	< .0017	< .0017 J	< .004	< .0021	< .002
paracymene	mg/kg	.023 J	.02 J	< .00075	< .00076 J	< .0018	< .00094	< .00089
sec-butylbenzene	mg/kg	< .00089	< .0012	< .00074	< .00075 J	< .0017	< .00093	< .00088
tert-butylbenzene	mg/kg	< .00084	< .0011	< .00069	< .0007 J	< .0016	< .00087	< .00082
toluene	mg/kg	< .0012	< .0016	< .001	< .001 J	< .0024	< .0013	< .0012
trichloroethene	mg/kg	< .0006	< .00079	< .0005	< .0005 J	< .0012	< .00062	< .00059
Semivolatile Organics								
2-methyl naphthalene	mg/kg	R	< 2.8	< .092	< .093	< .22	< .12	< .11
acenaphthene	mg/kg	R	< 5	< .17	< .17	< .39	< .21	< .2
acenaphthylene	mg/kg	R	< 3.9	< .13	< .13	< .31	< .16	< .15
anthracene	mg/kg	R	< 3.5	.27	< .12	< .28	< .15	< .14
benzo(a)anthracene	mg/kg	R	< 3.7	.56	.18 J	< .29	< .15	< .15
benzo(a)pyrene	mg/kg	R	< 4.7	.52	.19 J	.39 J	< .19	< .18
benzo(b)fluoranthene	mg/kg	R	< 2.9	.79	.31	< .23	< .12	< .12
benzo(g,h,i)perylene	mg/kg	4.4 J	4.5 J	.32	< .14	.61	< .18	< .17
benzo(k)fluoranthene	mg/kg	R	< 5	.31	< .17	< .39	< .21	< .2
bis(2-ethylhexyl)phthalate	mg/kg	R	< 31	< 1	12	< 2.4	< 1.3	< 1.2
chrysene	mg/kg	R	< 5.7	.59	< .19	< .45	< .24	< .22
di-n-butyl phthalate	mg/kg	R	< 5.4	.21 J	.2 J	< .42	< .22	< .21
dibenz(a,h)anthracene	mg/kg	R	< 4.7	< .15	< .16	< .36	< .19	< .18
dibenzofuran	mg/kg	R	< 4.3	< .14	< .14	< .34	< .18	< .17
fluoranthene	mg/kg	R	< 5.4	1.3	.36	< .42	< .22	< .21
fluorene	mg/kg	R	< 4.3	< .14	< .14	< .34	< .18	< .17
indeno(1,2,3-cd)pyrene	mg/kg	R	< 4.3	.34	< .14	< .34	< .18	< .17
naphthalene	mg/kg	R	< 3	< .098	< .099	< .23	< .12	< .12
phenanthrene	mg/kg	R	< 3.3	1.1	.25	< .25	< .13	< .13
pyrene	mg/kg	R	< 4.7	.98	.36	< .36	< .19	< .18
Pesticides/PCBs								
4,4'-DDD	mg/kg	< .0037	< .0049	< .0031	< .0031	< .14	< .0038	< .0036
4,4'-DDE	mg/kg	.0111	< .001	.0413	.0112	< .031	< .00082	< .00078
4,4'-DDT	mg/kg	.0587	.0187	.017	< .0012	< .058	< .0015	< .0014
aroclor 1248	mg/kg	.91	.945	< .0043	.295	9.11	< .0054	< .0051
aroclor 1260	mg/kg	.215	< .027	< .0043	.039	< .2	< .0054	< .0051
methoxychlor	mg/kg	< .0024	< .0031	< .0019	< .002	.2 J	< .0024	< .0023

mg/kg = milligrams per kilogram
R = indicates data rejected during validation as unusable
J = indicates an estimated value

Table 4-3 (continued)
Former Macon Naval Ordnance Landfill
Soil Analytical Data
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	LSL-13 (3'-4')	MW-6 (2'-4')	MW-6A (2'-4')	MW-7 (0'-2')	MW-8 (0'-2')	MW-9 (6'-8')	MW-10 (0'-2')
Inorganics								
antimony	mg/kg	< 2.9	R	R	R	11.1 J	R	R
beryllium	mg/kg	1.27	.15 J	.26 J	.18 J	.071 J	< .02	.33 J
cadmium	mg/kg	.663	29.8	64.2	2.16	31	< .23	14.8
chromium	mg/kg	26.7	23.2	41.4	16.3	39.1	4.67	19.5
copper	mg/kg	10.2	24.6	98.1	7.16	56	1.34	25
lead	mg/kg	18.6	36.7 J	91.3 J	15.9 J	61.8 J	5.43 J	123 J
mercury	mg/kg	.077 J	.249	.045 J	< .035	1.37	.047 J	.081 J
nickel	mg/kg	9.08	9.69	6.59	3.24	4.02	1.3 J	6.09
selenium	mg/kg	.809	< .15	< .13	< .1	1.12	< .45	< .17
silver	mg/kg	< .25	< .39	< .33	< .27	.69 J	< .24	< .45
thallium	mg/kg	.45 J	< .16	.45 J	< .11	< .12	< .098	< .18
zinc	mg/kg	60.6	58.9	71.2	23.2	86.4	4.5	162
Volatile Organics								
1,2,4-trimethylbenzene	mg/kg	< .00071	< .0011	< .00095	< .00077	< .00088	< .00069	< .0013
1,3,5-trimethylbenzene	mg/kg	< .00071	< .0011	< .00094	< .00076	< .00087	< .00068	< .0013
cis-1,2-dichloroethene	mg/kg	< .0023	< .0035	< .003	< .0024	< .0028	.0053 J	< .0041
ethylbenzene	mg/kg	< .00096	< .0015	< .0013	< .001	< .0012	< .00093	< .0017
isopropylbenzene	mg/kg	< .00069	< .0011	< .00093	< .00075	< .00085	< .00067	< .0013
m+p-xylene	mg/kg	< .003	NA	NA	NA	NA	NA	NA
n-butylbenzene	mg/kg	< .00076	< .0012	< .001	< .00082	< .00094	< .00073	< .0014
n-propylbenzene	mg/kg	< .0008	< .0012	< .0011	< .00086	< .00098	< .00077	< .0014
naphthalene	mg/kg	< .0013	< .0021	< .0018	< .0014	< .0016	< .0013	< .0024
o-xylene	mg/kg	< .0018	< .0029	< .0024	< .002	< .0022	< .0018	< .0033
paracymene	mg/kg	< .00082	< .0013	< .0011	< .00088	< .001	< .00078	< .0015
sec-butylbenzene	mg/kg	< .0008	< .0013	< .0011	< .00087	< .00099	< .00077	< .0015
tert-butylbenzene	mg/kg	< .00075	< .0012	< .001	< .00081	< .00092	< .00072	< .0014
toluene	mg/kg	< .0011	< .0017	< .0014	< .0012	< .0013	< .001	< .002
trichloroethene	mg/kg	< .00054	< .00084	< .00072	< .00058	< .00066	.004 J	< .00098
Semivolatile Organics								
2-methyl naphthalene	mg/kg	< .1	< .16	< .13	< .11	< .62	< .096	< .18
acenaphthene	mg/kg	< .18	< .28	< .24	< .19	< 1.1	< .17	< .33
acenaphthylene	mg/kg	< .14	< .22	< .19	< .15	< .87	< .14	< .26
anthracene	mg/kg	< .13	< .2	< .17	< .14	< .78	< .12	< .23
benzo(a)anthracene	mg/kg	< .13	< .21	< .18	< .14	< .82	< .13	< .24
benzo(a)pyrene	mg/kg	< .17	3	< .22	< .18	10	< .16	.86
benzo(b)fluoranthene	mg/kg	< .11	< .16	< .14	< .11	1.5	< .1	< .19
benzo(g,h,i)perylene	mg/kg	< .15	6.2	< .21	< .17	25	< .15	1.6
benzo(k)fluoranthene	mg/kg	< .18	< .28	< .24	< .19	1.6	< .17	< .33
bis(2-ethylhexyl)phthalate	mg/kg	< 1.1	< 1.7	< 1.5	< 1.2	< 6.9	< 1.1	< 2
chrysene	mg/kg	< .21	2.4	< .27	< .22	5.7	< .2	< .37
di-n-butyl phthalate	mg/kg	< .19	< .3	< .26	< .21	< 1.2	< .19	.47 J
dibenz(a,h)anthracene	mg/kg	< .17	< .26	< .22	< .18	< 1	< .16	< .3
dibenzofuran	mg/kg	< .15	< .24	< .21	< .17	< .95	< .15	< .28
fluoranthene	mg/kg	< .19	< .3	< .26	< .21	< 1.2	< .19	< .35
fluorene	mg/kg	< .15	< .24	< .21	< .17	< .95	< .15	< .28
indeno(1,2,3-cd)pyrene	mg/kg	< .15	< .24	< .21	< .17	2.8	< .15	< .28
naphthalene	mg/kg	< .11	< .17	< .14	< .11	< .66	< .1	< .19
phenanthrene	mg/kg	< .12	< .18	< .16	< .13	< .72	< .11	< .21
pyrene	mg/kg	< .17	< .26	< .22	< .18	2.1	< .16	< .3
Pesticides/PCBs								
4,4'-DDD	mg/kg	< .0033	< .01	< .0044	< .0036	< .41 J	< .0032	< .006
4,4'-DDE	mg/kg	< .00071	< .0022	< .00095	< .00076	< .087 J	< .00068	< .0013
4,4'-DDT	mg/kg	< .0013	< .0041	< .0018	< .0014	< .16 J	< .0013	< .0024
aroclor 1248	mg/kg	< .0047	4.3	.23	< .005	23.4 J	< .0045	1.61
aroclor 1260	mg/kg	< .0047	< .015	< .0062	< .005	< .57 J	< .0045	< .0084
methoxychlor	mg/kg	< .0021	< .0066	< .0028	< .0023	< .26 J	< .002	< .0038

mg/kg = milligrams per kilogram
R = indicates data rejected during validation as unusable
J = indicates an estimated value

(6-8 feet) showed estimated concentrations of cis-1,2-dichloroethene (0.0053J mg/Kg) and trichloroethene (0.004 J mg/Kg). Naphthalene was the most frequently detected VOC, with detections in 7 samples.

SVOCs were detected at several sample locations (LSL-1, LSL-3, LSL-5, LSL-6, LSL-7, LSL-8, LSL-10, LSL-11, LSL-12, MW-6, MW-8, and MW-10). At locations LSL-3, LSL-7, and LSL-11, semi-volatile parameters were detected in samples collected at all depths. Of the SVOCs detected the most significant is the presence of benzo(a)pyrene in a number of samples at concentrations ranging from less than 0.5 mg/Kg to up to 10 mg/Kg. The highest concentration of benzo(a)pyrene was detected in the shallow soil sample collected from MW-8 (0-2 feet).

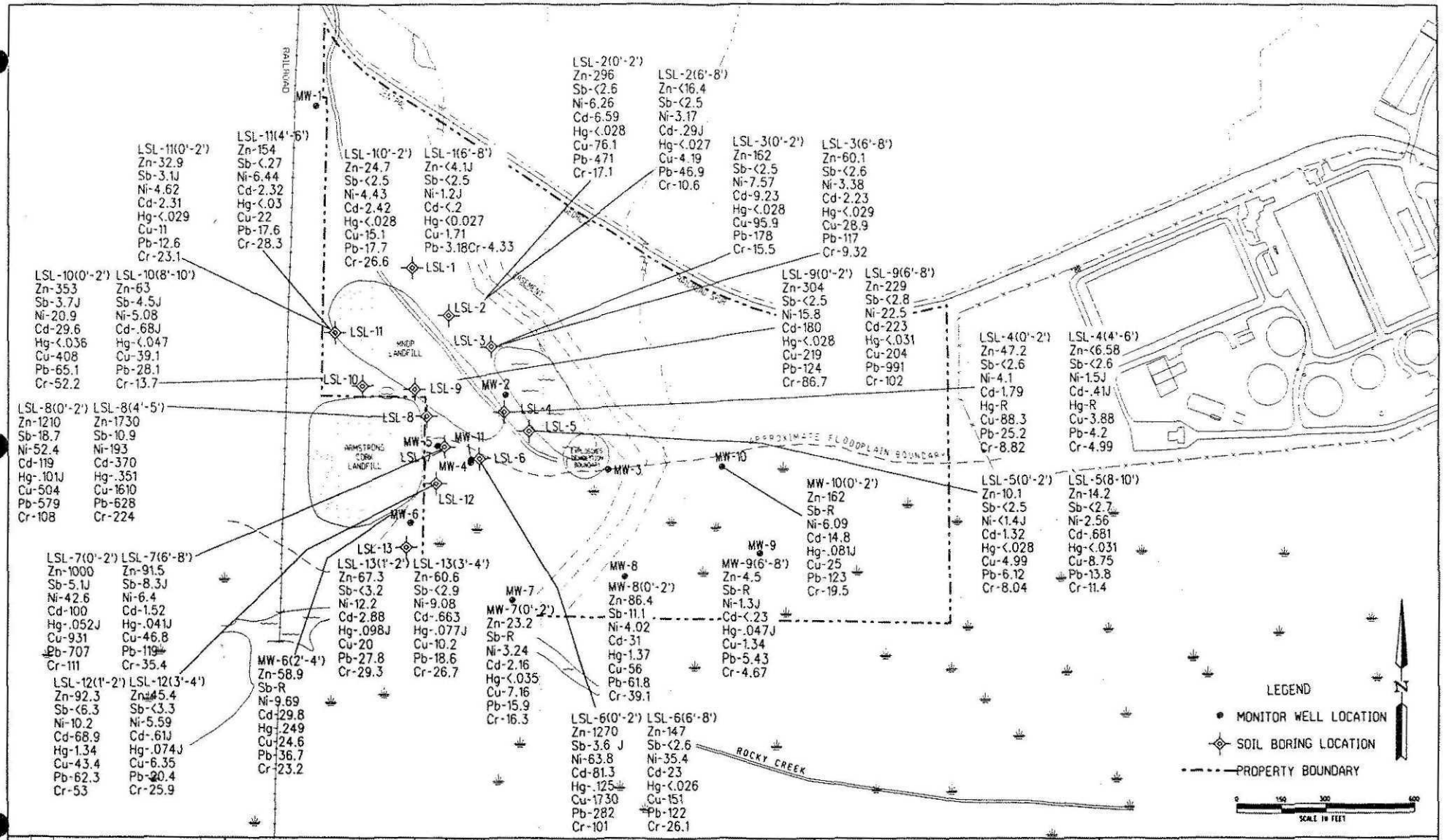
Both pesticides and PCBs were detected in soil samples collected at the landfill area. Pesticide compounds were detected at all but seven soil boring locations; LSL-12, LSL-13, MW-6, MW-7, MW-8, MW-9, and MW-10. Concentrations of pesticides in the collected soils were found to be below applicable regulatory criteria and are not discussed further. The PCB compounds detected were Aroclor 1248 and 1260. Aroclor 1248 was the primary PCB which was detected at 10 boring locations (Figure 4-3). The highest levels of Aroclor were observed in shallow soil samples collected from MW-8 (23.4 J mg/Kg), LSL-12 (9.11 mg/Kg), and LSL-3 (9.23 J mg/Kg).

4.6.3 Extent of Contamination

The results of soil sampling indicate that elevated levels of metals, SVOCs, and PCBs are present in subsurface soils at the former MNOP Landfill site. Distribution of metals and PCBs are illustrated in Figures 4-2 and 4-3 and are further discussed below. In addition, trace amounts of VOCs are present in isolated soil samples. Based upon the distribution and relative concentration of each analyte the following can be said concerning extent of soils contamination:

- Cadmium is present in both surface soils (0-2 feet) and to a lesser extent deeper soils throughout the site at levels that exceed background concentrations and relevant regulatory criteria (see Section 10.0). The highest cadmium levels are at locations LSL-7, LSL-8 and LSL-9 near the MNOP landfill with lower concentrations at more remote locations to the east and south (Figure 4-2). The aerial extent of elevated levels of cadmium has not yet been defined for surface soils, nor has it been defined vertically at some locations near the landfill mass.

- Chromium and copper are present in both surface soils and to a lesser extent deeper soils at locations LSL-6, LSL-7, LSL-8, and LSL-9 at concentrations that exceed background and regulatory criteria (Figure 4-2).



NO.	DATE	REVISIONS	BY

		DATE
RUST PROJECT	33941.000	
DESIGNED BY	L.WILLIAMS	6/98
DRAWN BY	M.PEARCE	6/98
CHECKED BY		
FILE NO.	33941082	

RUST ENVIRONMENT & INFRASTRUCTURE

NOTES:
1 - ALL VALUES IN mg/kg
2 - J - ESTIMATED VALUE
3 - R - DATA REJECTED DURING VALIDATION

FIGURE 4-2
ANALYTICAL RESULTS FOR METALS IN SOIL
FORMER MNOP LANDFILL
MACON, GEORGIA

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- Lead is present in both surface soils and to a lesser extent deeper soils at concentrations which exceed background and regulatory criteria for borings LSL-2, LSL-3, LSL-6, LSL-7, LSL-8, and LSL-9 located near the landfill mass.

- Aroclor 1248 is present in both surface soils and deeper soils collected throughout the site (Figure 4-3). This constituent is present in soils near the landfill and in soils south and east of the landfill. The aerial extent of Aroclor has not yet been determined, however it's concentration appears to be greatest in surface soils. Aroclor 1260 was detected less frequently (Figure 4-3).

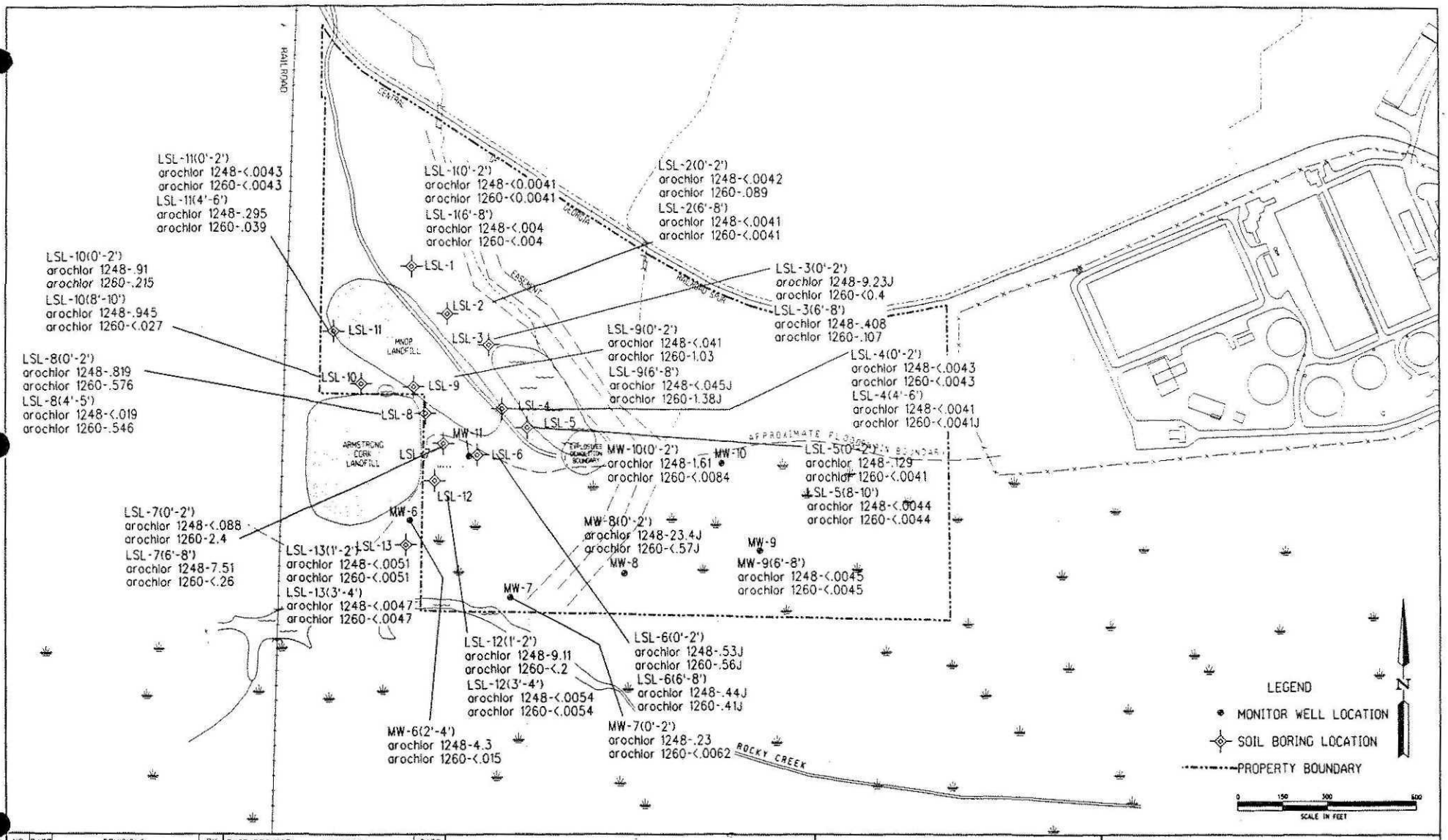
- The highest concentrations of copper, chromium, cadmium, and lead were found in samples collected in a small area just east of the Armstrong Cork Landfill and just south of the MNOP Landfill. It is likely that both of these landfills are now or have been contributing to the contamination in this area.

In summary, it appears that contamination, primarily by heavy metals and PCBs, has occurred in the site soils. The data generated during this investigation provides basic information to sufficiently characterize the area but does not fully delineate the extent of constituents with elevated levels. It is also noted that approximately half of the soil samples were collected from the vadose zone and half from saturated soils. No significant difference in the elevated concentrations between vadose zone and saturated zone soils can be distinguished. The source of metals and PCBs appears to be from the landfill mass via subsurface infiltration or possibly from run-off and sediment deposition. Because a portion of the site is located within the Rocky Creek floodplain off-site sources are possible from surface run-off and sedimentation.

4.6.4 Fate and Transport

4.6.4.1 PCBs

PCBs are mixtures of different congeners of chlorobiphenyl. Once released to soils, PCBs are strongly sorbed and will generally not leach significantly in aqueous soil systems (Micromedex, 1996). This is mostly due to the fact that PCBs have relatively low octanol-water partition coefficients and low solubilities and are hence strongly adsorbed by mineral and organic materials in soils. The literature reviewed indicates that PCBs with high chlorine content such as Aroclor 1248, 1254, and 1260, are resistant to biodegradation and PCBs with low chlorine content (Aroclor 1221 and 1232) biodegrade very rapidly (Micromedex, 1996). Chapelle, 1993, indicates that emerging research suggests that some of the highly chlorinated PCBs may be resistant to aerobic



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RUST ENVIRONMENT & INFRASTRUCTURE

NOTES:
1 - ALL VALUES IN mg/kg
2 - J = ESTIMATED VALUE

FIGURE 4-3
ANALYTICAL RESULTS FOR PCB's (AROCHLOR) IN SOIL
FORMER MNOP LANDFILL
MACON, GEORGIA

oxidation (degradation) but could be subject to reductive dehalogenation in anaerobic environments. Conversely, lightly chlorinated PCBs are resistant to reductive dehalogenation but can be aerobically oxidized (Chapelle, 1993). This PCB research generally demonstrates that microbial processes have the potential to completely degrade these compounds under the proper conditions, however, such cases are not yet documented.

Based upon the presence of abundant organic materials within the floodplain area and clayey soils throughout the site, PCBs are expected to be tightly sorbed and are probably immobile in the subsoils. Degredation of PCBs, as indicated in the literature, is not likely an important removal process, however, no data is available to determine if such processes are at work here. Erosion and deposition of surface soils appears to be the most likely mechanism for transport of PCBs across the site and possibly into the surface waters of Rocky Creek.

4.6.4.2 Metals

The following provides a discussion on the fate and transport of antimony, cadmium, chromium, copper, lead, nickel, and zinc. These constituents were the primary inorganics detected in soils at elevated levels, and are of greatest interest to this investigation. The discussion is intended to provide only general fate and transport information available from the literature. Limited soils and metals speciation data precludes making any specific conclusions concerning fate and transport of metals.

The retention of metals in soil depends on a number of physical, chemical, and in some cases biological factors. Soil properties such as texture, bulk density, pH, organic matter, type and amount of clay minerals, and the presence of mineral oxides, especially iron oxides, influence the retention and release of metals by soil. The partitioning between aqueous and solid phase are controlled by a number of processes including adsorption, precipitation, co-precipitation, and complexation. Partitioning may be influenced by the aqueous pH, redox potential, ionic strength of the water, the concentration of complexing ions, the type of anions present, and the metal concentration and type.

Physical deposition by fluvial and wind processes are the most common mechanism for transport and distribution of metals and are probably the most important transport processes at the MNOP landfill site. Metals can be released to the atmosphere in the form of particulate matter, dispersed by wind, and deposited by gravitational settling. Regional metals deposition has been widely studied and is characterized by large temporal and spatial variability. For example, cadmium deposition in urban areas is about one order of magnitude higher than in rural areas of the United States (ATSDR, 1993a). Metals released to waterways are generally associated with particulate matter and are transported and deposited in areas of active sedimentation.

Little is known about the adsorptive behavior of antimony, its compounds, and ions (ATSDR, 1992a). Some studies suggest that antimony is mobile under a variety of environmental conditions, while other references cited that it is strongly sorbed to soil. ATSDR (1992a) suggests that antimony is not expected to have an affinity for organic carbon and the cation exchange capacity of clay soils may not be an important factor to adsorption of this element. Antimony does not appear to bio-concentrate in fish and aquatic organisms (ATSDR, 1992a).

Cadmium exists in natural waters as the hydrated ion Cd(+2) 6H2O and can be complexed with humic substances (ATSDR, 1993a). In the literature, cadmium is cited to be more mobile in aquatic environments than other heavy metals such as lead (ATSDR, 1993a). Precipitation and sorption of cadmium compounds onto soils are the most important removal precesses cited in the literature. It is also cited that cadmium may redissolve from sediments under varying ambient conditions of pH, salinity, and redox potential (ATSDR, 1993a). Cadmium bio-accumulates in all levels of the food chain.

Chromium is present in soils primarily as an insoluble oxide Cr2O3(nH2O) and is not considered very mobile in soil (EPA, 1984a). A much smaller percentage of total chromium in soil exists as soluble hexavalent chromium (Cr^{+6}) and the less soluble trivalent chromium (Cr^{+3}). As with other metals, the sorption of chromium to soil depends on a number of factors including the clay content and to a lesser extent the presence of iron oxides and organic matter (ATSDR, 1993b).

Copper is cited in the literature to bind to soil much more strongly than other divalent cations (ATSDR, 1990). The literature reviewed suggested that copper will adsorb to organic matter, carbonate minerals. clay minerals, or hydrous iron and manganese oxides (ATSDR, 1990). Copper has a low potential for bio-accumulation.

The amount of lead in soil is affected by the adsorptive properties of various soil types, precipitation of soluble solid forms of the lead, and the formation of relatively stable organic-metal complexes or chelates with soil organic matter (ATSDR, 1993c). Under most conditions lead is strongly sorbed to soil (especially organic matter) and very little is transported to surface water or groundwater (EPA, 1986a; NSF 1977). Leaching of lead from soil to groundwater is very slow under most natural conditions except for highly acidic environments (ATSDR, 1993c).

Nickel is also described in the literature to be strongly adsorbed by soil, although to a lesser degree than lead and copper discussed above. Nickel is strongly adsorbed to oxides and hydrous oxides of iron, manganese, and aluminum (ATSDR, 1995). Nickel is expected to be primarily present as sorbed to soils.

Zinc occurs in the environment primarily in the +2 oxidation state (ATSDR, 1992b). Zinc in aerobic waters is expected to be partitioned into sediments through sorption onto hydrous iron and manganese oxides, clay minerals, and organic material. The degree of sorption varies according to cation exchange capacity, pH, salinity, redox potential, and concentration of complexing ligands and zinc. (ATSDR, 1992b). In anaerobic environments zinc sulfide is the controlling species (EPA 1980d; Kalbasi et al. 1978) and, since sulfide is insoluble, the mobility of zinc in anaerobic environments is low.

In summary, the metals (antimony, cadmium, chromium, copper, lead, nickel, and zinc) reviewed will most likely have an affinity to sorb onto organic rich soils and/or clayey soils under most natural conditions. These metals are not expected to significantly leach from soils and partition into groundwater to any large degree. Further, it is likely that the dominant transport mechanism for metals may be from erosion and sedimentation processes.

5.0 GROUNDWATER CONTAMINATION

5.1 GENERAL APPROACH

Groundwater quality at the site was evaluated by collecting groundwater samples from HydroPunch™ /drive point wells and permanently installed monitoring wells. The primary purpose of the groundwater sampling was to determine the horizontal and vertical extent of contamination in the shallow water-table aquifer.

In the first phase of the investigation, groundwater screening samples were collected using HydroPunch™ and drive point methods. The samples were field analyzed using a portable gas chromatograph (GC). These results were used to determine permanent monitor well locations. Finally, groundwater samples were collected from both the newly installed monitor wells and existing monitor wells in the former MNOP Landfill site.

Quality control (QC) samples, consisting of replicates and trip blanks were collected. Quality assurance (QA) samples were also sent to the USACE, South Atlantic Division (SAD) Laboratory.

5.2 ANALYTICAL PARAMETERS (Monitoring Wells)

Based on the suspected contaminants and historical activities at the landfill, the analytical parameters for the site included:

- volatile organic compounds (VOC)
- semivolatile organic compounds (SVOC)
- radium 226 and 228
- priority pollutant metals
- pesticides and polychlorinated biphenyls (PCB)

Table 5-1 summarizes the sampling and analytical requirements for this work. The table includes the analytical methods used, the sample preservation and holding times, and the number of quality control and quality assurance samples collected.

5.3 DRIVE POINT WELL/ HYDROPUNCH SCREENING

To aid in determining the outer boundaries of the groundwater contaminant plume known to exist locally near the landfill, eleven groundwater samples were collected by utilizing a combination

Table 3-1
Groundwater Sampling and Analytical Requirements
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Matrix	Field Samples	QC Samples	QA Samples	Trip Blanks	Total Samples	Analysis	Protocol	Analytical Procedures	Holding Time	Preservation Requirements	Sample (1) Containers	Total Containers
Groundwater from monitor wells	11	1	1	2	15	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C Add HCl to pH<2 or NaHSO4	2-40 mL glass septa vial	30
	11	1	1	0	13	SVOC/PAH BNA	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	2-1L amber glass	26
	11	1	1	0	13	Pesticides/ PCBs	SW-846	EPA 8080	7/40 days	Ice to 4 degrees C	2-1L amber glass	26
	11	1	1	0	13	Radium 226 & 228	SW-846	EPA 9310, 9315,9320	NA	Ice to 4 degrees C HNO3 to pH<2	1-8 oz glass	13
	11	1	1	0	13	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days 28 days for mercury	Ice to 4 degrees C HNO3 to pH<2	1-1L glass or plastic	13

(1) Per EM-200-1-3, Table I-1, 31 March 95.

of HydroPunch™ methods and the installation of drive point wells. These samples were screened in the field using a portable GC.

5.3.1 HydroPunch™

One HydroPunch™ sample was collected upgradient from the landfill (Figure 5-1). During the HydroPunch™ sampling process, a borehole was advanced by hollow-stem auger drilling to approximately 3 to 5 feet below static water level. The HydroPunch™ was lowered through the auger stem and driven approximately 5 feet further into the aquifer. The HydroPunch™ was then retracted several feet to allow water under hydrostatic pressure to enter the tool. After approximately 30 minutes, the HydroPunch™ was retrieved and the groundwater sample transferred to the appropriate laboratory container.

5.3.2 Drive Point Wells

Temporary drive point wells were installed because access to sampling point locations prohibited the use of a truck mounted rig needed for HydroPunch™ sampling. Each drive point well consisted of a 5-foot long, 1.25 inch ID stainless steel mesh screen and 5-foot galvanized steel riser. Drive point locations are shown on Figure 5-1. Stainless steel risers are not standard equipment and were not considered necessary for field screening of groundwater. Each drive point was installed to a depth of approximately 10 feet by hand auger methods. At each of the drive points, one groundwater sample was collected by bailer. Two of the drive points (DP-11 and DP-12) were used for water level measurements.

After sample collection, the drive point well was either removed from the ground or cut below the ground surface and abandoned by backfilling with grout.

5.3.3 Gas Chromatography

The groundwater screening results generated from the drive point well/HydroPunch™ testing were performed using a Shimadzu 14A gas chromatograph (GC) and flame ionizing detector (FID). Concentrations were calculated using the Shimadzu Chromatopack GC integrator and calibration standards.

Analytical screening procedures were performed using a modified version of SW-846 Method 3810. Modifications include using a two point initial calibration, forty microliter (ul) headspace injection, and ambient temperature sample equilibration. Continuing calibration checks on the initial calibration were performed each day of analysis using the initial standard stock solution. Syringe

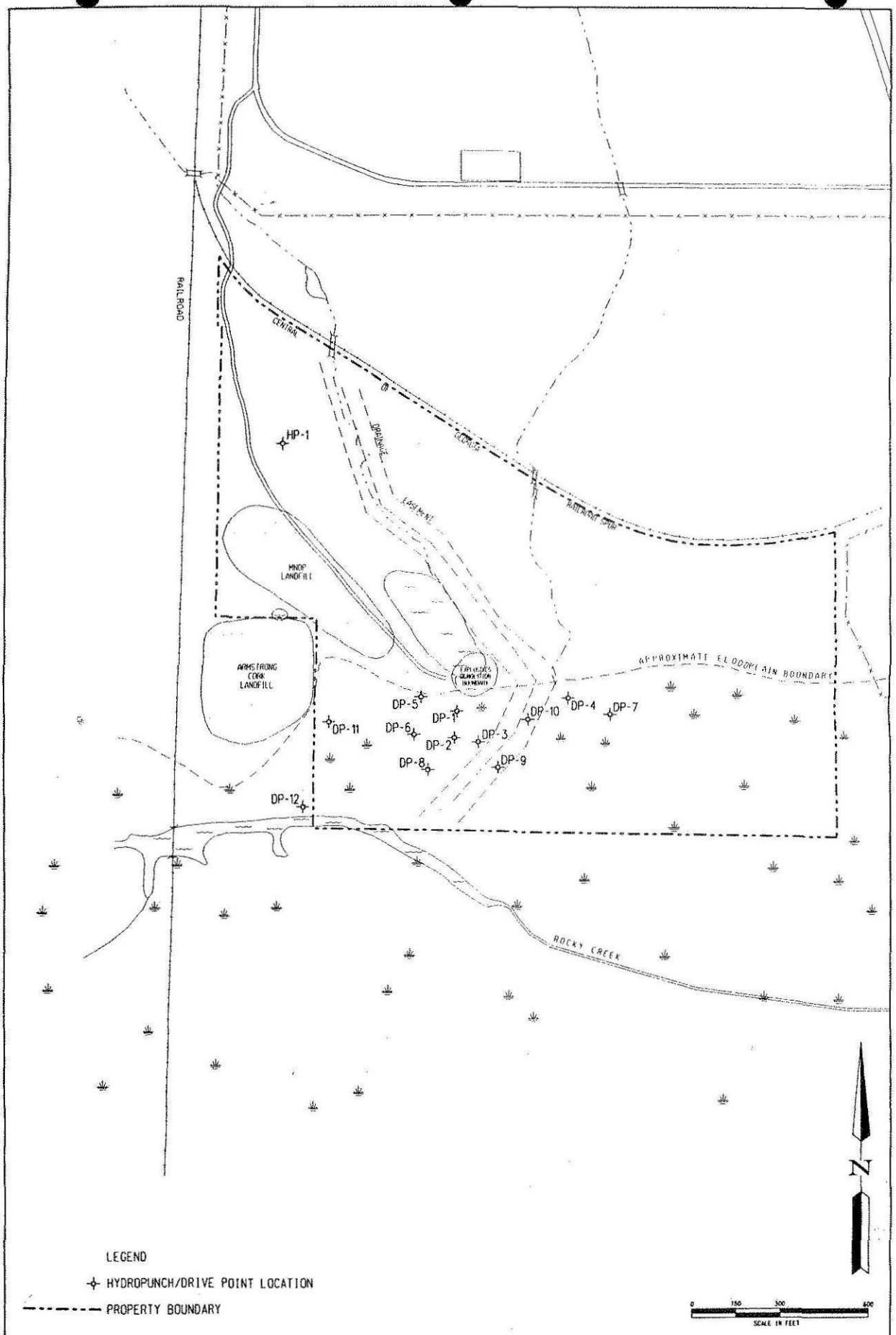

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FIGURE 5-1
HYDROPUNCH/DRIVE POINT LOCATION MAP
FORMER MNOP LANDFILL
MACON, GEORGIA

blanks were performed at the beginning of each day and after concentrated samples. Initial calibration standards were prepared at low parts per billion (ppb) levels using the following target analytes: trichloroethene, vinyl chloride, cis-1,2-dichloroethene. Standards were prepared using serial dilutions from neat standards and injected into air tight forty milliliter (ml) septa vials containing twenty ml of water via a syringe.

Due to the target organic compounds high vapor pressure, these compounds partitioned from the aqueous phase into the gaseous phase. An aliquot of the twenty ml of air (headspace) in each of the sample vials was collected using an air tight 50 ul syringe which was then injected into the GC.

5.4 MONITOR WELL INSTALLATION PROCEDURE

5.4.1 Monitor Well Installation

A total of six monitoring wells were installed during this investigation at locations indicated in Figure 5-2. The installation of monitor wells conformed to the applicable regulations in construction and sampling. Specifically, the following guidelines were adhered to:

- Manual for Groundwater Monitoring, Georgia Environmental Protection Division (GAEPD), 1991.
- EPA Groundwater Monitoring Technical Enforcement Guidance Document (TEGD), EPA No., OSWER-9950.1-RCRA.
- Monitor Well Design, Installation, and Documentation at Hazardous and/or Toxic Waste Sites, Corps of Engineers, EM1110-1-4000.

Monitor well installation for MW-6 and MW-11 were accomplished using a truck-mounted drill rig equipped with hollow stem augers. Monitor wells MW-7 through MW-10 were installed by using a hand auger. Two-inch ID, Schedule 40 polyvinyl chloride (PVC) well screens, casings, and fittings were used in the construction of each well. Each well was completed with a steel protective cover, protective posts (where appropriate) and a square concrete pad.

5.4.2 Well Development

Each well was developed within two weeks of construction, but no sooner than 48 hours after grouting. Well development was accomplished by a combination of bailing and pumping. Development began with mechanical surging with a bailer and bailing for a minimum of two

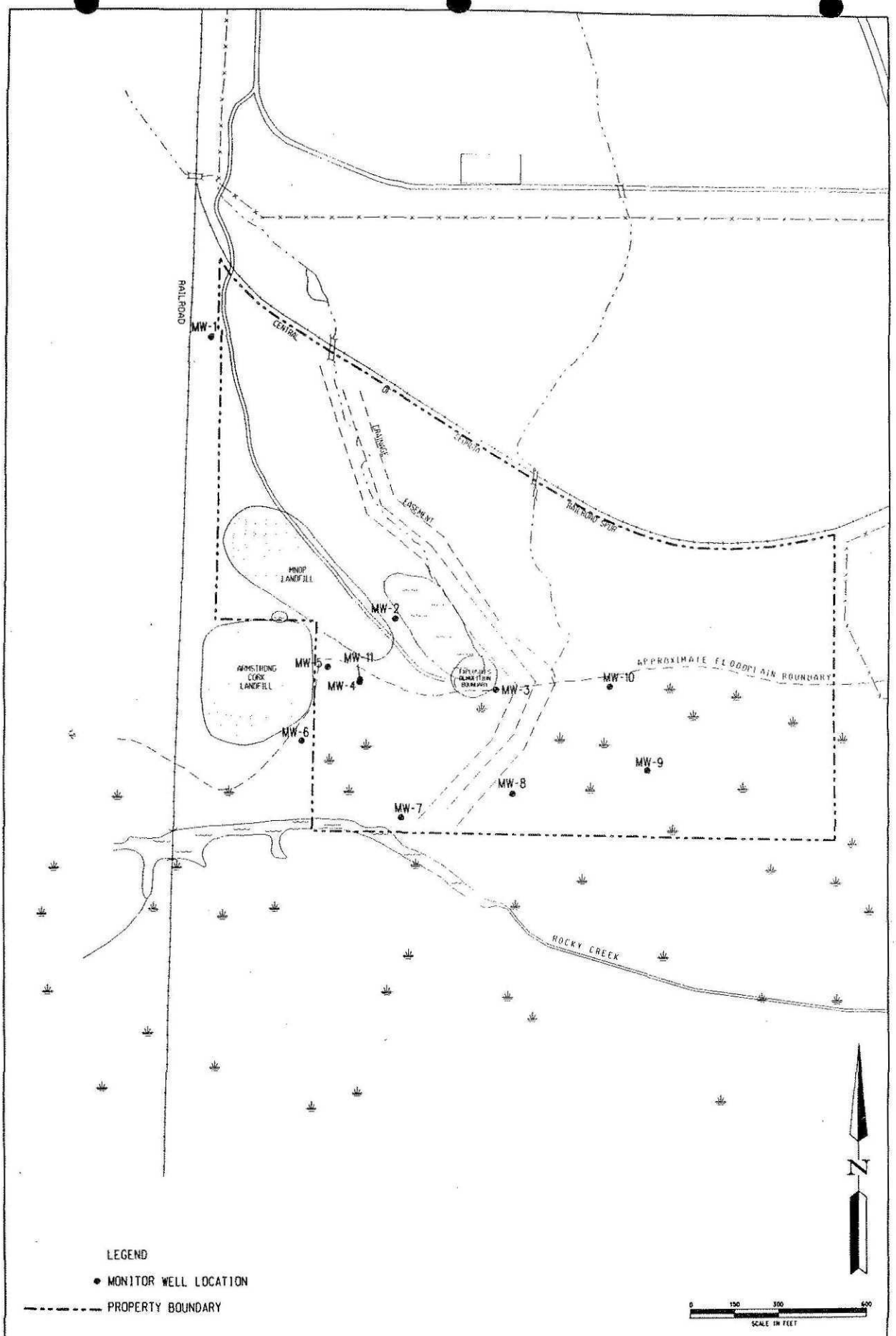

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FIGURE 5-2
MONITOR WELL LOCATION MAP
FORMER MNOP LANDFILL
MACON, GEORGIA

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hours. At the end of two hours, the wells were pumped using a submersible pump or a bailer. Field personnel monitored groundwater temperature, pH, specific conductivity (SC), and turbidity as indicator parameters.

A minimum of 5 times the volume of water present in the well and the filter pack (assuming 30% porosity) was removed from the well. In addition to this minimum volume, the following criteria were met before development ceased:

- The well water is clear to the unaided eye.
- The sediment thickness remaining in the well is less than 1% of the screen length.
- Temperature, pH, and specific conductivity stabilized to less than a ten percent change between two well and filter pack volumes. The pH was considered stable when a variation of +/- 0.2 pH units was achieved.

5.4.3 Water Level Measurement

The water level in the wells were measured using an electric water level indicator. This was accomplished by inserting the electric probe into the well, lowering until ground water is encountered, and recording the depth to ground water. All measurements were made and recorded to the nearest 0.01 foot, using the top of casing as a reference.

5.4.4 Surveying

The locations of the drive point wells, soil borings and permanent monitoring wells were surveyed by Entech, Inc. of Marietta, Georgia. Horizontal coordinates and elevations were determined at each point.

5.5 SAMPLING AND ANALYSIS PROCEDURES

5.5.1 Well Evacuation

Monitor wells were purged before collecting samples. For moderate to high yielding wells (i.e. wells that are not purged dry), a minimum of five well volumes were evacuated from the well. Additional water was removed from the well, as necessary, until three consecutive measurements of pH and specific conductivity from successive bails varied by 10 percent or less. Well evacuation was accomplished by bailers, or centrifugal pumps.

5.5.2 Sample Collection

As soon as sufficient recharge had occurred, or at the end of evacuation, samples were collected using a single-use, teflon, or stainless-steel bailer. For sample collection, the bailer was lowered with minimum splash to just below the water surface.

To comply with Georgia Environmental Protection Division regulations, the samples (including those for metals) were not filtered in the field prior to preservation.

Sample handling, decontamination, and Chain of Custody procedures for groundwater sampling activities are the same as those described in Section 4.4 for soil sampling activities. General laboratory analytical requirements are also the same as those described in Section 4.4.7. The specific sample preservation and laboratory analytical methods used for groundwater analyses are discussed in Section 5.2 and summarized in Table 5-1.

5.6 BACKGROUND WATER QUALITY

Background water quality data was obtained from MW-1. This well is upgradient from the Landfill source.

5.7 DATA SUMMARY

5.7.1 Drive Point Well/HydroPunch Screening Data

Groundwater screening was performed for the following compounds:

- TCE
- cis-1,2-dichloroethene
- vinyl chloride

The results of the drive point/HydroPunch screening data are summarized on Table 5-2 and depicted on Figure 5-3. These results indicate the presence of vinyl chloride at 6 locations, cis-1,2-dichloroethene at 7 locations, and TCE at 1 location. Concentrations of vinyl chloride ranged from 12 ug/L (DP-8) to 540 ug/L (DP-5). Cis-1,2-dichloroethene was detected at concentrations ranging from a low of 5 J ug/L to a high of 6330 ug/L (DP-8). TCE was detected at a concentration of 48 ug/L at DP-8. No target compounds were detected in samples collected from HP-1 located upgradient from the landfill area or at drive point locations DP-2 and DP-3.

Table 5-2
Summary of HydroPunch/Drive Point Screening
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

	Compound	vinyl chloride	cis-1,2-dichloroethene	trichloroethene
	Units	ug/L	ug/L	ug/L
	Detection Limit	10	10	10
Sample ID	Date Collected			
HP-1	1/16/96	ND	ND	ND
DP-1	1/22/96	81	66	ND
DP-1-a[1]	1/22/96	74	69	ND
DP-2	1/22/96	ND	ND	ND
DP-3	1/16/96	ND	ND	ND
DP-3-a[1]	1/16/96	ND	ND	ND
DP-4	1/16/96	34	ND	ND
DP-4-c[2]	1/16/96	ND	ND	ND
DP-5	1/16/96	540	442	ND
DP-6	1/22/96	41	8	ND
DP-7	1/22/96	41	5	ND
DP-8	1/22/96	12	6330	48
DP-9	1/22/96	ND	11	ND
DP-10	1/22/96	ND	5	ND

[1] -a indicates that the sample is a duplicate.

[2] -c indicates that the sample is a trip blank.

ND indicates that the analyte was not detected above the method detection limit.

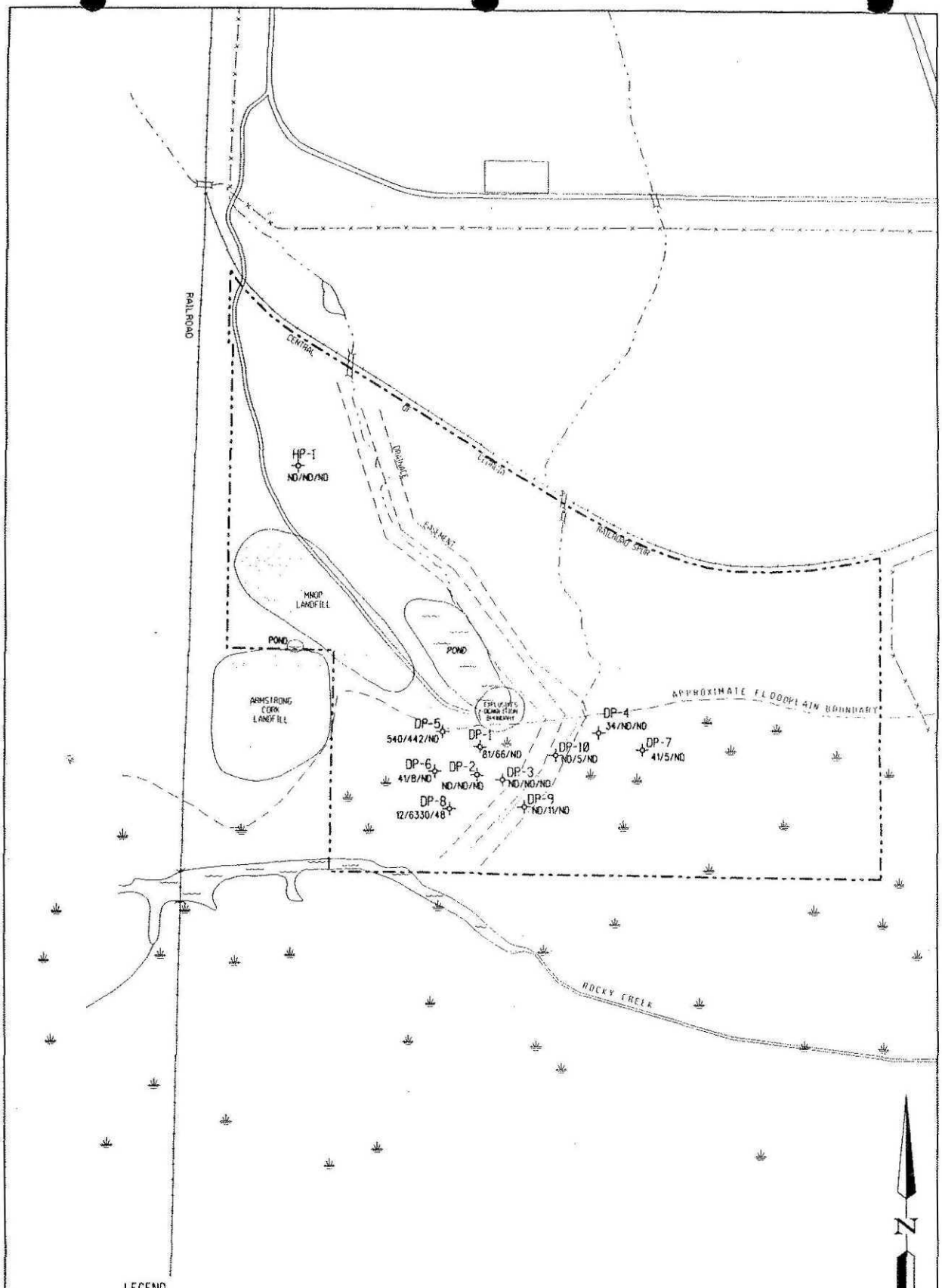

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FIGURE 5-3
HYDROPUNCH/DRIVE POINT & SCREENING SUMMARY
FORMER MNOP LANDFILL
MACON, GEORGIA

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5.7.2 Laboratory Results

The results of monitor well sampling are summarized in Table 5-3. All analytical data were evaluated with regards to data quality by both the analytical laboratory and Rust. A summary of the data quality review is included as part of the QCSR in Appendix B. Monitor well MW-1 is considered the background well for the MNOP landfill site. Monitor wells MW-2 through MW-5 are downgradient of the Landfill and were installed by ESE, Inc. in 1990. The six additional wells installed as part of this investigation were located south and southeast of the landfill. One well, MW-11, was installed adjacent to MW-4 and screened at a lower depth to evaluate vertical contaminant migration.

The results of sampling indicate the presence of primarily TCE, cis-1,2-dichloroethene and vinyl chloride in the groundwater of the former MNOP Landfill site. Detections of other VOCs and metals were also observed.

TCE was detected in groundwater samples collected from seven of the eleven monitoring wells sampled. Concentrations ranged from a high of 12 mg/L at MW-4 to a low of 0.061 mg/L at MW-10. TCE was not detected in samples collected from MW-6, MW-7 and MW-8 which are all located south (downgradient) of the former landfill and within the floodplain area. It should be noted that these three wells are installed and screened predominantly into the surficial (Quaternary) unit composed of clay. TCE also was detected in monitoring well MW-11 (screened into the deeper unit) at a concentration of 0.22 mg/L as compared to 12 mg/L at MW-4 (screened into the shallow aquifer at this nested location).

Cis-1,2-dichloroethene, a common breakdown product of TCE, was detected in the same groundwater samples described above for TCE. Concentrations of cis-1,2-dichloroethene ranged from 0.94 mg/L at MW-3 to 0.046 mg/L at MW-11.

Except for MW-11, vinyl chloride was detected in groundwater samples from the same wells described above for TCE. Vinyl chloride concentrations ranged from 0.130 mg/L at MW-2 to 0.022 mg/L at MW-5. Vinyl chloride is also a common breakdown product from the dehalogenation (degredation) of TCE. Other VOCs detected included 1,1,2-trichloroethane, 1,1-dichloroethene, chloroform, chloromethane, isopropylbenzene, sec-butylbenzene, tetrachloroethene, toluene, and trans-1,2-dichloroethene.

Ten metals were detected in the samples collected in the landfill area. Three of these, antimony, arsenic, and mercury were detected in the background well MW-1. Selenium was also detected in the background well, but not in any of the wells around the landfill. Of the ten metals detected,

Table 5-3
Monitor Well Groundwater Analytical Data
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	MW-1	MW-1D	MW-2	MW-3	MW-4	MW-5
Inorganics							
antimony	mg/L	< .022	.024 J	< .022	.029 J	< .022	< .022
arsenic	mg/L	.1 J	.077 J	.085 J	< .049	< .049	< .049
beryllium	mg/L	< .00016	< .00016	< .00016	.0004 J	< .00016	< .00016
cadmium	mg/L	< .0019	< .0019	< .0019	.0023 J	< .0019	.006
chromium	mg/L	< .0045	< .0045	< .0045	.0367	< .0045	< .0045
copper	mg/L	< .0073	< .0073	< .0073	.0468	< .0073	.0192
lead	mg/L	< .00089	< .00089	< .00089	.027	.0033	.0093
mercury	mg/L	.0005	.0004	.0003	.0002 J	< .00005	< .00005
nickel	mg/L	< .0056	< .0056	< .0056	.0085 J	< .0056	.0067 J
selenium	mg/L	.003 J	< .00074 J	< .00074 J	.0026 J	< .00074 J	< .00074 J
zinc	mg/L	< .011 J	< .019 J	< .0061 J	< .0261	< .0244	.105
Volatile Organics							
1,1,2-trichloroethane	mg/L	< .0012	< .00124	< .0012	< .0012	.0031 J	< .0012
1,1-dichloroethene	mg/L	< .00048	< .000475	< .00048	.044	.011	< .00048
chloroform	mg/L	< .0014	< .00136	< .0014	< .0014	.002 J	< .0014
chloromethane	mg/L	< .002	< .00202	< .002	< .002	< .002	< .002
cis-1,2-dichloroethene	mg/L	< .0018	< .00176	.16	.94	.5 J	.2 J
isopropylbenzene	mg/L	< .00054	< .00054	< .00054	< .00054	.0044 J	< .00054
sec-butylbenzene	mg/L	< .00063	< .000625	< .00063	< .00063	.0078 J	< .00063
tetrachloroethene	mg/L	< .00049	< .00049	< .00049	< .00049	.0022 J	< .00049
toluene	mg/L	< .00085	< .000845	< .00085	< .00085	< .00085	< .00085
trans-1,2-dichloroethene	mg/L	< .00055	< .000545	< .00055	.011	< .00055	< .00055
trichloroethene	mg/L	< .00042	< .00042	4.6	2.5	12	1.8 J
vinyl chloride	mg/L	< .00047	< .00047	.13	.12	.11	.022 J
Radiologicals							
radium 226	pCi/L	4.6	6.2	2.5	5.8	1.4	2.2
radium 228	pCi/L	.8	1	.7	1.7	.6	1

mg/L = milligrams per liter
pCi/L = picoCurie per liter
J = indicates an estimated value

Table 3-3 (continued)
Monitor Well Groundwater Analytical Data
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11
Inorganics							
antimony	mg/L	< .022	< .022	< .022	< .022	< .022	< .022
arsenic	mg/L	< .049	< .049	< .049	< .049	< .049	.049 J
beryllium	mg/L	.0015 J	< .00016	< .00016	< .00016	< .00016	< .00016
cadmium	mg/L	.0032 J	< .0019	.0285	< .0019	< .0019	< .0019
chromium	mg/L	.0348	.0052 J	.0056 J	.0064 J	.0125	.0139
copper	mg/L	.0215	< .0073	< .0073	< .0073	< .0073	.0103
lead	mg/L	.034	.0036	.0028 J	.0056	.012	< .00089
mercury	mg/L	< .00005	.0004	< .00005	< .00005	.0003	< .00005
nickel	mg/L	< .0056	< .0056	< .0056	< .0056	.0062 J	< .0056
selenium	mg/L	< .00074	< .00074	< .00074	< .00074	< .00074	< .00074
zinc	mg/L	.0673	< .023	.187	.0625	< .0291	< .0236
Volatile Organics							
1,1,2-trichloroethane	mg/L	< .0012	< .0012	< .0012	< .0012	< .0012	< .0012
1,1-dichloroethene	mg/L	< .00048	< .00048	< .00048	.0067	< .00048	< .00048
chloroform	mg/L	< .0014	< .0014	< .0014	< .0014	< .0014	< .0014
chloromethane	mg/L	< .002	.0021 J	< .002	< .002	< .002	< .002
cis-1,2-dichloroethene	mg/L	< .0018	< .0018	< .0018	.36	.13	.046
isopropylbenzene	mg/L	< .00054	< .00054	< .00054	< .00054	< .00054	< .00054
sec-butylbenzene	mg/L	< .00063	< .00063	< .00063	< .00063	< .00063	< .00063
tetrachloroethene	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049
toluene	mg/L	< .00085	< .00085	< .00085	.0017 J	< .00085	.0026 J
trans-1,2-dichloroethene	mg/L	< .00055	< .00055	< .00055	.0015 J	< .00055	< .00055
trichloroethene	mg/L	< .00042	< .00042	< .00042	.2	.061	.22
vinyl chloride	mg/L	< .00047	< .00047	< .00047	.079	.04	< .00047
Radiologicals							
radium 226	pCi/L	.55	1.65	.46	1.16	1.35	.7
radium 228	pCi/L	3.08	.49	4.02	.21	-1.47	2.2

mg/L = milligrams per liter
pCi/L = picoCurie per liter
J = indicates an estimated value

chromium and lead were detected the most frequently, with 7 and 8 detections respectively. One or more samples had detected concentrations of antimony, arsenic, and cadmium that exceeded the analyte's MCL.

Chromium was detected in concentrations ranging from 0.0052J mg/L to 0.0367 mg/L (at MW-3). None of these detections exceed chromium's MCL of 0.1 mg/L. The two highest lead concentrations occurred in MW-3 and MW-6 (0.027 mg/L and 0.034 mg/L respectively). Both of these detections are above the 0.015 mg/L MCL for lead.

Antimony was detected in MW-3 at a concentration of 0.029J mg/L. This exceeds the MCL for antimony (0.006 mg/L), however, antimony was also detected in the duplicate sample of the background well MW-1 at a concentration of 0.024J. Arsenic was detected in MW-2 at 0.085J mg/L, which exceeds the MCL of 0.05 mg/L. Arsenic was detected in the background well sample at a concentration of 0.1J mg/L. Two detections of cadmium exceeded it's MCL of 0.005 mg/L - 0.006 mg/L at MW-5 and 0.0285 at MW-8. Cadmium was not detected in the background well.

5.7.3 Extent of Contamination

The following discussion provides a summary of the extent of groundwater contamination based upon the data collected during this investigation. The following compounds are not discussed as explained below:

- 1,1,2-trichloroethane, 1,1-dichloroethene, chloroform, chloromethane, isopropylbenzene, sec-butylbenzene, tetrachloroethene, toluene, and trans-1,2-dichloroethene were detected in samples collected from isolated wells, and although these compounds may be present in groundwater they do not form a contiguous or mappable plume area.

- Antimony, arsenic, and mercury were detected in both the background well and in samples from downgradient monitoring wells. Based upon this, it appears that these metals may be naturally occurring.

- Several other metals are detected at isolated and infrequent points which do not form a continuous plume area that can be defined.

The analytical results indicate that the primary constituent detected in groundwater is TCE with lesser amounts of cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride. The latter two

compounds likely are degradation products of TCE. These three compounds appear to have had the most significant impact to groundwater quality and form mappable plume areas.

Trichloroethene

As described above, TCE is the most widely distributed compound and is present at the highest concentrations of any of the contaminants detected in groundwater. The analytical data indicate TCE is present at it's highest concentration in the shallow groundwater surrounding the landfill mass (wells MW-2, MW-4, and MW-5) and in the explosive demolition area (MW-3). The lateral distribution of TCE is shown on Figure 5-4.

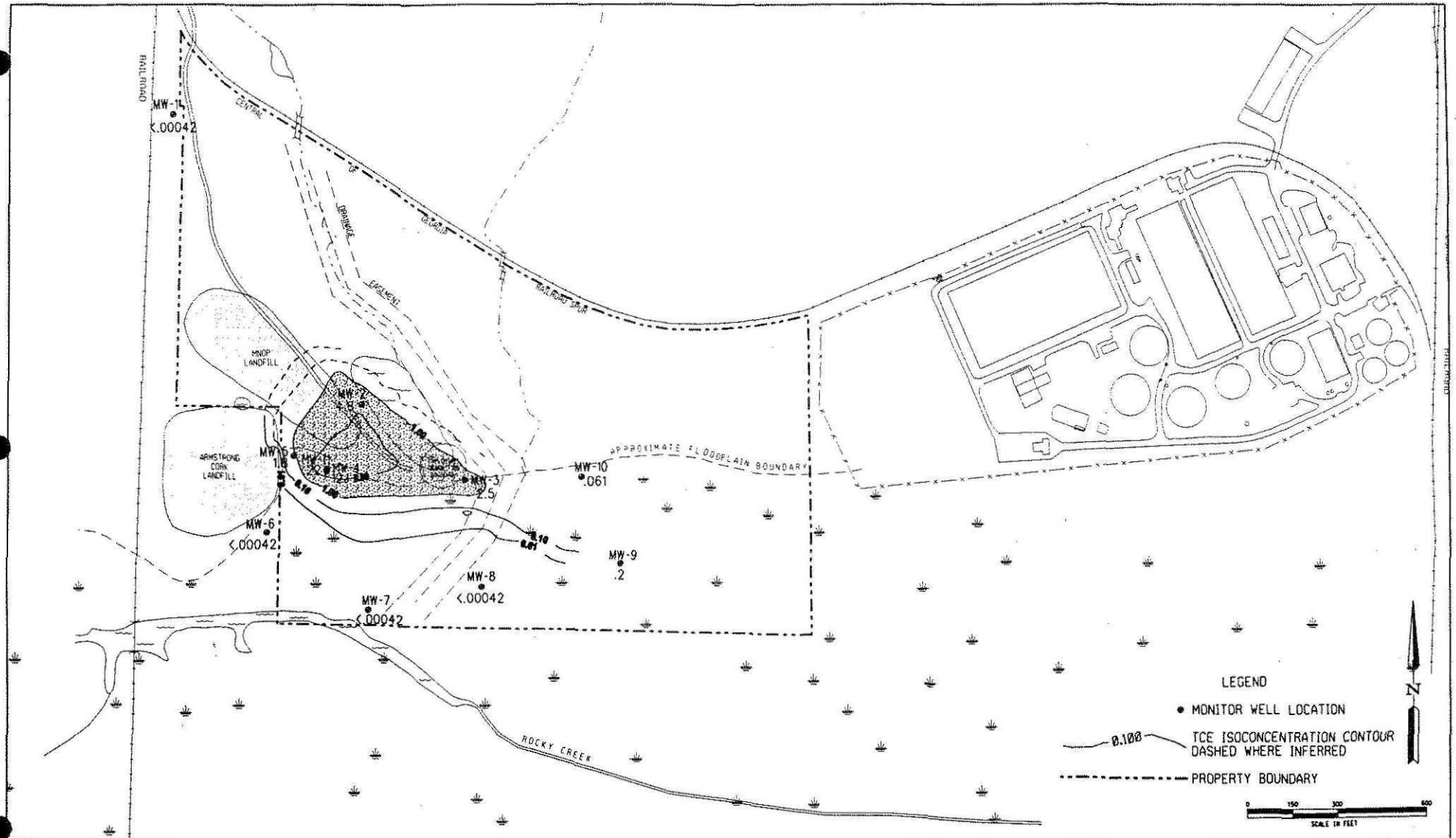
The data indicate that TCE has migrated vertically downward through the shallow aquifer(s) to a depth of at least 50 feet (MW-11). Also, based upon geologic/lithologic units, the primary contaminant migration pathways are expected to be the more permeable sands and silty sands of the underlying Tuscaloosa formation. The downward gradients observed at the well nest (MW-4/ MW-11) indicate a mechanism for downward infiltration of shallow groundwater into the deeper portions of the aquifer. Shallow strata throughout the floodplain (being composed primarily of clay) may form a less conductive water bearing unit in the hydrogeologic system.

The lateral extent of TCE cannot be determined at this time based upon the data collected. It can be said, however, that TCE is present at relatively high concentrations in the shallow groundwater localized to the MNOP landfill mass and to the explosive demolition area. Lower level concentrations of TCE at MW-9 and MW-10, which are located side-gradient to the source areas, may be indications of horizontal movement of the TCE in the shallow surficial units (Figure 5-4). However; it is also possible that the detections in these two wells are from an upgradient source of TCE which has been recently delineated within the AIP area (Rust, 1996). There are no upgradient wells north of MW-10 to establish the relationship to the AIP plume(s) at this time.

Based upon the data, it can be concluded that TCE does not appear to be significantly migrating through the shallow surficial unit as evidenced by an almost complete absence of TCE in the drive point and monitoring wells (MW-6, MW-7 and MW-8) located hydraulically down gradient from the landfill. Further, screening data suggest that while TCE is absent, the breakdown products of TCE (cis-1,2-DCE and vinyl chloride) were found to be present in the shallow groundwater in the drive point screening data.

Cis-1,2-Dichloroethene

The lateral and vertical extent of cis-1,2-DCE appears to be the same as TCE described above. This is as expected since this compound is believed to be present as an intermediate breakdown product of TCE. It is noted that in MW-9 and MW-10 the ratio of TCE to cis-1,2-DCE is about proportional



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RUST ENVIRONMENT & INFRASTRUCTURE

NOTES:
1 - ALL VALUES IN mg/L
2 - J - ESTIMATED VALUE

FIGURE 5-4
ANALYTICAL RESULTS FOR TCE IN GROUNDWATER
FORMER MNOP LANDFILL
MACON, GEORGIA

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verses the ratios of these compounds in wells near the landfill which show a predominance of TCE. A cis-1,2-DCE map is not presented in this report because it has a similar distribution to TCE.

Vinyl Chloride

The lateral extent of vinyl chloride in the shallow groundwater is similar to that described above for TCE and cis-1,2-DCE. The distribution of vinyl chloride is shown on Figure 5-5. Vinyl chloride is an expected breakdown product of both TCE and cis-1,2-DCE.

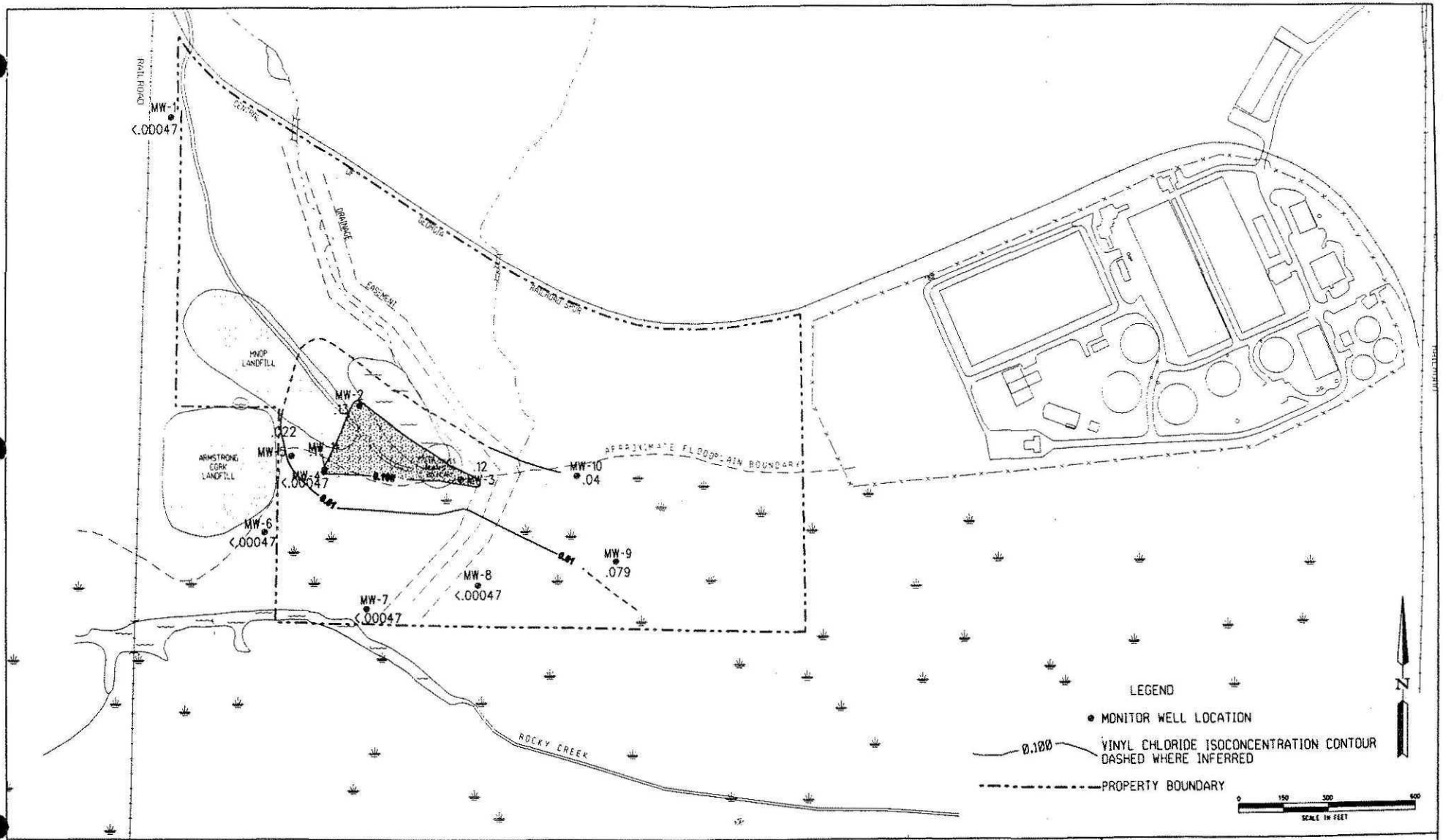
5.7.4 Fate and Transport

This section discusses transport and fate of the primary detected contaminants; TCE, cis-1,2-DCE and vinyl chloride. These constituents belong to a class of compounds referred to as halogenated aliphatic compounds, often referred to as alkyl halides. When released to soils and surface water this class of compounds are primarily lost to volatilization. This is due to the relatively high vapor pressure of these compounds. Once these compounds enter subsurface soils or groundwater the principal attenuating mechanisms are sorption, biodegradation and possibly volatilization in the vadose zone.

Halogenated aliphatic compounds are subject to biodegradation under both aerobic and anaerobic conditions (Chapelle, 1993). However, aerobic biodegradation only occurs under special conditions and has generally been found to play a minor role in the degradation process of halogenated aliphatic compounds. Hence, this explains the observed persistence of TCE in most shallow aerobic aquifer systems. Anaerobic degradation of these compounds is much more commonly observed and documented in the literature. Numerous studies have indicated that compounds such as TCE are progressively dechlorinated under anaerobic conditions. The tendency of reductive dehalogenation is to transform TCE to isomers of dichloroethene (cis- or trans-) and then to vinyl chloride. Research has also shown that complete dehalogenation in the subsurface environment is difficult to achieve (Chapelle, 1993).

Based upon site data, it appears that the contaminants of interest are probably undergoing slow dechlorination in the shallow water-table aquifer. Due to the proximity of the adjacent floodplain, conditions appear to be favorable for these processes to take place.

While some transformation may be occurring in the shallow water-table aquifer, these compounds are expected to be relatively persistent in the deeper groundwater systems of the Tuscaloosa. TCE and it's breakdown products should be transported at approximately the same rate as groundwater flow. Only slight retardation will occur from adsorption to aquifer materials. The ultimate fate



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NOTES:
1 - ALL VALUES IN mg/L
2 - J = ESTIMATED VALUE

FIGURE 5-5
ANALYTICAL RESULTS FOR VINYL CHLORIDE IN GROUNDWATER
FORMER MNOP LANDFILL
MACON, GEORGIA

of these contaminants will primarily be discharge to the floodplain and surface waters of Rocky Creek, or continued transport and migration into deeper aquifers.

6.0 ADDITIONAL ENVIRONMENTAL SAMPLING

6.1 SURFACE WATER

Surface water samples were collected from (1) multiple points along Rocky Creek, (2) overland drainage areas between the MNOP Landfill and Rocky Creek, and (3) sampling points along the up slope drainages to the landfill site. The Rocky Creek sampling locations included two sampling points approximately 1000 feet downstream of the landfill (LSW-8 and LSW-9), a number of points near the probable point of entry for overland drainage from within the MNOP property boundaries (LSW-4 through LSW-7) and two sampling locations up gradient (LSW-1 and LSW-2) as shown on Figure 6-1. Two of the overland drainage area sampling locations were located in the drainage easement right of way (LSW-5 and LSW-10) and one point was located at the outfall from the pond area (LSW-11). QC samples, consisting of replicates and trip blanks were also collected. Quality assurance (QA) samples (splits) were also collected and submitted to the USACE, SAD Laboratory located in Marietta, Georgia.

All surface water samples were analyzed for volatile organic compounds (EPA, 8260), semivolatile organic compounds and polynuclear aromatic hydrocarbons (EPA, 8270) and priority pollutant metals (EPA, 6010, 7060, 7421, 7740). Explosive residues (EPA, 8330) were tested in all samples except for LSW-12 and LSW-13. The sampling and analytical program implemented is outlined in Table 6-1.

6.1.1 Procedure

Surface water sample locations were approached from the creek bank and from the downstream direction to prevent possible disturbance of sediments or contamination of surface water by field personnel during sampling. Field parameters (pH, temperature, and conductivity) of the surface water were determined at each sample location. Samples for VOC analysis were collected at a depth of 0-2 inches from the water surface using a new glass jar. Sample vials were filled with in such a manner as to exclude air bubbles. Sample containers for other analyses were filled in a similar manner. The samples were properly documented, placed on ice, and shipped to the analytical laboratory.

6.1.2 Results

A total of thirteen surface water samples were collected in the Landfill area at the sampling locations depicted in Figure 6-1. The results of these analyses are summarized in Table 6-2.

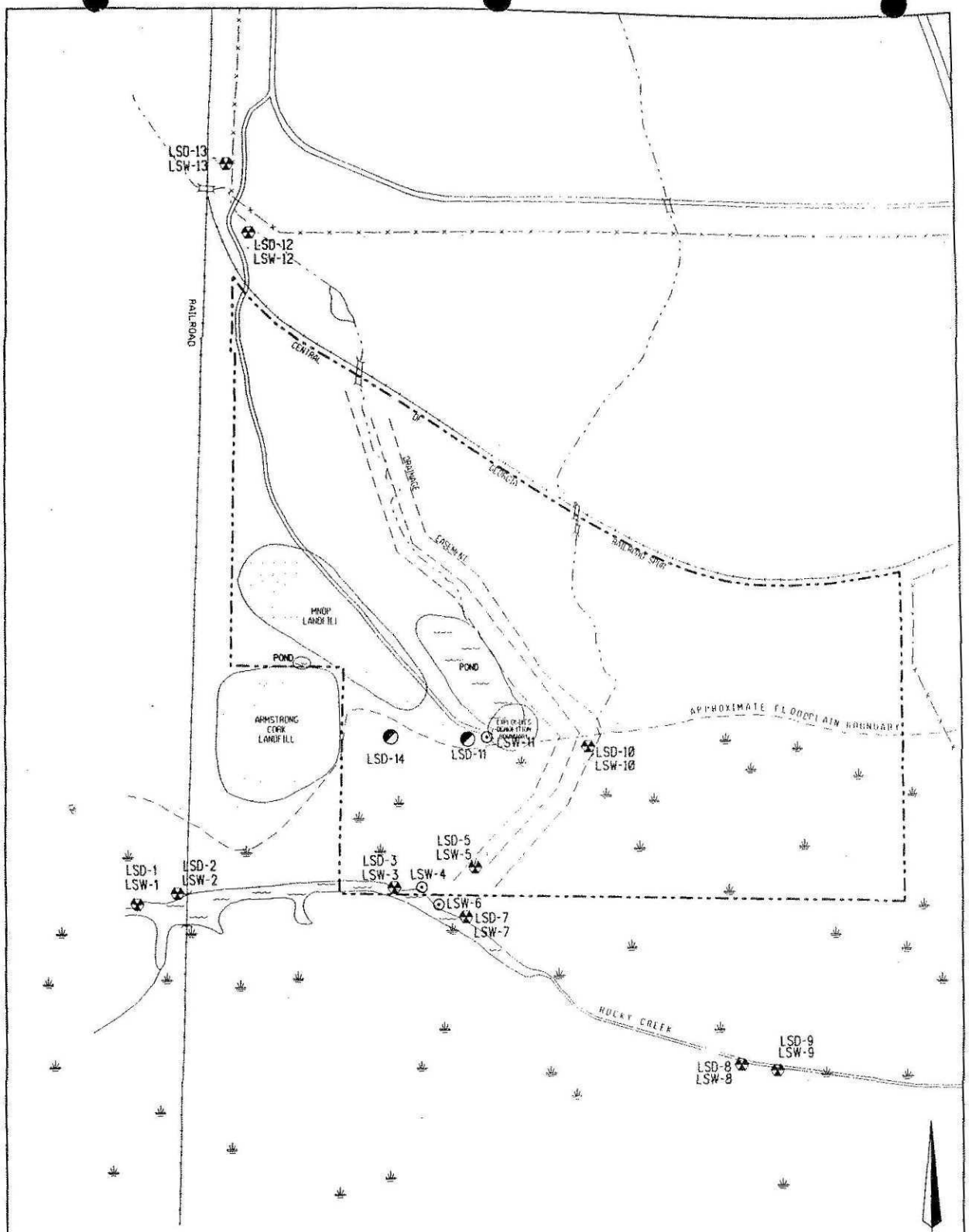

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FIGURE 6-1
SURFACE WATER/SEDIMENT SAMPLE LOCATIONS
FORMER MNOP LANDFILL
MACON, GEORGIA

Table 5-1
Surface Water, Sediment Sampling and Analytical Requirements
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Matrix	Field Samples	QC Samples	QA Samples	Trip Blanks	Total Samples	Analysis	Protocol	Analytical Procedures	Holding Time	Preservation Requirements	Sample (1) Containers	Total Containers
Surface Water from Rocky Creek and downgradient of landfill	11	1	1	2	15	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C Add HCl to pH<2 or NaHSO4	2-40 mL glass septa vial	30
	11	1	1	0	13	SVOC/PAH	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	2-1L amber glass	26
	11	1	1	0	13	Explosive Residues	SW-846	EPA 8330	14/40 days	Ice to 4 degrees C	2-1L amber glass	26
	11	1	1	0	13	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days, 28 days for mercury	HNO3 to pH<2 Ice to 4 degrees C	1-1L glass or plastic	26
Surface Water from property line	2	1	1	1	5	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C Add HCl to pH<2 or NaHSO4	2-40 mL glass septa vial	10
	2	1	1	0	4	SVOC/PAH	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	2-1L amber glass	8
	2	1	1	0	4	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days, 28 days for mercury	HNO3 to pH<2 Ice to 4 degrees C	1-1L glass or plastic	4
Sediment from Rocky Creek and downgradient of landfill	10	1	1	0	12	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C	1-125 mL glass septa vial	12
	10	1	1	0	12	SVOC/PAH	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	1-8 oz glass	12
	10	1	1	0	12	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days, 28 days for mercury	Ice to 4 degrees C	1-8 oz glass	12
	10	1	1	0	12	Explosive Residues	SW-846	EPA 8330	14/40 days	Ice to 4 degrees C	1-4 oz glass	12
Sediment from property line	2	1	1	0	4	VOC	SW-846	EPA 8260	14 days	Ice to 4 degrees C	1-125 mL glass septa vial	4
	2	1	1	0	4	Priority Pollutant Metals	SW-846	EPA 6010, 7060, 7421, 7740	180 days, 28 days for mercury	Ice to 4 degrees C	1-8 oz glass	4
	2	1	1	0	4	SVOC/PAH	SW-846	EPA 8270	7/40 days	Ice to 4 degrees C	1-8 oz glass	4

(1) Per EM-200-1-3, Table I-1, 31 March 95.

Table 6-2
Surface Water Analytical Data
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	LSW-1	LSW-2	LSW-3	LSW-4	LSW-5	LSW-6	LSW-7	LSW-8
Inorganics									
cadmium	mg/L	< .0019	< .0019	< .0019	< .0019	< .0019	< .0019	< .0019	< .0019
chromium	mg/L	< .0045	< .0045	< .0045	< .0045	< .0045	< .0045	< .0045	< .0045
copper	mg/L	< .0073	< .0073	< .0073	< .0073	< .0073	< .0073	< .0073	< .0073
lead	mg/L	< .00089	< .00089	< .00089	< .00089	< .00089	< .00089	< .00089	< .00089
mercury	mg/L	< .00005	< .00005	< .00005	< .00005	< .00005	< .00005	< .00005	< .00005
nickel	mg/L	< .0056	< .0056	< .0056	< .0056	< .0056	.014 J	< .0056	< .0056
zinc	mg/L	< .0207	< .017 J	< .02 J	< .018 J	< .019 J	< .0479	< .019 J	< .018 J
Volatile Organics									
bromomethane	mg/L	< .00049 J	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049
cis-1,2-dichloroethene	mg/L	< .0018 J	< .0018	< .0018	< .0018	< .0018	< .0018	< .0018	< .0018
trichloroethene	mg/L	< .00042 J	< .00042	< .00042	< .00042	< .00042	< .00042	< .00042	< .00042

mg/L = milligrams per liter
J = indicates an estimated value

Table 6-2 (continued)
Surface Water Analytical Data
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	LSW-9	LSW-10	LSW-11	LSW-11D	LSW-12	LSW-12D	LSW-13
Inorganics								
cadmium	mg/L	< .0019	.0023 J	< .0019	.0033 J	.00949	< .0019	< .0019
chromium	mg/L	< .0045	< .0045	< .0045	< .0045	< .0045	.0052 J	< .0045
copper	mg/L	< .0073	< .0073	.0097 J	.0083 J	< .0073	< .0073	< .0073
lead	mg/L	< .00089	.0049	.0053	.0037	< .00089	< .00089	< .00089
mercury	mg/L	< .00005	< .00005	.0003	.0003	.0002 J	< .00005	.0002 J
nickel	mg/L	< .0056	< .0056	< .0056	< .0056	< .0056	< .0056	< .0056
zinc	mg/L	< .016 J	.0574	.107	.106	.046	< .0424	< .0346
Volatile Organics								
bromomethane	mg/L	< .00049	< .00049	< .00049	< .00049	< .00049	< .00049	.0026 J
cis-1,2-dichloroethene	mg/L	< .0018	.051	< .0018	< .0018	< .0018	< .0018	.0049 J
trichloroethene	mg/L	< .00042	.38	< .00042	< .00042	.0086	.0069	.032

mg/L = milligrams per liter
J = indicates an estimated value

The results of the eight surface water samples collected from Rocky Creek indicate that surface waters do not exhibit the presence of VOCs, SVOCs, explosive residues, or priority pollutant metals except for a single detection of nickel in the sample collected at location LSW-6. Nickel was detected at a concentration of 0.014 J mg/L which is below the Georgia in-stream water quality standard of 0.088 mg/L.

The remaining five surface water sample locations were collected from drainage features located within the boundary of the former MNOP. Two of these points are located on the tributary of Rocky Creek where it flows onto the northwest side of the MNOP property, LSW-12 and LSW-13. These locations are the point of entry for surface waters entering the northern part of the site. The results of sampling indicate the presence of TCE at a concentration of 0.007 mg/L to 0.032 mg/L at LSW-12 and LSW-13, respectively. In addition, trace concentrations (less than 0.005 mg/L) of bromomethane and cis-1,2-dichloroethene were also detected in samples collected from LSW-13. Inorganics detected at these points include cadmium, chromium, mercury and zinc. Georgia in-stream standards were exceeded for cadmium (0.0007 mg/L) at LSW-12 and for mercury (0.000012 mg/L) at both LSW-12 and LSW-13. TCE has an in-stream standard of 0.080 mg/L but was not exceeded at these upstream points.

The results of surface water sampling at LSW-10, located in the drainage easement east of the pond and landfill refuse area, indicate the surface water in this overland flow area exhibits the presence of TCE (0.38 mg/L), cis-1,2-dichloroethene (0.051 mg/L), and a number of inorganics including cadmium (0.0023 J mg/L), lead (0.0049 mg/L), and zinc (0.0574 mg/L). Georgia in-stream water quality standards were exceeded for TCE, cadmium and lead at this point. Cadmium and lead have Georgia in-stream standards of 0.0007 mg/L and 0.0013 mg/L, respectively.

The results of sampling at LSW-11, which sampled surface water discharging from the pond located immediately east of the landfill, indicated that no VOCs, SVOCs or explosive residues were detected in surface water at this location. However, several inorganic parameters were detected including lead (0.0053 mg/L), mercury (0.0003 mg/L), copper (0.0097 J mg/L) and zinc (0.107 J mg/L). Georgia in-stream water quality standards were exceeded for lead, mercury (0.000012 mg/L), and copper (0.0065 mg/L).

The remaining surface water point located in the drainage easement (LSW-5) did not reveal any target analytes above the laboratory quantitation limit.

6.2 SEDIMENT SAMPLING

Twelve sediment samples were collected at the locations depicted in Figure 6-1. Six sediment samples were collected within the former MNOP Landfill property and six were collected from Rocky Creek. QC samples, consisting of replicates and trip blanks were collected. Quality assurance (QA) samples (splits) were also collected and submitted to the USACE, SAD Laboratory located in Marietta, Georgia.

All sediment samples were analyzed for volatile organic compounds (EPA, 8260), semivolatile organic compounds/polynuclear aromatic hydrocarbons (EPA, 8270) and priority pollutant metals (EPA, 6010, 7060, 7421, 7740). Explosive residues (EPA, 8330) were tested in all samples except for LSD-12 and LSD-13 located at the northwest (upgradient) corner of the site. The sampling and analytical program implemented is outlined in Table 6-1.

6.2.1 Procedure

Sediment samples were collected at each station to represent stream bed or drainage area sediments. A clean, stainless steel spoon or grain scoop was used to collect the sample. For VOCs, the sample container was gently tapped as the sample was placed in the container, and the container was completely filled to eliminate any headspace. For other analyses the sediment was gently mixed, quartered, and placed in the sample containers.

6.2.2 Results

The results of sediment sampling are provided in Table 6-3. All samples within the boundary of the MNOP property had various inorganic parameters. The inorganics detected included beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc. Beryllium, chromium, copper, lead, nickel and zinc were detected at similar concentrations in LSD-12 and LSD-13 (northwest tributaries upgradient from Landfill) and in LSD-1 and LSD-2 (upgradient points in Rocky Creek) as compared to sediment sampling points within the MNOP boundary (LSD-5, LSD-10, LSD-11, and LSD-14). Hence, it is concluded that these inorganic parameters are probably naturally occurring in the sediments. Cadmium, however, was detected at concentrations which appear elevated. In addition mercury, selenium, and silver were not detected in any upgradient sediment sampling points. Cadmium was detected at it's highest concentration within the MNOP boundary at LSD-14 (17 mg/Kg) compared to the 0.95 mg/Kg to 1.42 mg/Kg detected at upgradient sediment locations. Mercury and selenium were detected at one sampling point (LSD-5) at concentrations of 0.975 mg/Kg and 0.9 J mg/Kg. Silver was detected in one sample (LSD-11) at a concentration of 1.7 mg/Kg.

35a

Table 6-3
Sediment Analytical Data
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	LSD-1	LSD-2	LSD-3	LSD-5	LSD-7	LSD-8	LSD-9
Inorganics								
beryllium	mg/kg	.3 J	.38 J	.24 J	.43 J	.04 J	.35 J	.38 J
cadmium	mg/kg	< .42	.47 J	.49 J	5.09	< .23	.65 J	4.88
chromium	mg/kg	14.5	15.7	8.29	35	1.1 J	10.9	15.6
copper	mg/kg	9.41	9.09	4.74	20.3	< .9	7.1	11.5
lead	mg/kg	42	28.7	18.6	53.4	3.79	13.9	22.5
mercury	mg/kg	< .13	< .067	.058 J	.975	< .038	.15 J	< .077
nickel	mg/kg	3.2 J	4.54	2.4 J	5.88	.6 J	3.1 J	3.1 J
selenium	mg/kg	< .17	< .12	.61 J	.9 J	< .09	.69 J	.57 J
silver	mg/kg	< .44	< .31	< .28	< .38	< .24	< .33	< .34
zinc	mg/kg	27.2	31.2	27.6	45.7	4.73	30.6	37.7
Volatile Organics								
bromomethane	mg/kg	< .0011	< .00079 J	< .0007 J	< .00095	< .00059	< .00082	< .00084
cis-1,2-dichloroethene	mg/kg	< .004	< .0029 J	< .0026	< .0034	< .0022	< .003	< .0031
o-xylene	mg/kg	< .0032	< .0023 J	< .0021	< .0028	< .0017	< .0024	< .0025
sec-butylbenzene	mg/kg	< .0014	< .001 J	< .00091	< .0012	< .00076	< .0011	< .0011
tert-butylbenzene	mg/kg	< .0013	< .00095 J	< .00085	< .0011	< .00072	< .00099	< .001
trans-1,2-dichloroethene	mg/kg	< .0012	< .00088 J	< .00079	< .0011	< .00067	< .00092	< .00095
trichloroethene	mg/kg	< .00095	< .00068 J	< .00061	< .00082	< .00051	< .00071	< .00073
vinyl chloride	mg/kg	< .0011	< .00076 J	< .00068	< .00092	< .00057	< .00079	< .00082
Semivolatile Organics								
benzo(a)pyrene	mg/kg	< .3	< .21	< .19	.76	< .16	< .22	.75
benzo(b)fluoranthene	mg/kg	< .19	< .13	< .12	< .32	< .1	< .14	.21 J
benzo(g,h,i)perylene	mg/kg	< .27	< .19	< .17	1.2	< .15	< .2	1.1
bis(2-ethylhexyl)phthalate	mg/kg	< 2	< 1.4	< 1.3	< 3.4	< 1.1	< 1.5	< 1.5
chrysene	mg/kg	< .36	< .26	< .23	< .62	< .2	< .27	.59
di-n-butyl phthalate	mg/kg	< .34	< .24	< .22	< .58	< .18	< .25	< .26
phenanthrene	mg/kg	< .21	< .15	< .13	< .35	< .11	< .15	< .16
pyrene	mg/kg	< .3	< .21	< .19	< .51	< .16	< .22	.26 J

mg/kg = milligrams per kilogram
J = indicates an estimated value

Table 6-3 (continued)
Sediment Analytical Data
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	LSD-10	LSD-11	LSD-11D	LSD-12	LSD-12D	LSD-13	LSD-14
Inorganics								
beryllium	mg/kg	.19	.15	.16	.19	.17	.058	.23
cadmium	mg/kg	9.87	8.91	7.41	1.42	2.64	.95	17
chromium	mg/kg	9.27	19.3	16.4	8.14	7.3	3.57	15.8
copper	mg/kg	15.9	48.8	51	7.48	9.42	2.4	73.7
lead	mg/kg	42.4	52.2	49.1	32.1	29.2	9.31	41.6
mercury	mg/kg	< .036	< .047	< .044	< .039	< .038	< .032	< .11
nickel	mg/kg	3.35	8.18	5.2	2.8	2.4	< 1.3	10
selenium	mg/kg	< .11	< .14	< .13	< .11	< .11	< .094	< .33
silver	mg/kg	< .28	1.7	1.89	< .3	< .29	< .25	< .86
zinc	mg/kg	72.6	136	140	58.3	53.2	22.7	230
Volatile Organics								
bromomethane	mg/kg	< .0007	< .00092	< .00086	< .00075	.015	< .00062	< .0021 J
cis-1,2-dichloroethene	mg/kg	.0086	.0081 J	< .0031	< .0027	< .0026	< .0022	< .0078 J
o-xylene	mg/kg	< .002	< .0027	.0027 J	< .0022	< .0021	< .0018	< .0063 J
sec-butylbenzene	mg/kg	< .0009	< .0012	< .0011	< .00097	< .00094	< .0008	.019 J
tert-butylbenzene	mg/kg	< .00084	< .0011	< .001	< .00091	< .00088	< .00075	.015 J
trans-1,2-dichloroethene	mg/kg	< .00078	.0034 J	.0023 J	< .00085	< .00082	< .0007	< .0024 J
trichloroethene	mg/kg	< .0006	.0042 J	< .00074	< .00065	< .00063	< .00054	< .0019 J
vinyl chloride	mg/kg	.0033	< .00089	< .00083	< .00073	< .00071	< .0006	< .0021 J
Semivolatile Organics								
benzo(a)pyrene	mg/kg	.8	< .25	< .23	< .2	< .2	< .17	< .58 J
benzo(b)fluoranthene	mg/kg	.36	< .16	< .14	.14	< .12	< .1	< .36 J
benzo(g,h,i)perylene	mg/kg	.83	< .23	< .21	< .19	< .18	< .15	< .53 J
bis(2-ethylhexyl)phthalate	mg/kg	1.6	2.3	1.8	< 1.4	< 1.3	< 1.1	< 3.8 J
chrysene	mg/kg	.66	< .3	< .28	< .25	< .24	< .2	< .71 J
di-n-butyl phthalate	mg/kg	< .22	< .28	.32	< .23	< .23	< .19	< .66 J
phenanthrene	mg/kg	< .13	< .17	< .16	.15	< .14	< .12	< .4 J
pyrene	mg/kg	.34	< .25	< .23	< .2	< .2	< .17	< .58 J

mg/kg = milligrams per kilogram
J = indicates an estimated value

Two locations, LSD-10 and LSD-11, contained multiple detections of both SVOCs and VOCs (Table 6-3). These two locations are southeast of the landfill area. Two locations, LSD-5 and LSD-14, evidenced detections of a limited number of SVOCs and VOCs. VOCs and SVOCs were generally not detected in the upgradient sediment locations except for a single, possibly anomalous, detection of bromomethane (0.015 mg/Kg) in LSD-12D, a replicate sample taken at LSD-12. No explosive residue compounds were detected in any of the samples analyzed.

All six sediment samples from Rocky Creek contained one or more of the inorganic parameters listed above for samples collected within the MNOP boundary. However, concentrations of these inorganic parameters were generally found to be within the same range of values as the upgradient sediment sample locations. No VOCs or explosive residue compounds were detected in any of the Rocky Creek sediment samples. SVOCs were not detected in any other samples except for LSD-9 (downstream point) which exhibited the presence of benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, and pyrene (Table 6-3).

6.3 BIOTA SAMPLING

6.3.1 Procedures

Biota sampling was conducted at Rocky Creek, which runs along the southern portion of the former MNOP Landfill site. Collection of aquatic life (i.e., fish) was done by electrofishing both up stream and down stream of the landfill.

Electrofishing of Rocky Creek took place on March 25 and May 1, 1996. Fish collected during both sampling events, include: redear sunfish (*Lepomis microlophus)*, redbreast sunfish (*Lepomis auritus*), longear sunfish (*Lepomis megalotis*), bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), white crappie (*Pomoxis annularis*), redfin pickerel (*Esox americanus*), American eel (*Anguilla rostrata*), gizzard shad (*Dorosoma cepedianum*), silver redhorse sucker (*Moxostoma anisurum*), spotted sucker (*Minytrema melanops*), creek chub (*Semotilus atromaculatus*), golden shiner (*Notemigonus crysoleucas*), Ocmulgee shiner (*Cyprinella callizera*), and inland silverside (*Menidia beryllina*). During the March sampling, no samples for contaminant analysis were collected due to stream access problems, and rising water levels due to thunderstorms. Samples for contaminant analysis were obtained during the May 1, 1996 sampling event. Samples collected include four fish caught from down stream locations- a bluegill (138mm), white crappie (185mm), spotted sucker (438mm), and a silver redhorse sucker (345mm). A spotted sucker (394mm) was also caught up stream (200-500 feet upstream of the Central Railroad tracks) of the landfill area. All fish were filleted in the field prior to shipment to the lab.

6.3.2 Results

Fish were analyzed for selected ICP metals (Method 6010), Pesticides/PCB's (Method 8080), PAH's (Method 8100), selected volatiles (TCE & vinyl chloride) (Method 8240), explosives (Method 8330), cyanide (Method 9010), and total recoverable petroleum hydrocarbons (Method 418.1). All analytes, except for TRPH, barium, selenium, and Aroclor 1254, were not detected at or above the limits of detection. The results of analyses are summarized in Table 6-4.

TRPH was detected in the 2 spotted suckers and the silver redhorse sucker (not enough sample was available to analyze for TRPH in the bluegill and the white crappie). TRPH levels in the downstream spotted sucker were 260 mg/kg while levels in the upstream spotted sucker were 940 mg/kg. TRPH levels in the silver redhorse sucker were 510 mg/kg. No benchmarks are available against which to directly compare these levels. However, by using a common surrogate chemical for TRPH, such as hexane, these levels can be compared to the EPA Region III Risk-based Concentration (RBC) for fish. The RBC for hexane is 81 mg/kg. This comparison assumes that all of the TRPH is present as hexane, which is unlikely.

Barium (1.5 mg/kg) and selenium (1.4 mg/kg) were detected in the silver redhorse sucker. No benchmark exists for barium. The RBC for selenium is 6.8 mg/kg.

Aroclor 1254 was detected in all of the fish analyzed. Levels detected in the down stream fish were 0.42 mg/kg (bluegill), 0.45 mg/kg (white crappie), 0.49 mg/kg (spotted sucker), and 0.35 mg/kg (silver redhorse sucker). The upstream spotted sucker had a level of 0.2 mg/kg. All of these samples are greater than the RBC of 0.027 mg/kg.

Table 6-4
Biota Analytical Data
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Parameter	Unit	BG-1 5/01/96	SU-1 5/01/96	SU-2 5/01/96	SU-3 5/01/96	WC-1 5/01/96
Inorganics						
barium	mg/kg	< 1.1	< 1.1	1.5	< 1	< 1
selenium	mg/kg	< 1.1	< 1.1	1.4	< 1	< 1
Pesticides/PCBs						
aroclor 1254	mg/kg	.42	.49	.35	.2	.45
PAH						
total petroleum hydrocarbons	mg/kg	NA	260	510	940	NA

mg/kg = milligrams per kilograms
NA = not analyzed
BG-1 = Bluegill (138 mm)
SU-1 = Spotted Sucker (438 mm)
SU-2 = Silver Redhorse Sucker (345 mm)
SU-3 = Spotted Sucker (394 mm - Upstream)
WC-1 = White Crappie (185 mm)

7.0 ENVIRONMENTAL RECEPTORS

Access to the former MNOP Landfill site is gained through several routes including two dirt roads entering the property from the AIP property to the north and one from a gravel road entering from the Armstrong Cork property to the west. All three roads converge at the northwest corner of the property where a dirt road leads south to the landfilled area. The landfill occupies approximately 15 acres while the remaining property is undeveloped. A new chain-link property fence has been erected on the Armstrong Cork property near the southwestern edge of the landfill. All other portions of the site have unrestricted access. Several drainage features flow across the site from north to south discharging into Rocky Creek. Two areas of ponded water have been identified, one west and the other immediately east of the landfill.

An ecological reconnaissance of the former MNOP Landfill site was conducted on May 2, 1996. The Rocky Creek floodplain, which lies immediately south and downgradient of the landfill, was also visited as part of the biota sampling discussed in Section 6.0. The following paragraphs discuss the findings of the reconnaissance.

- The vegetation over the landfill had recently been disturbed due to field investigation efforts. There was no canopy layer, although small scattered trees were noted. The trees present were small (up to 20 feet) and included loblolly pine (*Pinus taeda*), box-elder (*Acer negundo*), white ash (*Fraxinus americana*), chinaberry (*Melia azedarach*), and wild black cherry (*Prunus serotina*). The shrub layer was also patchy, and contained the following species: Groundsel-tree (*Baccharis halimifolia*), smooth sumac (*Rhus glabra*), and Chickasaw plum (*Prunus angustifolia*). The herb layer was dense over all of the landfill except for the north-central portion, where the ground was bare due to recent bulldozer activity. Herbs which are present over the rest of the landfill included trumpet-creeper (*Campsis radicans*), red sorrel (*Rumex acetosella*), Japanese honeysuckle (*Lonicera japonica*), goldenrod (*Solidago* sp.), blackberry (*Rubus allegheniensis*), broom-sedge (*Andropogon virginicus*), passion flower (*Passiflora incarna*), vetch (*Vicia* sp.), and sassafras (*Sassafras albidum*) seedlings.

  The Rocky Creek floodplain, located immediately south of and downgradient from the landfill, is fairly mature, and has a closed canopy. Dominant species in the canopy layer include red maple (*Acer rubrum*), sycamore (*Platanus occidentalis),* black willow (*Salix nigra*), black gum (*Nyssa sylvatica* var. *biflora*), box-elder, and cherrybark oak (*Quercus falcata* var. *pagodaefolia*). The shrub layer is sparse, and most components are saplings of the previously noted tree species

(especially red maple). Other species present in this stratum include dog-hobble (*Leucothoe axillaris*), strawberry bush (*Euonymus americanus*), bayberry (*Myrica cerifera*), and Virginia-willow (*Itea virginica*). Dominants in the herb stratum include manna grass (*Glyceria striata*), soft rush (*Juncus effusus*), lizard's-tail (*Saururus cernuus*), sensitive fern (*Onoclea sensibilis*), green arum (*Peltandra virginica*), sedge (*Carex comosa*), bur-reed (*Sparganium americanum*), cane (*Arundinaria gigantea*), false nettle (*Boehmeria cylindrica*), butterweed (*Senecio glabellus*), Virginia-creeper (*Parthenocissus quinquefolia*), poison-ivy (*Toxicodendron radicans*), muscadine grape (*Vitis rotundifolia*) and, in the wettest areas (including some sluggish portions of Rocky Creek proper), parrot-feather (*Myriophyllum aquaticum*).

- The only mammals observed in the immediate vicinity of the landfill were two coyote (*Canis latrans*). Tracks of white-tailed deer (*Odocoileus virginianus*) were also observed. Birds noted in the immediate vicinity of the landfill include indigo bunting (*Passerina cyanea*), northern cardinal (*Cardinalis cardinalis*), and mourning dove (*Zenaida macroura*).

  Mammal signs observed within the Rocky Creek floodplain include trees gnawed by beaver (*Castor canadensis*), and tracks of dogs (*Canis domesticus*) and white-tailed deer. Birds observed in the floodplain (including Rocky Creek) include a great blue heron (*Ardea herodias*), Carolina chickadee (*Parus carolinensis*), brown-headed cowbird (*Molothrus ater*), and numerous other songbirds. Reptiles observed within the floodplain include an eastern box turtle (*Terrapene carolina*) and an unidentified snake.

- Invertebrates observed within Rocky Creek include water striders (Order Hemiptera; Family Gerridae), water boatmen (Order Hemiptera; Family Corixidae), and crayfish (*Cambarus* sp.). Fishes observed in Rocky Creek (via electrofishing) were bluegill (*Lepomis macrochirus*), redbreast sunfish (*Lepomis auritus*), longear sunfish (*Lepomis megalotis*), white crappie (*Pomoxis annularis*), largemouth bass (*Micropterus salmoides*), creek chub (*Semotilus atromaculatus*), redfin pickerel (*Esox americanus*), longnose gar (*Lepisosteus osseus*), gizzard shad (*Dorosoma cepedianum*), golden shiner (*Notemigonus crysoleucas*), spotted sucker (*Minytrema melanops*), silver redhorse sucker (*Moxostoma anisurum*), Ocmulgee shiner (*Cyprinella callizera*), and inland silverside (*Menidia beryllina*).

- Evidence of human activity near the landfill included tire tracks, spent shotgun shells, and discarded appliances and construction/demolition debris. Two monitoring wells are located near the southern edge of the landfill.

  The most utilized access to Rocky Creek and its associated floodplains is via a dirt road which parallels the Central of Georgia railroad tracks, and cross Rocky Creek approximately 250 feet upstream of the landfill. Evidence of human activity in Rocky Creek and its associated floodplain included hunting tree stands, fishing debris (tangled line, lures in overhanging trees, bait containers, etc.), a trash barrel, and trodden paths along the creek in the immediate vicinity of the trestle. Conversation with three fisherman indicated that their catch consisted of bluegill and crappie. They also reported having seen an alligator (*Alligator mississippiensis*) in the backwater area upstream of the trestle.

In summary, potential receptors may come into contact with contaminated media associated with the former MNOP Landfill site. Evidence in the vicinity of the landfill indicates that hunters utilize the area. Rocky Creek is frequently used by fishermen. Other possible human receptors for the landfill are environmental samplers or trespassers (dumping debris etc.). Exposure to human receptors could potentially occur via incidental ingestion of and dermal contact with soil, inhalation of particulates from soil, and ingestion of contaminated fish or game. Ecological receptors are numerous and include a variety of small and large mammals, birds, and aquatic organisms in Rocky Creek.

8.0 PROPERTIES AND RESPONSIBLE PARTIES

8.1 SITE PROPERTY OWNERSHIP HISTORY

The public records reviewed by Rust during research for the Project Action Plan indicated that the former MNOP Landfill site was purchased by the Navy from the City of Macon in 1955. The landfill site was included in the sale of the entire MNOP to Maxson Electronics in 1965, and in the subsequent sale to Allied Chemical Corporation in 1973 and the Macon-Bibb County Industrial Authority in 1981. In 1989, the Macon-Bibb County Industrial Authority exchanged property with the Macon Water Authority, swapping the 40 acre parcel of land containing the Landfill for 19 acres located north of the Central of Georgia railroad tracks. Therefore, the current property owner of the former MNOP Landfill site is the Macon Water Authority.

8.2 OFF-SITE PROPERTY OWNERSHIP

The former MNOP Landfill site is bordered to the west and south by property owned by Armstrong Cork. The property to the west contains an inactive landfill once operated by Armstrong Cork. The property to the north consists of the AIP which consists of light industrial and commercial businesses. Property in the AIP is either owned by individual businesses or is leased from the Macon-Bibb County Industrial Authority. Property to the east is owned by the Macon Water Authority and contains a waste water treatment facility.

9.0 SUMMARY OF PREVIOUS ACTIONS

Limited environmental investigations have been conducted at the former MNOP Landfill site prior to this investigation. These studies are described in Section 1.2.

Only one action has been identified as having reduced the environmental risk posed by the source areas. During the sites' ownership by Allied Chemical Company, the landfill was covered with soil and active use was discontinued. No actions have been identified for the explosive demolition area.

10.0 COMPLIANCE WITH RISK REDUCTION STANDARDS

The Georgia HSRA regulations specify that a site listed on the HSI must meet one of five risk reduction standards (RRS). The requirements of the RRS, identified as Type 1 through Type 5, are described in Rule 391-3-19-.07 of Georgia Department of Natural Resources Environmental Protection Division Hazardous Site Response (HSRA). Type 1 and 2 RRS criteria apply to residential properties and provide for either a standardized approach to exposure assumptions and defined risk levels (Type 1) or a site-specific risk assessment (Type 2). The Type 3 and 4 RRS apply to non-residential properties following the same standardized versus site-specific approach to risk evaluation. The Type 5 RRS applies to sites where the application of Type 1 through 4 is not appropriate and allows for the use of measures to control the regulated substances on the property where the regulated substances are located.

A detailed description of the evaluation procedure applied to the analytical data collected is found in Appendix C. The appendix presents the evaluation grouped by the RRS risk evaluation approach. Therefore, Type 1 and 3 RRS are discussed first as they require a standardized approach to exposure assumptions and defined risk levels. A discussion of Type 2 and 4 RRS follows in which a site-specific approach to risk evaluation is applied.

10.1 GROUNDWATER DATA

The results of the RRS evaluations indicate that the primary regulated substances in groundwater are TCE and vinyl chloride and to a lesser extent metals depending on the RRS criteria being compared. A total of 10 analytes were found to exceed the Type 1 (residential) and Type 3 (non-residential) RRS at some point in the groundwater of the landfill. Of these, the primary constituents exceeding the Type 1 or Type 3 criteria were TCE and vinyl chloride. Four metals also (antimony, arsenic, cadmium, and lead) exceeded the criteria. The metals criteria, however, were not exceeded in more than one or two groundwater samples each.

A comparison of the calculated Type 2 RRS to site groundwater concentrations indicate that antimony, arsenic, cadmium and cis-1,2-dichloroethene and lead exceeded the standard in two samples. Arsenic was detected at a concentration above the Type 2 RRS in the sample from the background well (MW-1). Antimony, arsenic, cadmium, and cis-1,2-dichloroethene are dropped when compared to the Type 4 RRS, leaving only TCE, vinyl chloride and lead as regulated substances with respect to the non-residential scenario.

10.2 SOIL DATA

The soils evaluation indicated a number of inorganic and organic parameters that were detected in samples at concentrations in excess of the Type 1 and Type 3 soil RRS. Metals (antimony, cadmium, chromium, copper, lead, mercury, nickel, and zinc), PCBs (arochlor 1248 and arochlor 1260) and two semi-VOCs (benzo(a)pyrene and chrysene) exceeded the standards. In addition, a number of VOCs and SVOCs were detected in the Landfill soils that do not have established standards. Based upon the levels detected for metals and PCBs it was concluded that the landfill soils did not meet the Type 1 or Type 3 criteria and further evaluation of these standards were not performed.

For the evaluation of Type 2 (residential) and Type 4 (non-residential) standards the regulated substances were screened against several criteria to limit the number of parameters evaluated. The results of this evaluation indicated that the Type 2 RRS is exceeded for PCBs, benzo(a)pyrene, lead, and para-cymene at multiple points. Lead and para-cymene exceed the calculated Type 4 concentrations at several points. It is noted that since some compounds were not included in the Type 2 and 4 evaluations additional compounds may be present above their respective RRS.

10.3 SUMMARY

Based upon the data evaluation, all four of the RRS are exceeded at some point in the groundwater and soil. In addition, while the Type 2 (residential) or Type 4 (non-residential) standards would apply to any off-site properties affected, the Type 4 (non-residential) standards would likely apply to the non-residential use of the subject property at this time. The Type 2 and Type 4 standards (see Table C4-4 and C5-1 in Appendix C) are considered "safe concentrations" by the State of Georgia, based upon the two scenarios presented in Appendix C, and may be considered preliminary remedial goals.

11.0 CONCLUSIONS AND RECOMMENDATIONS

11.1 CONCLUSIONS

11.1.1 Extent of Contamination

Based upon data collected during the current and past investigations we conclude that:

Groundwater

- A release of HSRA regulated substances has occurred to the groundwater of the MNOP landfill site. TCE was the primary organic constituent released to groundwater.

- Gross contamination by TCE and other regulated substances appears to be localized to areas immediately surrounding the landfill mass and near the explosive demolition area.

- No evidence of explosive residues, semi-volatiles, pesticides, or PCBs were detected in groundwater samples analyzed.

- Downgradient of the landfill, TCE does not appear to be migrating significantly in the surficial (Quaternary) unit, as evidenced by an almost complete absence of TCE in samples collected from shallow drive point and monitoring wells south of the landfill. Also, based on screening data (drive point wells), it appears that since the breakdown products of TCE (cis-1,2-DCE and vinyl chloride) are present in the shallow groundwater of the floodplain area, TCE may be actively degrading in these areas.

- TCE and other site related constituents were detected in samples collected from monitor wells MW-9 and MW-10 which are located some 600 to 900 feet east and southeast of the landfill. The horizontal extent of the contaminant plume in the surficial aquifer of this area has not been determined. Also, since these wells are located side-gradient to the source areas an upgradient source is possible.

- The contaminant plume has migrated vertically downward through the shallow aquifer(s) to a depth of at least 50 feet (MW-11) in the landfill source area. The downward hydraulic gradients observed at the landfill indicate a clear mechanism for downward infiltration of shallow groundwater into the deeper portions of the aquifer.

Based upon geologic/lithologic units, the primary contaminant migration pathways are likely the more permeable sands and silty sands of the underlying Tuscaloosa formation. The current investigation did not fully investigate vertical or horizontal extent in the Tuscaloosa aquifer(s).

- While some transformation may be occurring in the shallow water-table aquifer, TCE, cis-1,2-DCE and vinyl chloride will probably be relatively persistent in the deeper groundwater systems of the Tuscaloosa. TCE and it's breakdown products should be transported at approximately the same rate as groundwater flow. However, the detectable concentrations of TCE are found in fairly close proximity to the landfill. Only slight retardation is expected from adsorption to aquifer materials, but the swampy areas of Rocky Creek may be diluting concentrations below detection limits. The ultimate fate of these contaminants will primarily be discharge to surface waters of Rocky Creek or continued migration into deeper aquifers.

Soil

- Elevated levels of heavy metals and PCBs are present throughout the subsoils of the MNOP landfill site. Detected metals are primarily antimony, cadmium, chromium, copper, lead and zinc. PCBs are primarily Arochlor 1248. Based on the data, metals and PCB contamination is present adjacent to the landfill as well as in remote sampling locations throughout floodplain areas. The extent of elevated metals and PCBs have not been fully determined from the data collected.

- Based upon the chemical characteristics of PCBs, these compounds will not likely undergo significant biodegradation, but are expected to be strongly sorbed to soil. Detected metals may also have an affinity to sorb onto soil.

- Volatile organic compounds were detected generally at trace or low level concentrations in only a few of the samples collected. Naphthalene was the most frequently detected VOC, with detections in 7 samples. Two of the deeper soil samples (LSL-2 at 6-8 feet and LSL-5 at 8 to 10 feet) exhibited the presence of a number of VOCs. These two samples account for most of the volatile organic compound detections.

- SVOCs were detected at several sample locations. At three locations, LSL-3, LSL-7, and LSL-11, SVOC parameters were detected in samples collected at all depths. Of the SVOCs detected the most significant is the presence of benzo(a)pyrene in a

number of samples at concentrations ranging from less than 0.5 mg/Kg to up to 10 mg/Kg.

- No evidence of explosive residues were detected in the samples and concentrations of pesticides were not significant in terms of regulatory compliance.

Surface Water

- Surface water sampling conducted along Rocky Creek does not indicate the presence of target VOCs, SVOCs, explosive residues, or priority pollutant metals in the waterway.

- Samples of surface water entering the site from the northwest corner contain detectable amounts of TCE, cis-1,2-DCE, bromomethane, and several metals including cadmium and mercury. The source of these constituents is likely from an off-site source to the north or northwest.

- In the drainage easement area, near LSW-10, elevated levels of TCE and other site related contaminants were detected in surface water. Since TCE levels are more than 10 times that detected in the upgradient (northwest) tributary the levels observed may be related to seepage of contaminated groundwater from the on-site source. The tributary stream coming in from the north may also be bringing contamination from the Allied Industrial Park site.

Sediment

- Sediment samples collected from Rocky Creek did not reveal any evidence of VOCs or explosive residues. The farthest downgradient sample collected from Rocky Creek (LSD-9) did contain detections of several SVOCs.

- Sediments samples collected in overland flow areas between the on-site sources indicate some evidence of SVOCs and VOCs and elevated levels of cadmium in places.

Biota

- The results of biota sampling indicate that PCBs (Aroclor 1254) are present in the fish tested.

- Due to the limited study conducted it cannot be concluded that the PCBs detected in the biota were from on-site sources. The PCB isomer detected in the fish (Aroclor 1254) was not the same as that detected in the site subsoils (Aroclor 1248).

- Total petroleum hydrocarbons were detected in all 3 samples in which they were analyzed for, including the upgradient sample. Values for all three fish were greater than any of the surrogate compound RBCs, suggesting a potential for risk. However it should also be kept in mind that TPH can be associated with urban non-point source runoff. Therefore it cannot be concluded that TPH are from on-site sources.

11.1.2 Evaluation of Potential Source Areas

With respect to source areas, we conclude that:

- The former MNOP landfill is a continuing source of TCE and to a lesser degree, other VOCs to groundwater. The landfill site is also a source of metals and PCBs, as evidenced by elevated concentrations of these constituents in subsoils. No evidence of explosive residues was detected in the samples, nor were pesticides above the RRS levels. The exact boundaries of the landfill are not known at this time.

- The explosives demolition area does not appear to be a source of contamination. Groundwater samples collected downgradient do not show significant levels of contamination originating from the demolition area. No soil sampling was conducted in this area during the recent investigation; however, soil samples were collected during a previous investigation (Environmental Science and Engineering, 1990) and analyzed for VOCs, SVOCs, metals, petroleum hydrocarbons, and explosives compounds. No organic compounds and no significant levels of metals were detected during this previous investigation.

- There is no evidence to suggest that the Armstrong Cork Landfill site is impacting the MNOP property in terms of VOCs and SVOCs. However, based on the fact that the Armstrong Cork property was placed on the HSI due to the presence of lead, it is unclear as to whether or not this site is contributing metals, particularly lead. More information on the Armstrong Cork site will be needed to make this determination.

11.1.3 Compliance with HSRA Risk Reduction Standards

11.1.3.1 Soils

Based on an evaluation of the analytical data collected, soils at the site do not comply with the Type 1 or Type 3 Risk Reduction Standards (RRS), which use a standardized approach to exposure assumptions for residential (Type 1) and non-residential (Type 3) property classifications. The criteria for both RRS were exceeded for 9 inorganic compounds.

The Type 2 and Type 4 RRS apply site-specific risk data to the evaluation of residential (Type 2) and non-residential (Type 4) property classifications. An analysis of the soil data collected revealed that the Type 2 RRS is exceeded due to the levels of Aroclor 1248 (10 locations), Aroclor 1260 (one location), benzo(a)pyrene (3 locations), lead (14 locations) and para-cymene (2 locations) detected in the samples. Under the Type 4 RRS the PCBs (Aroclor) and benzo(a)pyrene are eliminated, leaving only lead (14 locations) and para-cymene (2 locations) above the RRS.

11.1.3.2 Groundwater

Evaluation of groundwater analytical data indicates that shallow groundwater beneath the site does not comply with the Type 1 or Type 3 RRS, which use a standardized approach to exposure assumptions for residential (Type 1) and non-residential (Type 3) property classifications. The samples analyzed failed to meet the criteria for TCE, vinyl chloride, 1,1-DCE, antimony, arsenic, cadmium and lead.

The results of screening groundwater data against the Type 2 (residential) and Type 4 (non-residential) standards indicate that the levels of TCE, vinyl chloride, and lead exceed both RRS. Antimony, arsenic and cadmium exceed only the Type 2 standards at one to two points individually.

11.1.3.3 Summary

Based on the non-residential use of the property at this time, it is assumed that the calculated Type 4 RRS for soil and groundwater (Table C5-1 of Appendix C) may apply as remedial goals for the site. In order to prepare a CSR it will be necessary to obtain sufficient data to adequately define the vertical and horizontal extent of contamination. The CSR should be compiled on the basis of site conditions which exist after the completion of any voluntary corrective actions that will be taken at the site. The CSR must certify compliance with one of the five HSRA risk reduction standards.

No determination on the need or types of corrective action can be made without further evaluation. However, based upon site conditions, it would appear that the site will not comply with the Type 1 through Type 4 RRS without corrective action. Compliance with the applicable Type 1 through 4 standards requires that all source materials must be removed or decontaminated to the RRS media criteria (see Table C5-1 in Appendix C for calculated Type 4 criteria). HSRA allows for concentrations in excess of soil and groundwater criteria to be left in place under special conditions of the Type 5 risk reduction standard. However, remedial measures designed to meet the Type 5 standard must meet a number of performance criteria for carcinogens, systemic toxicant, air, groundwater and soil as defined in 391-3-19-.07 (10)(d).

The Type 5 RRS requires long-term monitoring and maintenance, restrictive covenant, and requires that the Type 1 through 4 RRS be met beyond the boundary of the area for which compliance with Type 5 standards are sought whenever implementation of remedial measures is complete. This standard allows for engineering controls to remove the principal threats however it does not allow substitution of institutional controls for active remedial measures unless such measures are determined not to be practicable.

11.2 RECOMMENDATIONS

Based upon the results of the site investigation and current site conditions, we recommend that:

- The vertical and horizontal extent of groundwater contamination be further defined in order to meet the requirements of a HSRA Compliance Status Report. Monitoring wells should be specifically installed along the south, east, and western property boundaries to establish a point of compliance. Nested well locations may be required to evaluate deeper aquifers beneath the site. Also, at least one upgradient well nest will be required to evaluate potential migration of the recently identified contaminant plumes from the AIP onto the MNOP landfill property. The additional data gathering should focus on collecting site specific data that will support compliance with the Type 4 RRS at the property boundary. Routine monitoring of upgradient and downgradient wells may be required to develop a broader statistical base concerning groundwater quality for risk-evaluation purposes.

- The contaminant sources impacting the shallow groundwater should be further evaluated. Specifically, a survey should be conducted to locate the landfill boundaries, condition and thickness of cover, and possibly the thickness and character of waste material if a removal action is being considered. The boundary of the explosive demolition area, as well as the extent of soils contamination, should

be evaluated. These additional investigations should determine if a cost effective remedial action can help achieve one of the HSRA risk reduction standards.

- An additional investigation concerning the PCB contamination be conducted. It is recommended that this include a literature review to help establish PCB levels in the Macon area, specifically with the Rocky Creek drainage area.

- Levels of TRPH and PCBs observed in biota samples collected from Rocky Creek are greater than EPA RBCs, implying that there is a potential risk to humans from consuming these fish. Further analysis of fish in Rocky creek should be conducted. This includes collection of additional samples downgradient of the site and from several background locations. These data should be analyzed for full scan TCL/TAL to determine what the total contaminant body burden is. A full scan for total petroleum hydrocarbons should also be conducted.

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APPENDIX B

QUALITY CONTROL SUMMARY REPORT

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1.0 INTRODUCTION

Groundwater, soil, sediment, and surface water samples were collected during several field investigation tasks at the Former Macon Naval Ordnance Plant (MNOP) Landfill between December 4, 1995 and May 2, 1996. Rust has provided a summary of the activities involved in this investigation to the United States Army Corps of Engineers, Savannah District (USACE) on a monthly basis throughout this project. Copies of these monthly status reports are attached. The site investigation for which these samples were collected was designed to provide analytical data concerning potential site contamination. The collected samples were analyzed by Hydrologic Laboratories, Inc. of Brighton, Colorado for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), pesticides/PCBs, metals, and explosive residues.

1.1 DATA EVALUATION PURPOSE AND SCOPE

The data evaluation performed by Rust is a technical evaluation independent of laboratory internal quality reviews. The purpose of this evaluation is to assess the utility of data to support professional interpretation and to qualify the data so that it will not be used inappropriately. The evaluation involves an examination of laboratory and field activities to determine how completely those activities conform to established quality control procedures.

1.2 DATA EVALUATION PROCEDURE SUMMARY

The data evaluation process is used, in concert with professional judgment, to assess the effect of the entire analytical process on the usability of the data. After release by the laboratory, the data packages were reviewed and evaluated by the Rust Atlanta database manager according to the instructions provided in the U.S. Environmental Protection Agency (EPA) guidance documents USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (Feb. 1994 revision) and USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (Feb. 1994 revision) and Test Methods for Evaluating Solid Waste (SW-846) third edition.

The two major categories of data evaluation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a straightforward inspection for compliance with method requirements. Review areas include holding time compliance, instrument performance checks, initial and continuing calibration, and laboratory control samples. Evaluation of matrix interferences entails the analysis of surrogate spike recoveries, matrix spike recoveries, laboratory and field blanks, and comparative duplicate sample results.

Rust uses Paradox™ database software to automate those aspects of the evaluation process which are strictly mathematical and non-interpretive. The automated program provides a more complete, accurate and precise review than manual inspection of hardcopy quality control data. The speed of the computerized review also allows extra time for the data evaluators to exercise professional judgment in the overall assessment of data and the subsequent application of EPA qualifying flags.

Those evaluation areas which are favorable for computerized checking are:

- holding times
- blank contamination
- system monitoring compounds (surrogate spike recoveries)
- matrix spikes and matrix spike duplicates
- laboratory control samples
- comparative duplicate samples

Areas which require manual scrutiny of the laboratory data packages are:

- sample preservation
- sample volume sufficiency
- instrument performance checks
- initial and continuing calibration
- internal standards (instrument stability during analysis)
- compound quantitation

2.0 LABORATORY DATA EVALUATION

This section provides an assessment of laboratory data quality on the basis of standard quality assurance and quality control procedures.

2.1 SUMMARY OF LABORATORY QUALITY CONTROL PROGRAM

Hydrologic Laboratories, Inc. (Hydrologic) developed the Quality Assurance Program Plan (QAPP) to meet the requirements of the *Scope of Work / Site Investigation of the Former Macon Naval Ordnance Plant DERP-Funds Project No. IO4GA081300* dated May 9, 1995 for the site investigation of the former Macon Naval Ordnance Plant to be conducted at Macon, Georgia. Specifications and data deliverables were also developed to be compliant with the following documents:

- Requirements for the Preparation of Sampling and Analysis Plans, EM 200-1-3, September 1994
- Engineering and Design Chemical Data Quality Management for Hazardous Waste Remedial Activities, Regulation No. 1110-1-263, October 1990
- Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS - 005/80, EPA-600/4-83-004, February 1983

Hydrologic Laboratories assigned Project Managers/Project Administrators (PM/PA) the responsibility to review QAPP information with respect to the referenced documents and determine if additional information is required to meet the project Data Quality Objectives (DQO's).

For the Site Investigation at the former Macon Naval Ordnance Plant, the data can be used for risk assessment, site characterization, engineering, design and monitoring. Hydrologic submitted a full QAPP prior to project initiation. The QAPP was submitted to USACE Savannah District as part of the Final Work Plan for the Site Investigation of the former MNOP.

The QAPP contains specific procedures regarding sample custody; security; sample receipt; sample tracking; analytical reagents; data validation and reporting; method blank, control sample, and matrix spike/matrix spike duplicate analyses; as well as audits and performance analyses. These procedures are described fully in the Final Work Plan.

2.2 EXCEPTIONS TO LABORATORY QUALITY CONTROL PROGRAM

Formal QA/QC procedures were employed by the contract laboratory and Rust to monitor the quality of data derived from the Site Investigation of the former Macon Naval Ordnance Plant. Subsequent QC reviews of documentation of analytical procedures and the laboratory reports have not identified any exceptions to the prescribed protocols delineated in the Work Plan adopted for this project that would jeopardize the validity of the derived data as reported.

2.3 LABORATORY DATA EVALUATION SUMMARY

Sample results which were outside the range of acceptable quality control limits were indicated with EPA national qualifiers. These qualifying flags are included in project data summary tables. The following definitions provide brief explanations of the national qualifiers:

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is an approximate concentration.

UJ The analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.

R The sample results are rejected as unusable due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Sample results were rejected as unusable for three reasons: (1) unacceptably low recoveries in organic laboratory control samples, (2) surrogate recoveries for organic analytes less than ten percent, and (3) matrix spike recoveries for inorganic analytes less than thirty percent. Table B2-1 contains every record rejected with the explanation provided in each case. Several quality control non-conformances occurred which did not merit rejection of the results, but required qualification nonetheless. Table B2-2 contains every record so qualified with the explanation provided in each case. These two tables constitute a summary of the review conclusions per analyte qualified during the evaluation process.

The Rust laboratory data evaluation concludes after an overall assessment of available quality control data that the analytical data as reported for volatile organics, semivolatile organics (including the semivolatile compounds described as explosive residues and analyzed under method 8330),

pesticide/PCBs, and inorganic data are acceptable as qualified. Refer to Table B2-3 for a summary of the quality problems encountered per analysis and matrix.

3.0 FIELD DATA EVALUATION

This section provides an assessment of field data quality on the basis of accepted quality control standards and field sampling procedures.

3.1 SUMMARY OF FIELD QUALITY CONTROL PROGRAM

The QC procedures which guided the field work during the Site Investigation of the former Macon Naval Ordnance Plant were discussed in detail in the *Final Workplan Hazardous Site Response Act Investigation* submitted to USACE Savannah District in November 1995. The procedures entail collecting required QC/QA samples; maintaining field equipment in proper working order and calibration; using prescribed sampling procedures and chain of custody protocols; using the proper containers, preservation techniques, packaging, and transportation procedures; and providing sufficient documentation. The project organization, project oversight by the site manager, and Quality Assurance field auditing during sampling activities were the primary means employed to assure that proper procedures were followed in the field sampling tasks.

3.1.1 Project Organization

The Rust Project Manager (PM) was responsible for coordination and of the budget and schedule and for developing the multidiscipline project team with the required skills and experience to accomplish the investigation tasks. This individual maintained communications between the USACE, Rust personnel, and subcontractors and vendors on the project team. The Project Manager periodically reviewed field activity to assure that technical requirements were maintained throughout the field tasks.

The Site Manager was directly responsible for implementing the work plan and assuring that field activities followed the specified protocols. Prior to commencing field activities, the Site Manager assigned specific duties to personnel on the project team. The Site Manager reports to the Project Manager.

The Field Staff was responsible for field activities including following proper protocols regarding decontamination, equipment operation, sample collection and shipment, and documentation of field activities. Each member of the field crew was responsible for knowledge of and proficiency in the procedural requirements of the Chemical Data Acquisition Plan (CDAP). This responsibility included quality control awareness and initiating corrective action, if necessary.

The QC Manager was responsible for monitoring and auditing management and technical systems, data quality objectives, and performance evaluations. This activity is an ongoing process conducted at the local level by a full-time staff professional within the Atlanta Division of Rust.

The quality assurance structure functions independently of project operations to maintain the quality of field operations. The Project Manager, and Site Manager were directly responsible for the project's operations, including its quality control procedures. The QC Manager monitors the project's operations for compliance with established quality control procedures and targets. The personnel assigned QC responsibilities were familiar with the CDAP and qualified to observe and evaluate procedures. While implementing their responsibilities, QC personnel had access to all work areas and the freedom to identify potential quality problems; initiate, recommend, or provide solutions to quality problems through designated channels; verify implementation of solutions; and ensure that further processing or action was controlled until proper disposition of unsatisfactory conditions occurred. QC personnel had access to project management and corporate management as required to resolve problems or coordinate quality concerns.

3.1.2 Site Manager Oversight of Field Activities

The Site Manager directed the Field Staff in the field activities designed to accomplish the collection of reliable field data. The field activities included collecting the required data samples as well as the prescribed QC samples, maintaining field equipment in proper working order and calibration; using prescribed sampling procedures and chain of custody protocols; using the proper containers and preservation techniques, packaging and transportation procedures; and providing documentation of these activities.

3.1.3 Quality Assurance Audit

The QC Manager conducted a field QC audit on January 18, 1996 during the course of the field sampling. The audit found only minor procedural and documentation omissions which were addressed by field personnel. No findings were identified that jeopardized the integrity of the sample data. The QC Manager advised the Project Manager on QC procedures and overall project compliance on a continual basis.

3.2 EXCEPTIONS TO FIELD QUALITY CONTROL PROGRAM

The formal QC audit performed by Rust, and subsequent QC reviews of documentation of the field activities and procedures, have not identified any exceptions to the prescribed protocols delineated in the Work Plan adopted for this project that would jeopardize the validity of the investigative derived data.

The exceptions to the field QC program, as noted, were limited to procedural adjustments and/or documentation omissions with no direct impact on the validity of the acquired data. These exceptions are delineated below with an accompanying evaluation of the exceptions' impact on the data collection.

3.3 FIELD DATA EVALUATION SUMMARY

3.3.1 Daily Quality Control Reports

Daily Quality Control Reports were filled out by field personnel for each day of field work conducted for this investigation. These reports provide brief summaries of work performed each day including the number of samples and types of media sampled, sampling methods, equipment used, personnel on site, site conditions, and health and safety information. These reports provide indications of any equipment failures or sampling problems and also document field calibrations of equipment. Copies of all Daily Quality Control Reports were provided to USACE and a complete set of copies of these reports are also provided at the end of this QCSR.

No QC deficiencies, which may have jeopardized the quality of the derived data, were apparent in the Daily Quality Control Reports completed for this Site Investigation.

3.3.2 Field Sampling Procedures

The field sampling techniques utilized to conduct the Site Investigation were detailed in the Geologic Data Acquisition Plan (GDAP) that was submitted as Section 5.0 of the *Final Workplan Hazardous Site Response Act Investigation* submitted to USACE Savannah District in November 1995. Specific sampling requirements for chemical analyses were presented in the CDAP (Section 6.0) of the same document. Field investigation techniques were divided into two general sites of investigation; the former MNOP Landfill and the former MNOP plant operations area, known presently as the Allied Industrial Park area. Field investigation techniques were provided for the following sampling activities:

- Direct Push Technology (DPT) Sampling
- Surface Water and Sediment Sampling
- Bio Sampling
- Groundwater Screening
- Soil Test Boring Sampling
- Monitoring Well Installation Plan

All field investigation techniques employed during the Site Investigation were performed in accordance with Characterization of Hazardous Waste Sites and Methods Manual: Volume II. Available Sampling Methods, EPA-600/4-83-040. Sampling methodologies are discussed in more detail under the soil and groundwater sampling procedures in the Site Investigation Report.

No QC deficiencies, which may have jeopardized the quality of the derived data, were apparent in the field sampling techniques employed in this investigation.

Daily field calibration of the pH meter and conductivity meter was not documented throughout the field investigation, but was documented as being conducted periodically and on an as needed basis. No inconsistencies or anomalies were indicated in the physical parameter measurements conducted in the field that would indicate the meters were not operating within the manufacturers' specified range of accuracy or calibration. The measurement of physical parameters in the field did not influence the selection of samples or the accuracy of laboratory analyses. This exception should have no impact on the chemical data validity.

Daily field calibration of the Foxboro OVA was not documented throughout the field investigation, but was documented as being conducted periodically and on an as needed basis. No inconsistencies or anomalies were indicated in the organic vapor measurements used to field screen soil samples that would indicate the OVA was not operating within the manufacturer's specified range of accuracy or calibration. The measurement of organic vapors in soil samples collected in the field did influence the selection of samples in that the sample registering the highest meter deflection during OVA screening was selected for laboratory analyses. Since the OVA screening was conducted to determine the relative concentration of organic vapors from one sample to another and not to quantify the degree of concentration of vapors, as long as the OVA was operational, it should have accurately identified the sample with the greatest volatile organic vapor concentration. Therefore, this exception should have no impact on the chemical data validity.

3.3.3 Sample Preparation and Shipment

Sampling containers, prepared with EPA prescribed preservatives, were furnished by HydroLogic. Container and preservation specifications met all appropriate requirements as prescribed in the Final Work Plan.

Sample containers provided by HydroLogic were constructed from EPA designated materials, containing EPA prescribed preservatives and affixed with a HydroLogic Laboratories' identification label. To monitor container temperature, a 100-ml plastic container labeled "Sample Container for Lab Temperature Use Only" was prefilled with tap water and supplied with each sample. All such temperature blanks were measured and recorded by the laboratory upon receipt.

Containers were provided with a unique batch assignment number to permit traceability.

3.3.3.1 Sample Custody Objectives

The primary objective of sample custody is to provide accurate, verifiable, and traceable records of sample possession and handling from the preparation and shipment of bottleware through laboratory receipt, sample analyses, and data validation. A sample is considered in custody if it is:

3.3.3.2 Sample Record Decontamination

- in actual possession of the sampler or transferee
- in view of the sampler or transferee after establishment of physical possession
- sealed for sample integrity by the sampler
- in a secured area, restricted to authorized personnel

Field and laboratory records were maintained in a secure area. All field and laboratory data were recorded in bound notebooks, and in waterproof ink. Field and laboratory data entry errors were deleted with a one-line strike through the error, and the correction initialed and dated by the individual making the change. Field and laboratory information were also documented on various prepared forms. All forms for recording field and laboratory data include spaces for date and initials which must be completed by the data recorder. Any field and laboratory documentation, recorded on media other than prepared forms, was also dated and initialed.

3.3.3.3 Sample Chain of Custody

Formal COC documentation and custody procedures were followed in preparing samples for shipment to the laboratory. During sample collection, all sample containers were labeled with an identification number that uniquely identified the sample. The sample identification number was logged in the field logbook, and on the COC along with the following information:

- sampling personnel
- date and time of collection
- field sample location and depth (if appropriate)
- observations of ambient (weather) conditions
- type of sampling (composite or grab)
- method of sampling
- sampling matrix or source
- intended analyses and type of container

- preservation method
- observations of physical characteristics of the sample

For samples transported from the field to the laboratory by common carrier, COC was maintained. Completed custody forms accompanied each sealed cooler, which was then sealed in the field by the sampling team to ensure that tampering would be immediately evident upon receipt by the laboratory.

3.3.3.4 Sample Packaging

Samples were packed for shipping in waterproof ice chests or coolers, and sample containers were individually sealed in plastic bags prior to packing them in the cooler with bubble wrap or styrofoam packing to prevent breakage during shipment. Wet ice sealed in plastic bags (to inhibit cross contamination of samples by meltwater) was placed with the samples in the cooler to maintain the samples at a temperature of 4° Celsius during temporary on-site storage and shipping. Prior to shipment, coolers were observed for excessive melting ice, and re-packed with ice as necessary to preserve the samples. The COC form was signed as "relinquished" by the principal sampler or responsible party, sealed in a waterproof plastic bag, and placed inside the cooler. Following packing, the cooler lid was sealed with strapping or duct tape. Two signed and dated custody seals were affixed to two opposite sides of the cooler, across the seal of the lid, and covered with clear tape. The tape was placed on either end of the custody seal, thereby requiring the seal be broken during any attempt to open the cooler. The cooler was also labeled with "This End Up" and "Fragile" warning markers.

3.3.3.5 Sample Shipping

The sample coolers were shipped on the day samples were collected, by overnight express carrier to the laboratory. A copy of the bill of lading was retained by Rust and is part of the sample custody documentation in the project file. Prior to sample shipment, the laboratory was notified by phone to assure personnel would be available to receive the coolers. Samples were shipped for delivery during the affected laboratory's normal working hours. All holding time limitations were taken into consideration in the sampling schedule.

4.0 PROFICIENCY ENHANCEMENT EVALUATION

A review of the tasks performed to accomplish the scope of work for this Site Investigation revealed several action items which would enhance the proficiency of future efforts. The items involve both field and analytical procedures as shown below:

- Equipment blanks should be included in the analytical QC samples to screen for possible interference from field decontamination procedures.

- Sampling protocol should include filtered metals analyses in order to eliminate the influence of turbidity on metals analyses.

- Closer communication should be required of the subcontract analytical laboratory, specifically requiring immediate notification to the A/E Project Manager should any sample's integrity be potentially impacted by exceeded holding times, questionable identification, or results.

- Drilling investigations should be completed during the dry seasons (late summer/early fall) to ensure access to the Rocky Creek floodplain.

5.0 PRECISION, ACCURACY, REPRESENTATIVENESS, COMPARABILITY AND COMPLETENESS

5.1 PRECISION

Precision is the evaluation of the reproducability of a measurement. Precision is estimated by analyzeing duplicate samples and the calculation of relative percent difference (RPD) or relative standard deviation (RSD).

This project included the collection of field duplicates and the production of laboratory duplicates. Field duplicates serve as an indicator of overall precision from sample collection through laboratory analysis. All field duplicates were withing acceptable RPD ranges.

Laboratory duplicates focus on the precision of the analytical method. An insignificant number of volatile records (42 out of 17,818) were flagged for unacceptable RPDs between matrix spike samples and their duplicates. Per the EPA National Functional Guidelines For Organic Data Review (Feb. 1993), no qualification of data is required for MS/MSD non-conformances alone.

The data are acceptably precise.

5.2 ACCURACY

Accuracy is the measure of bias in a system. It is the degree of agreement between a measurement and an accepted reference or true value. Accuracy was estimated for this project by analyzing QC samples with known true values (surrogate spikes and matrix spikes) and was expressed as percent recovery. Data that do not meet accuracy criteria are flagged J (estimated) or R (rejected), as appropriate.

The data are acceptably accurate.

5.3 REPRESENTATIVENESS AND COMPARABILITY

Representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population at a sampling pint, process condition, or environmental condition. Comparability expresses the confidence with which a data set can be compared to another.

Represenatativeness and comparability are qualitative objectives that were met for this project by following SOPs for sample collection and analysis.

5.4 COMPLETENESS

Completeness is the measure of the amount of valid (usable) data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. The completeness of data is calculated by dividing the number of valid data points by the number of total data points.

The percentages of data completeness calculated for this project area as follows:

	VOCs	SVOCs	Pest/PCBs	Inorganics	Radiologicals
Groundwater	100%	97%	100%	100%	100%
Surfacewater	100%	99%	NA	100%	NA
Soil	100%	97%	100%	98%	NA
Sediment	100%	99%	NA	100%	NA

The overall data completeness goal of 95% was achieved.

5.5 OVERALL ASSESSMENT OF DATA

The data are acceptable as qualified with the validator assigned flags.

Table B2-1
Data Rejected During Validation
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
LSD-10	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2622
LSD-10	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2622
LSD-10	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2622
LSD-10	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2622
LSD-10	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2622
LSD-10	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2622
LSD-11	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2617
LSD-11	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2617
LSD-11	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2617
LSD-11	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2617
LSD-11	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2617
LSD-11	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2617
LSD-11D	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2617
LSD-11D	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2617
LSD-11D	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2617
LSD-11D	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2617
LSD-11D	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2617
LSD-11D	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2617
LSD-14	8330	1,3,5-trinitrobenzene	<	0.031	mg/Kg	R	LCS recovery too low	L2611
LSD-14	8330	3-nitrotoluene	<	0.059	mg/Kg	R	LCS recovery too low	L2611
LSD-14	8330	4-amino-2,6-dinitrotoluene	<	0.05	mg/Kg	R	LCS recovery too low	L2611
LSD-14	8330	4-nitrotoluene	<	0.066	mg/Kg	R	LCS recovery too low	L2611
LSD-14	8330	hmx	<	0.029	mg/Kg	R	LCS recovery too low	L2611
LSD-14	8330	tetryl	<	0.033	mg/Kg	R	LCS recovery too low	L2611
LSL-10 (0'-2')	8270	1,2,4,5-tetrachlorobenzene	<	5.4	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	1,2,4-trichlorobenzene~	<	3.2	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	1,2-dichlorobenzene~	<	3.4	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	1,2-diphenylhydrazine	<	5.4	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	1,3-dichlorobenzene~	<	3.9	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	1,4-dichlorobenzene~	<	3.9	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	1-chloronaphthalene	<	13	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	1-naphthylamine	<	4.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2,3,4,6-tetrachlorophenol	<	6.4	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2,4,5-trichlorophenol	<	7.5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2,4,6-trichlorophenol	<	5.4	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2,4-dichlorophenol	<	5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2,4-dimethylphenol	<	4.3	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2,4-dinitrophenol	<	8.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2,4-dinitrotoluene	<	3.9	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2,6-dichlorophenol	<	5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2,6-dinitrotoluene	<	5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2-chloronaphthalene	<	6.8	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2-chlorophenol	<	3.9	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2-methyl naphthalene	<	2.8	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2-methylphenol	<	2.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2-naphthylamine	<	4.3	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2-nitroaniline	<	5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2-nitrophenol	<	5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	2-picoline	<	3.8	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	3,3'-dichlorobenzidine	<	4.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	3-methylcholanthrene	<	3.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	3-nitroaniline	<	4.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	4,6-dinitro-2-methylphenol	<	5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	4-aminobiphenyl	<	4.3	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	4-bromophenyl phenyl ether	<	3.5	mg/Kg	R	Surrogate recovery below 10 percent	L2474

Table B2-1
Data Rejected During Validation
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
LSL-10 (0'-2')	8270	4-chloro-3-methylphenol	<	4.3	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	4-chloroaniline	<	5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	4-chlorophenyl phenyl ether	<	4.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	4-methylphenol	<	2.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	4-nitroaniline	<	8.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	4-nitrophenol	<	9.7	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	7,12-dimethylbenz(a)anthracene	<	3.9	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	a,a-dimethylphenethylamine	<	5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	acenaphthene	<	5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	acenaphthylene	<	3.9	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	acetophenone	<	3.9	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	aniline	<	3.3	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	anthracene	<	3.5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	benzidine	<	8.2	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	benzo(a)anthracene	<	3.7	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	benzo(a)pyrene	<	4.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	benzo(b)fluoranthene	<	2.9	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	benzo(k)fluoranthene	<	5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	benzoic acid	<	75	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	benzyl alcohol	<	3.3	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	bis(2-chloroethoxy)methane	<	3.9	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	bis(2-chloroethyl)ether	<	2.9	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	bis(2-chloroisopropyl)ether	<	2.5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	bis(2-ethylhexyl)phthalate	<	31	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	butyl benzyl phthalate	<	3.1	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	chrysene	<	5.7	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	di-n-butyl phthalate	<	5.4	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	di-n-octyl phthalate	<	3.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	dibenz(a,h)anthracene	<	4.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	dibenz(a,j)acridine	<	6.8	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	dibenzofuran	<	4.3	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	diethyl phthalate	<	6.8	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	dimethyl phthalate	<	6.4	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	diphenylamine	<	5.7	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	ethyl methanesulfonate	<	3.4	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	fluoranthene	<	5.4	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	fluorene	<	4.3	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	hexachlorobenzene	<	3.2	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	hexachlorobutadiene~	<	3.9	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	hexachlorocyclopentadiene	<	2.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	hexachloroethane	<	6.1	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	indeno(1,2,3-cd)pyrene	<	4.3	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	isophorone	<	3.9	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	methyl methanesulfonate	<	3.7	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	n-nitrosodibutylamine	<	3.8	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	n-nitrosodimethylamine	<	2.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	n-nitrosodiphenylamine	<	11	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	n-nitrosodipropylamine	<	3.8	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	n-nitrosopiperidine	<	4.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	naphthalene~	<	3	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	nitrobenzene	<	6.4	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	p-(dimethylamino)azobenzene	<	3.4	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	pentachlorobenzene	<	4.3	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	pentachloronitrobenzene	<	6.1	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	pentachlorophenol	<	6.1	mg/Kg	R	Surrogate recovery below 10 percent	L2474

Table B2-1
Data Rejected During Validation
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
LSL-10 (0'-2')	8270	phenacetin	<	7.9	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	phenanthrene	<	3.3	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	phenol	<	4.5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	pronamide	<	5	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSL-10 (0'-2')	8270	pyrene	<	4.6	mg/Kg	R	Surrogate recovery below 10 percent	L2474
LSW-10	8270	pyrene	<	0.0039	mg/L	R	LCS recovery too low	L2622
LSW-11	8270	pyrene	<	0.0039	mg/L	R	LCS recovery too low	L2617
LSW-11D	8270	pyrene	<	0.0039	mg/L	R	LCS recovery too low	L2617
LSW-12	8270	pyrene	<	0.0039	mg/L	R	LCS recovery too low	L2622
LSW-12D	8270	pyrene	<	0.0039	mg/L	R	LCS recovery too low	L2622
LSW-13	8270	pyrene	<	0.0039	mg/L	R	LCS recovery too low	L2622
MW-10	8270	pyrene	<	0.0039	mg/L	R	LCS recovery too low	L2617
MW-10 (0'-2')	6010	antimony	<	5.2	mg/Kg	R	Matrix spike recovery below 30 percent	WG5624
MW-11	8270	pyrene	<	0.0039	mg/L	R	LCS recovery too low	L2607
MW-6	8270	pyrene	<	0.0039	mg/L	R	LCS recovery too low	L2607
MW-6 (2'-4')	6010	antimony	<	4.5	mg/Kg	R	Matrix spike recovery below 30 percent	WG5624
MW-6A (2'-4')	6010	antimony	<	3.9	mg/Kg	R	Matrix spike recovery below 30 percent	WG5624
MW-7	8270	pyrene	<	0.0039	mg/L	R	LCS recovery too low	L2622
MW-7 (0'-2')	6010	antimony	<	3.1	mg/Kg	R	Matrix spike recovery below 30 percent	WG5624
MW-8	8270	pyrene	<	0.0039	mg/L	R	LCS recovery too low	L2617
MW-9	8270	pyrene	<	0.0039	mg/L	R	LCS recovery too low	L2617
MW-9 (6'-8')	6010	antimony	<	2.8	mg/Kg	R	Matrix spike recovery below 30 percent	WG5624

Table B2-2
Data Qualified During Validation
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
LSD-11	8260	cis-1,2-dichloroethene	0.0081	mg/Kg	J	Surrogate recovery too high	L2617
LSD-11	8260	trans-1,2-dichloroethene	0.0034	mg/Kg	J	Surrogate recovery too high	L2617
LSD-11	8260	trichloroethene	0.0042	mg/Kg	J	Surrogate recovery too high	L2617
LSD-11D	8260	o-xylene	0.0027	mg/Kg	J	Surrogate recovery too high	L2617
LSD-11D	8260	trans-1,2-dichloroethene	0.0023	mg/Kg	J	Surrogate recovery too high	L2617
LSD-13	6010	nickel	< 1.3	mg/Kg	UJ	Method blank contamination	L2622
LSD-14	8260	1,1,1,2-tetrachloroethane	< 0.002	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,1,1-trichloroethane	< 0.0075	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,1,2,2-tetrachloroethane	< 0.0028	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,1,2-trichloroethane	< 0.0055	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,1-dichloroethane	< 0.0075	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,1-dichloroethene	< 0.0021	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,1-dichloropropene	< 0.0075	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,2,3-trichlorobenzene	< 0.0042	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,2,3-trichloropropane	< 0.0049	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,2,4-trichlorobenzene	< 0.0037	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,2,4-trimethylbenzene	< 0.0025	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,2-chlorotoluene	< 0.0023	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,2-dibromo-3-chloropropane	< 0.0027	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,2-dibromoethane	< 0.0022	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,2-dichlorobenzene	< 0.0032	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,2-dichloroethane	< 0.0092	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,2-dichloropropane	< 0.0022	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,3,5-trimethylbenzene	< 0.0024	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,3-dichlorobenzene	< 0.0031	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,3-dichloropropane	< 0.0064	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	1,4-dichlorobenzene	< 0.0025	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	2,2-dichloropropane	< 0.014	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	4-chlorotoluene	< 0.0023	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	benzene	< 0.0017	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	bromobenzene	< 0.0025	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	bromochloromethane	< 0.0031	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	bromodichloromethane	< 0.0028	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	bromoform	< 0.0021	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	bromomethane	< 0.0021	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	carbon tetrachloride	< 0.006	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	chlorobenzene	< 0.0019	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	chloroethane	< 0.0024	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	chloroform	< 0.006	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	chloromethane	< 0.0089	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	cis-1,2-dichloroethene	< 0.0078	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	cis-1,3-dichloropropene	< 0.0034	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	dibromochloromethane	< 0.0022	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	dibromomethane	< 0.0062	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	dichlorodifluoromethane	< 0.0019	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	ethylbenzene	< 0.0033	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	hexachlorobutadiene	< 0.0049	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	isopropylbenzene	< 0.0024	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	m+p-xylene	< 0.01	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	methylene chloride	< 0.0033	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	n-butylbenzene	< 0.0026	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	n-propylbenzene	< 0.0027	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	naphthalene	< 0.0046	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	o-xylene	< 0.0063	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	paracymene	< 0.0028	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	sec-butylbenzene	0.019	mg/Kg	J	Surrogate recovery too high and too low	L2611
LSD-14	8260	styrene	< 0.0032	mg/Kg	UJ	Surrogate recovery too low	L2611

Table B2-2
Data Qualified During Validation
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
LSD-14	8260	tert-butylbenzene	0.015	mg/Kg	J	Surrogate recovery too high and too low	L2611
LSD-14	8260	tetrachloroethene	< 0.0022	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	toluene	< 0.0037	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	trans-1,2-dichloroethene	< 0.0024	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	trans-1,3-dichloropropene	< 0.0024	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	trichloroethene	< 0.0019	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	trichloromonofluoromethane	< 0.0027	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8260	vinyl chloride	< 0.0021	mg/Kg	UJ	Surrogate recovery too low	L2611
LSD-14	8270	1,2,4,5-tetrachlorobenzene	< 0.66	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	1,2,4-trichlorobenzene~	< 0.4	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	1,2-dichlorobenzene~	< 0.42	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	1,2-diphenylhydrazine	< 0.66	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	1,3-dichlorobenzene~	< 0.49	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	1,4-dichlorobenzene~	< 0.49	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	1-chloronaphthalene	< 1.6	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	1-naphthylamine	< 0.58	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2,3,4,6-tetrachlorophenol	< 0.8	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2,4,5-trichlorophenol	< 0.93	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2,4,6-trichlorophenol	< 0.66	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2,4-dichlorophenol	< 0.62	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2,4-dimethylphenol	< 0.53	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2,4-dinitrophenol	< 1.1	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2,4-dinitrotoluene	< 0.49	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2,6-dichlorophenol	< 0.62	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2,6-dinitrotoluene	< 0.62	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2-chloronaphthalene	< 0.84	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2-chlorophenol	< 0.49	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2-methyl naphthalene	< 0.35	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2-methylphenol	< 0.32	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2-naphthylamine	< 0.53	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2-nitroaniline	< 0.62	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2-nitrophenol	< 0.62	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	2-picoline	< 0.46	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	3,3'-dichlorobenzidine	< 0.58	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	3-methylcholanthrene	< 0.44	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	3-nitroaniline	< 0.58	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	4,6-dinitro-2-methylphenol	< 0.62	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	4-aminobiphenyl	< 0.53	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	4-bromophenyl phenyl ether	< 0.43	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	4-chloro-3-methylphenol	< 0.53	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	4-chloroaniline	< 0.62	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	4-chlorophenyl phenyl ether	< 0.58	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	4-methylphenol	< 0.32	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	4-nitroaniline	< 1.1	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	4-nitrophenol	< 1.2	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	7,12-dimethylbenz(a)anthracene	< 0.49	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	a,a-dimethylphenethylamine	< 0.62	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	acenaphthene	< 0.62	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	acenaphthylene	< 0.49	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	acetophenone	< 0.49	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	aniline	< 0.4	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	anthracene	< 0.44	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	benzidine	< 1	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	benzo(a)anthracene	< 0.46	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	benzo(a)pyrene	< 0.58	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	benzo(b)fluoranthene	< 0.36	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	benzo(g,h,i)perylene	< 0.53	mg/Kg	UJ	Holding time violation (extraction)	L2611

Table B2-2
Data Qualified During Validation
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Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
LSD-14	8270	benzo(k)fluoranthene	< 0.62	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	benzoic acid	< 9.3	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	benzyl alcohol	< 0.41	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	bis(2-chloroethoxy)methane	< 0.49	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	bis(2-chloroethyl)ether	< 0.36	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	bis(2-chloroisopropyl)ether	< 0.31	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	bis(2-ethylhexyl)phthalate	< 3.8	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	butyl benzyl phthalate	< 0.39	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	chrysene	< 0.71	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	di-n-butyl phthalate	< 0.66	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	di-n-octyl phthalate	< 0.44	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	dibenz(a,h)anthracene	< 0.58	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	dibenz(a,j)acridine	< 0.84	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	dibenzofuran	< 0.53	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	diethyl phthalate	< 0.84	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	dimethyl phthalate	< 0.8	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	diphenylamine	< 0.71	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	ethyl methanesulfonate	< 0.42	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	fluoranthene	< 0.66	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	fluorene	< 0.53	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	hexachlorobenzene	< 0.39	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	hexachlorobutadiene~	< 0.49	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	hexachlorocyclopentadiene	< 0.32	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	hexachloroethane	< 0.75	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	indeno(1,2,3-cd)pyrene	< 0.53	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	isophorone	< 0.49	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	methyl methanesulfonate	< 0.46	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	n-nitrosodibutylamine	< 0.47	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	n-nitrosodimethylamine	< 0.33	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	n-nitrosodiphenylamine	< 1.3	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	n-nitrosodipropylamine	< 0.47	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	n-nitrosopiperidine	< 0.58	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	naphthalene~	< 0.37	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	nitrobenzene	< 0.8	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	p-(dimethylamino)azobenzene	< 0.42	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	pentachlorobenzene	< 0.53	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	pentachloronitrobenzene	< 0.75	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	pentachlorophenol	< 0.75	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	phenacetin	< 0.97	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	phenanthrene	< 0.4	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	phenol	< 0.55	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	pronamide	< 0.62	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-14	8270	pyrene	< 0.58	mg/Kg	UJ	Holding time violation (extraction)	L2611
LSD-2	8260	1,1,1,2-tetrachloroethane	< 0.00072	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,1,1-trichloroethane	< 0.0027	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,1,2,2-tetrachloroethane	< 0.001	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,1,2-trichloroethane	< 0.002	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,1-dichloroethane	< 0.0027	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,1-dichloroethene	< 0.00077	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,1-dichloropropene	< 0.0027	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,2,3-trichlorobenzene	< 0.0015	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,2,3-trichloropropane	< 0.0018	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,2,4-trichlorobenzene	< 0.0014	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,2,4-trimethylbenzene	< 0.0009	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,2-chlorotoluene	< 0.00083	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,2-dibromo-3-chloropropane	< 0.00098	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,2-dibromoethane	< 0.0008	mg/Kg	UJ	Surrogate recovery too low	L2755

Table B2-2
Data Qualified During Validation
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Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
LSD-2	8260	1,2-dichlorobenzene	< 0.0012	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,2-dichloroethane	< 0.0034	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,2-dichloropropane	< 0.00082	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,3,5-trimethylbenzene	< 0.00089	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,3-dichlorobenzene	< 0.0011	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,3-dichloropropane	< 0.0024	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	1,4-dichlorobenzene	< 0.0009	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	2,2-dichloropropane	< 0.0053	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	4-chlorotoluene	< 0.00083	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	benzene	< 0.00063	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	bromobenzene	< 0.00092	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	bromochloromethane	< 0.0011	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	bromodichloromethane	< 0.001	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	bromoform	< 0.00075	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	bromomethane	< 0.00079	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	carbon tetrachloride	< 0.0022	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	chlorobenzene	< 0.00071	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	chloroethane	< 0.00087	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	chloroform	< 0.0022	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	chloromethane	< 0.0033	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	cis-1,2-dichloroethene	< 0.0029	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	cis-1,3-dichloropropene	< 0.0013	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	dibromochloromethane	< 0.00081	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	dibromomethane	< 0.0023	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	dichlorodifluoromethane	< 0.00069	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	ethylbenzene	< 0.0012	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	hexachlorobutadiene	< 0.0018	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	isopropylbenzene	< 0.00088	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	m+p-xylene	< 0.0038	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	*methylene chloride*	< 0.0012	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	n-butylbenzene	< 0.00097	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	n-propylbenzene	< 0.001	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	naphthalene	< 0.0017	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	o-xylene	< 0.0023	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	paracymene	< 0.001	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	sec-butylbenzene	< 0.001	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	styrene	< 0.0012	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	tert-butylbenzene	< 0.00095	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	tetrachloroethene	< 0.0008	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	toluene	< 0.0014	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	trans-1,2-dichloroethene	< 0.00088	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	trans-1,3-dichloropropene	< 0.00089	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	trichloroethene	< 0.00068	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	trichloromonofluoromethane	< 0.001	mg/Kg	UJ	Surrogate recovery too low	L2755
LSD-2	8260	vinyl chloride	< 0.00076	mg/Kg	UJ	Surrogate recovery too low	L2755
LSL-1 (6'-8')	6010	zinc	< 4.1	mg/Kg	UJ	Method blank contamination	L2459
LSL-10 (0'-2')	8260	1,2,4-trimethylbenzene	0.0024	mg/Kg	J	Surrogate recovery too high	L2474
LSL-10 (0'-2')	8260	naphthalene	0.13	mg/Kg	J	Surrogate recovery too high	L2474
LSL-10 (0'-2')	8260	paracymene	0.023	mg/Kg	J	Surrogate recovery too high	L2474
LSL-10 (0'-2')	8270	benzo(g,h,i)perylene	4.4	mg/Kg	J	Surrogate recovery below 10 percent	L2474
LSL-10 (8'-10')	8260	naphthalene	0.015	mg/Kg	J	Surrogate recovery too high	L2474
LSL-10 (8'-10')	8260	paracymene	0.02	mg/Kg	J	Surrogate recovery too high	L2474
LSL-11 (4'-6')	8260	1,1,1,2-tetrachloroethane	< 0.00053	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,1,1-trichloroethane	< 0.002	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,1,2,2-tetrachloroethane	< 0.00075	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,1,2-trichloroethane	< 0.0015	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,1-dichloroethane	< 0.002	mg/Kg	UJ	Surrogate recovery too low	L2474

Table B2-2
Data Qualified During Validation
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Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
LSL-11 (4'-6')	8260	1,1-dichloroethene	< 0.00057	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,1-dichloropropene	< 0.002	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,2,3-trichlorobenzene	< 0.0011	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,2,3-trichloropropane	< 0.0013	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,2,4-trichlorobenzene	< 0.001	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,2,4-trimethylbenzene	< 0.00066	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,2-chlorotoluene	< 0.00061	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,2-dibromo-3-chloropropane	< 0.00072	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,2-dibromoethane	< 0.00059	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,2-dichlorobenzene	< 0.00087	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,2-dichloroethane	< 0.0025	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,2-dichloropropane	< 0.0006	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,3,5-trimethylbenzene	< 0.00066	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,3-dichlorobenzene	< 0.00084	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,3-dichloropropane	< 0.0017	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	1,4-dichlorobenzene	< 0.00066	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	2,2-dichloropropane	< 0.0039	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	4-chlorotoluene	< 0.00061	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	benzene	< 0.00047	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	bromobenzene	< 0.00068	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	bromochloromethane	< 0.00082	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	bromodichloromethane	< 0.00076	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	bromoform	< 0.00056	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	bromomethane	< 0.00058	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	carbon tetrachloride	< 0.0016	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	chlorobenzene	< 0.00052	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	chloroethane	< 0.00064	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	chloroform	< 0.0016	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	chloromethane	< 0.0024	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	cis-1,2-dichloroethene	< 0.0021	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	cis-1,3-dichloropropene	< 0.00093	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	dibromochloromethane	< 0.0006	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	dibromomethane	< 0.0017	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	dichlorodifluoromethane	< 0.00051	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	ethylbenzene	< 0.0009	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	hexachlorobutadiene	< 0.0013	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	isopropylbenzene	< 0.00065	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	m+p-xylene	< 0.0028	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	methylene chloride	< 0.0009	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	n-butylbenzene	< 0.00071	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	n-propylbenzene	< 0.00074	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	naphthalene	0.94	mg/Kg	J	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	o-xylene	< 0.0017	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	paracymene	< 0.00076	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	sec-butylbenzene	< 0.00075	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	styrene	< 0.00085	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	tert-butylbenzene	< 0.0007	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	tetrachloroethene	< 0.00059	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	toluene	< 0.001	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	trans-1,2-dichloroethene	< 0.00065	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	trans-1,3-dichloropropene	< 0.00066	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	trichloroethene	< 0.0005	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	trichloromonofluoromethane	< 0.00074	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-11 (4'-6')	8260	vinyl chloride	< 0.00056	mg/Kg	UJ	Surrogate recovery too low	L2474
LSL-12 (1'-2')	8080	methoxychlor	0.2	mg/Kg	J	Surrogate recovery below 10 percent but mitigated by dilution	L2760
LSL-2 (6'-8')	6010	zinc	< 16.4	mg/Kg	U	Method blank contamination	L2459
LSL-3 (0'-2')	8080	4,4'-DDE	0.0428	mg/Kg	J	Surrogate recovery too high	L2459

Table B2-2
Data Qualified During Validation
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
LSL-3 (0'-2')	8080	4,4'-DDT	0.0631	mg/Kg	J	Surrogate recovery too high	L2459
LSL-3 (0'-2')	8080	aroclor 1248	9.23	mg/Kg	J	Surrogate recovery too high	L2459
LSL-4 (4'-6')	6010	zinc	< 6.58	mg/Kg	U	Method blank contamination	L2463
LSL-5 (0'-2')	6010	nickel	< 1.4	mg/Kg	UJ	Method blank contamination	L2481
LSL-8 (4'-5')	8260	naphthalene	0.0035	mg/Kg	J	Surrogate recovery too high	L2481
LSL-9 (6'-8')	8080	4,4'-DDD	0.642	mg/Kg	J	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	4,4'-DDE	0.118	mg/Kg	J	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	4,4'-DDT	0.0838	mg/Kg	J	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	aldrin	< 0.0084	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	alpha-BHC	< 0.003	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	aroclor 1016	< 0.045	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	aroclor 1221	< 0.045	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	aroclor 1232	< 0.045	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	aroclor 1242	< 0.045	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	aroclor 1248	< 0.045	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	aroclor 1254	< 0.045	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	aroclor 1260	1.38	mg/Kg	J	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	beta-BHC	< 0.0026	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	chlordane	< 0.085	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	delta-BHC	< 0.0019	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	dieldrin	< 0.0021	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	endosulfan I	< 0.0025	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	endosulfan II	< 0.0022	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	endosulfan sulfate	< 0.003	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	endrin	< 0.0021	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	endrin aldehyde	< 0.014	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	endrin ketone	< 0.0024	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	gamma-BHC	< 0.0022	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	heptachlor	< 0.006	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	heptachlor epoxide	< 0.0023	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	methoxychlor	< 0.0083	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8080	toxaphene	< 0.041	mg/Kg	UJ	Surrogate recovery too low	L2459
LSL-9 (6'-8')	8260	toluene	0.0044	mg/Kg	J	Surrogate recovery too high	L2459
LSW-1	6010	zinc	< 0.0207	mg/L	U	Method blank contamination	L2755
LSW-1	8260	1,1,1,2-tetrachloroethane	< 0.00045	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,1,1-trichloroethane	< 0.0017	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,1,2,2-tetrachloroethane	< 0.00063	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,1,2-trichloroethane	< 0.0012	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,1-dichloroethane	< 0.0017	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,1-dichloroethene	< 0.00048	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,1-dichloropropene	< 0.0017	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,2,3-trichlorobenzene	< 0.00094	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,2,3-trichloropropane	< 0.0011	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,2,4-trichlorobenzene	< 0.00084	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,2,4-trimethylbenzene	< 0.00056	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,2-chlorotoluene	< 0.00051	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,2-dibromo-3-chloropropane	< 0.00061	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,2-dibromoethane	< 0.0005	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,2-dichlorobenzene	< 0.00073	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,2-dichloroethane	< 0.0021	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,2-dichloropropane	< 0.00051	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,3,5-trimethylbenzene	< 0.00055	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,3-dichlorobenzene	< 0.0007	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,3-dichloropropane	< 0.0015	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	1,4-dichlorobenzene	< 0.00056	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	2,2-dichloropropane	< 0.0033	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	4-chlorotoluene	< 0.00051	mg/L	UJ	Surrogate recovery too low	L2755

Table B2-2
Data Qualified During Validation
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Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
LSW-1	8260	benzene	< 0.00039	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	bromobenzene	< 0.00057	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	bromochloromethane	< 0.00069	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	bromodichloromethane	< 0.00064	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	bromoform	< 0.00047	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	bromomethane	< 0.00049	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	carbon tetrachloride	< 0.0014	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	chlorobenzene	< 0.00044	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	chloroethane	< 0.00054	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	chloroform	< 0.0014	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	chloromethane	< 0.002	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	cis-1,2-dichloroethene	< 0.0018	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	cis-1,3-dichloropropene	< 0.00078	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	dibromochloromethane	< 0.0005	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	dibromomethane	< 0.0014	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	dichlorodifluoromethane	< 0.00043	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	ethylbenzene	< 0.00075	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	hexachlorobutadiene	< 0.0011	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	isopropylbenzene	< 0.00054	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	m+p-xylene	< 0.0023	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	methylene chloride	< 0.00075	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	n-butylbenzene	< 0.00059	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	n-propylbenzene	< 0.00062	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	naphthalene	< 0.001	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	o-xylene	< 0.0014	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	paracymene	< 0.00064	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	sec-butylbenzene	< 0.00063	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	styrene	< 0.00072	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	tert-butylbenzene	< 0.00059	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	tetrachloroethene	< 0.00049	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	toluene	< 0.00085	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	trans-1,2-dichloroethene	< 0.00055	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	trans-1,3-dichloropropene	< 0.00055	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	trichloroethene	< 0.00042	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	trichloromonofluoromethane	< 0.00062	mg/L	UJ	Surrogate recovery too low	L2755
LSW-1	8260	vinyl chloride	< 0.00047	mg/L	UJ	Surrogate recovery too low	L2755
LSW-10	8270	1,2,4,5-tetrachlorobenzene	< 0.0046	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	1,2,4-trichlorobenzene~	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	1,2-dichlorobenzene~	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	1,2-diphenylhydrazine	< 0.0045	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	1,3-dichlorobenzene~	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	1,4-dichlorobenzene~	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	1-chloronaphthalene	< 0.011	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	1-naphthylamine	< 0.004	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2,3,4,6-tetrachlorophenol	< 0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2,4,5-trichlorophenol	< 0.0062	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2,4,6-trichlorophenol	< 0.0045	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2,4-dichlorophenol	< 0.0043	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2,4-dimethylphenol	< 0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2,4-dinitrophenol	< 0.0072	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2,4-dinitrotoluene	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2,6-dichlorophenol	< 0.0041	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2,6-dinitrotoluene	< 0.0041	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2-chloronaphthalene	< 0.0056	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2-chlorophenol	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2-methyl naphthalene	< 0.0023	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2-methylphenol	< 0.0021	mg/L	UJ	Holding time violation (extraction)	L2622

Table B2-2
Data Qualified During Validation
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Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
LSW-10	8270	2-naphthylamine	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2-nitroaniline	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2-nitrophenol	< 0.0043	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	2-picoline	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	3,3'-dichlorobenzidine	< 0.004	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	3-methylcholanthrene	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	3-nitroaniline	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	4,6-dinitro-2-methylphenol	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	4-aminobiphenyl	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	4-bromophenyl phenyl ether	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	4-chloro-3-methylphenol	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	4-chloroaniline	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	4-chlorophenyl phenyl ether	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	4-methylphenol	< 0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	4-nitroaniline	< 0.0071	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	4-nitrophenol	< 0.008	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	7,12-dimethylbenz(a)anthracene	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	a,a-dimethylphenethylamine	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	acenaphthene	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	acenaphthylene	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	acetophenone	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	aniline	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	anthracene	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	benzidine	< 0.0069	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	benzo(a)anthracene	< 0.0031	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	benzo(a)pyrene	< 0.0039	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	benzo(b)fluoranthene	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	benzo(g,h,i)perylene	< 0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	benzo(k)fluoranthene	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	benzoic acid	< 0.062	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	benzyl alcohol	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	bis(2-chloroethoxy)methane	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	bis(2-chloroethyl)ether	< 0.0024	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	bis(2-chloroisopropyl)ether	< 0.0021	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	bis(2-ethylhexyl)phthalate	< 0.026	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	butyl benzyl phthalate	< 0.0026	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	chrysene	< 0.0047	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	di-n-butyl phthalate	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	di-n-octyl phthalate	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	dibenz(a,h)anthracene	< 0.0039	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	dibenz(a,j)acridine	< 0.0057	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	dibenzofuran	< 0.0037	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	diethyl phthalate	< 0.0057	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	dimethyl phthalate	< 0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	diphenylamine	< 0.0047	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	ethyl methanesulfonate	< 0.0029	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	fluoranthene	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	fluorene	< 0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	hexachlorobenzene	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	hexachlorobutadiene~	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	hexachlorocyclopentadiene	< 0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	hexachloroethane	< 0.005	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	indeno(1,2,3-cd)pyrene	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	isophorone	< 0.0034	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	methyl methanesulfonate	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	n-nitrosodibutylamine	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	n-nitrosodimethylamine	< 0.0022	mg/L	UJ	Holding time violation (extraction)	L2622

Table B2-2
Data Qualified During Validation
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Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
LSW-10	8270	n-nitrosodiphenylamine	< 0.0091	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	n-nitrosodipropylamine	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	n-nitrosopiperidine	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	naphthalene~	< 0.0025	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	nitrobenzene	< 0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	p-(dimethylamino)azobenzene	< 0.0029	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	pentachlorobenzene	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	pentachloronitrobenzene	< 0.005	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	pentachlorophenol	< 0.0051	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	phenacetin	< 0.0066	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	phenanthrene	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	phenol	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-10	8270	pronamide	< 0.004	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	1,2,4,5-tetrachlorobenzene	< 0.0046	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	1,2,4-trichlorobenzene~	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	1,2-dichlorobenzene~	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	1,2-diphenylhydrazine	< 0.0045	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	1,3-dichlorobenzene~	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	1,4-dichlorobenzene~	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	1-chloronaphthalene	< 0.011	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	1-naphthylamine	< 0.004	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2,3,4,6-tetrachlorophenol	< 0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2,4,5-trichlorophenol	< 0.0062	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2,4,6-trichlorophenol	< 0.0045	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2,4-dichlorophenol	< 0.0043	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2,4-dimethylphenol	< 0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2,4-dinitrophenol	< 0.0072	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2,4-dinitrotoluene	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2,6-dichlorophenol	< 0.0041	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2,6-dinitrotoluene	< 0.0041	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2-chloronaphthalene	< 0.0056	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2-chlorophenol	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2-methyl naphthalene	< 0.0023	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2-methylphenol	< 0.0021	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2-naphthylamine	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2-nitroaniline	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2-nitrophenol	< 0.0043	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	2-picoline	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	3,3'-dichlorobenzidine	< 0.004	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	3-methylcholanthrene	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	3-nitroaniline	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	4,6-dinitro-2-methylphenol	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	4-aminobiphenyl	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	4-bromophenyl phenyl ether	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	4-chloro-3-methylphenol	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	4-chloroaniline	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	4-chlorophenyl phenyl ether	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	4-methylphenol	< 0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	4-nitroaniline	< 0.0071	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	4-nitrophenol	< 0.008	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	7,12-dimethylbenz(a)anthracene	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	a,a-dimethylphenethylamine	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	acenaphthene	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	acenaphthylene	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	acetophenone	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	aniline	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	anthracene	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622

Table B2-2
Data Qualified During Validation
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
LSW-12	8270	benzidine	< 0.0069	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	benzo(a)anthracene	< 0.0031	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	benzo(a)pyrene	< 0.0039	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	benzo(b)fluoranthene	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	benzo(g,h,i)perylene	< 0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	benzo(k)fluoranthene	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	benzoic acid	< 0.062	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	benzyl alcohol	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	bis(2-chloroethoxy)methane	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	bis(2-chloroethyl)ether	< 0.0024	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	bis(2-chloroisopropyl)ether	< 0.0021	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	bis(2-ethylhexyl)phthalate	< 0.026	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	butyl benzyl phthalate	< 0.0026	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	chrysene	< 0.0047	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	di-n-butyl phthalate	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	di-n-octyl phthalate	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	dibenz(a,h)anthracene	< 0.0039	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	dibenz(a,j)acridine	< 0.0057	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	dibenzofuran	< 0.0037	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	diethyl phthalate	< 0.0057	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	dimethyl phthalate	< 0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	diphenylamine	< 0.0047	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	ethyl methanesulfonate	< 0.0029	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	fluoranthene	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	fluorene	< 0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	hexachlorobenzene	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	hexachlorobutadiene~	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	hexachlorocyclopentadiene	< 0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	hexachloroethane	< 0.005	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	indeno(1,2,3-cd)pyrene	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	isophorone	< 0.0034	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	methyl methanesulfonate	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	n-nitrosodibutylamine	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	n-nitrosodimethylamine	< 0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	n-nitrosodiphenylamine	< 0.0091	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	n-nitrosodipropylamine	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	n-nitrosopiperidine	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	naphthalene~	< 0.0025	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	nitrobenzene	< 0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	p-(dimethylamino)azobenzene	< 0.0029	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	pentachlorobenzene	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	pentachloronitrobenzene	< 0.005	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	pentachlorophenol	< 0.0051	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	phenacetin	< 0.0066	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	phenanthrene	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	phenol	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12	8270	pronamide	< 0.004	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	6010	zinc	< 0.0424	mg/L	U	Method blank contamination	L2622
LSW-12D	8270	1,2,4,5-tetrachlorobenzene	< 0.0046	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	1,2,4-trichlorobenzene~	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	1,2-dichlorobenzene~	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	1,2-diphenylhydrazine	< 0.0045	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	1,3-dichlorobenzene~	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	1,4-dichlorobenzene~	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	1-chloronaphthalene	< 0.011	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	1-naphthylamine	< 0.004	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2,3,4,6-tetrachlorophenol	< 0.0053	mg/L	UJ	Holding time violation (extraction)	L2622

Table B2-2
Data Qualified During Validation
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
LSW-12D	8270	2,4,5-trichlorophenol	< 0.0062	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2,4,6-trichlorophenol	< 0.0045	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2,4-dichlorophenol	< 0.0043	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2,4-dimethylphenol	< 0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2,4-dinitrophenol	< 0.0072	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2,4-dinitrotoluene	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2,6-dichlorophenol	< 0.0041	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2,6-dinitrotoluene	< 0.0041	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2-chloronaphthalene	< 0.0056	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2-chlorophenol	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2-methyl naphthalene	< 0.0023	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2-methylphenol	< 0.0021	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2-naphthylamine	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2-nitroaniline	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2-nitrophenol	< 0.0043	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	2-picoline	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	3,3'-dichlorobenzidine	< 0.004	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	3-methylcholanthrene	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	3-nitroaniline	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	4,6-dinitro-2-methylphenol	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	4-aminobiphenyl	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	4-bromophenyl phenyl ether	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	4-chloro-3-methylphenol	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	4-chloroaniline	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	4-chlorophenyl phenyl ether	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	4-methylphenol	< 0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	4-nitroaniline	< 0.0071	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	4-nitrophenol	< 0.008	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	7,12-dimethylbenz(a)anthracene	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	a,a-dimethylphenethylamine	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	acenaphthene	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	acenaphthylene	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	acetophenone	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	aniline	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	anthracene	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	benzidine	< 0.0069	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	benzo(a)anthracene	< 0.0031	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	benzo(a)pyrene	< 0.0039	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	benzo(b)fluoranthene	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	benzo(g,h,i)perylene	< 0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	benzo(k)fluoranthene	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	benzoic acid	< 0.062	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	benzyl alcohol	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	bis(2-chloroethoxy)methane	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	bis(2-chloroethyl)ether	< 0.0024	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	bis(2-chloroisopropyl)ether	< 0.0021	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	bis(2-ethylhexyl)phthalate	< 0.026	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	butyl benzyl phthalate	< 0.0026	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	chrysene	< 0.0047	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	di-n-butyl phthalate	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	di-n-octyl phthalate	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	dibenz(a,h)anthracene	< 0.0039	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	dibenz(a,j)acridine	< 0.0057	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	dibenzofuran	< 0.0037	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	diethyl phthalate	< 0.0057	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	dimethyl phthalate	< 0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	diphenylamine	< 0.0047	mg/L	UJ	Holding time violation (extraction)	L2622

Table B2-2
Data Qualified During Validation
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter		Result	Unit	Qflag	Explanation	SDG
LSW-12D	8270	ethyl methanesulfonate	<	0.0029	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	fluoranthene	<	0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	fluorene	<	0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	hexachlorobenzene	<	0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	hexachlorobutadiene~	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	hexachlorocyclopentadiene	<	0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	hexachloroethane	<	0.005	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	indeno(1,2,3-cd)pyrene	<	0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	isophorone	<	0.0034	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	methyl methanesulfonate	<	0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	n-nitrosodibutylamine	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	n-nitrosodimethylamine	<	0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	n-nitrosodiphenylamine	<	0.0091	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	n-nitrosodipropylamine	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	n-nitrosopiperidine	<	0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	naphthalene~	<	0.0025	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	nitrobenzene	<	0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	p-(dimethylamino)azobenzene	<	0.0029	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	pentachlorobenzene	<	0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	pentachloronitrobenzene	<	0.005	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	pentachlorophenol	<	0.0051	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	phenacetin	<	0.0066	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	phenanthrene	<	0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	phenol	<	0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-12D	8270	pronamide	<	0.004	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	6010	zinc	<	0.0346	mg/L	U	Method blank contamination	L2622
LSW-13	8270	1,2,4,5-tetrachlorobenzene	<	0.0046	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	1,2,4-trichlorobenzene~	<	0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	1,2-dichlorobenzene~	<	0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	1,2-diphenylhydrazine	<	0.0045	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	1,3-dichlorobenzene~	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	1,4-dichlorobenzene~	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	1-chloronaphthalene	<	0.011	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	1-naphthylamine	<	0.004	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2,3,4,6-tetrachlorophenol	<	0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2,4,5-trichlorophenol	<	0.0062	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2,4,6-trichlorophenol	<	0.0045	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2,4-dichlorophenol	<	0.0043	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2,4-dimethylphenol	<	0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2,4-dinitrophenol	<	0.0072	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2,4-dinitrotoluene	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2,6-dichlorophenol	<	0.0041	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2,6-dinitrotoluene	<	0.0041	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2-chloronaphthalene	<	0.0056	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2-chlorophenol	<	0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2-methyl naphthalene	<	0.0023	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2-methylphenol	<	0.0021	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2-naphthylamine	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2-nitroaniline	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2-nitrophenol	<	0.0043	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	2-picoline	<	0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	3,3'-dichlorobenzidine	<	0.004	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	3-methylcholanthrene	<	0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	3-nitroaniline	<	0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	4,6-dinitro-2-methylphenol	<	0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	4-aminobiphenyl	<	0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	4-bromophenyl phenyl ether	<	0.003	mg/L	UJ	Holding time violation (extraction)	L2622

Table B2-2
Data Qualified During Validation
Former MNOP Landfill
Macon, Georgia
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Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
LSW-13	8270	4-chloro-3-methylphenol	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	4-chloroaniline	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	4-chlorophenyl phenyl ether	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	4-methylphenol	< 0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	4-nitroaniline	< 0.0071	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	4-nitrophenol	< 0.008	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	7,12-dimethylbenz(a)anthracene	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	a,a-dimethylphenethylamine	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	acenaphthene	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	acenaphthylene	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	acetophenone	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	aniline	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	anthracene	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	benzidine	< 0.0069	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	benzo(a)anthracene	< 0.0031	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	benzo(a)pyrene	< 0.0039	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	benzo(b)fluoranthene	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	benzo(g,h,i)perylene	< 0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	benzo(k)fluoranthene	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	benzoic acid	< 0.062	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	benzyl alcohol	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	bis(2-chloroethoxy)methane	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	bis(2-chloroethyl)ether	< 0.0024	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	bis(2-chloroisopropyl)ether	< 0.0021	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	bis(2-ethylhexyl)phthalate	< 0.026	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	butyl benzyl phthalate	< 0.0026	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	chrysene	< 0.0047	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	di-n-butyl phthalate	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	di-n-octyl phthalate	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	dibenz(a,h)anthracene	< 0.0039	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	dibenz(a,j)acridine	< 0.0057	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	dibenzofuran	< 0.0037	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	diethyl phthalate	< 0.0057	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	dimethyl phthalate	< 0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	diphenylamine	< 0.0047	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	ethyl methanesulfonate	< 0.0029	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	fluoranthene	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	fluorene	< 0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	hexachlorobenzene	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	hexachlorobutadiene~	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	hexachlorocyclopentadiene	< 0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	hexachloroethane	< 0.005	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	indeno(1,2,3-cd)pyrene	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	isophorone	< 0.0034	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	methyl methanesulfonate	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	n-nitrosodibutylamine	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	n-nitrosodimethylamine	< 0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	n-nitrosodiphenylamine	< 0.0091	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	n-nitrosodipropylamine	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	n-nitrosopiperidine	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	naphthalene~	< 0.0025	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	nitrobenzene	< 0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	p-(dimethylamino)azobenzene	< 0.0029	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	pentachlorobenzene	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	pentachloronitrobenzene	< 0.005	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	pentachlorophenol	< 0.0051	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	phenacetin	< 0.0066	mg/L	UJ	Holding time violation (extraction)	L2622

Table B2-2
Data Qualified During Validation
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Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
LSW-13	8270	phenanthrene	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	phenol	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-13	8270	pronamide	< 0.004	mg/L	UJ	Holding time violation (extraction)	L2622
LSW-2	6010	zinc	< 0.017	mg/L	UJ	Method blank contamination	L2755
LSW-3	6010	zinc	< 0.02	mg/L	UJ	Method blank contamination	L2755
LSW-4	6010	zinc	< 0.018	mg/L	UJ	Method blank contamination	L2755
LSW-5	6010	zinc	< 0.019	mg/L	UJ	Method blank contamination	L2755
LSW-6	6010	zinc	< 0.0479	mg/L	U	Method blank contamination	L2755
LSW-7	6010	zinc	< 0.019	mg/L	UJ	Method blank contamination	L2755
LSW-7	8270	bis(2-ethylhexyl)phthalate	< 0.058	mg/L	U	Method blank contamination	L2755
LSW-8	6010	zinc	< 0.018	mg/L	UJ	Method blank contamination	L2755
LSW-9	6010	zinc	< 0.016	mg/L	UJ	Method blank contamination	L2755
MW-1	6010	zinc	< 0.011	mg/L	UJ	Method blank contamination	WG5084
MW-1	7740	selenium	0.003	mg/L	J	Matrix spike recovery too low	WG5086
MW-1	7841	thallium	< 0.00079	mg/L	UJ	Matrix spike recovery too low	WG5087
MW-10	6010	zinc	< 0.0291	mg/L	U	Method blank contamination	L2617
MW-10 (0'-2')	*7421*	*lead*	*123*	*mg/Kg*	*J*	Matrix spike recovery below 30 percent	WG5625
MW-11	6010	zinc	< 0.0236	mg/L	U	Method blank contamination	L2607
MW-1D	6010	zinc	< 0.019	mg/L	UJ	Method blank contamination	WG5084
MW-1D	7740	selenium	< 0.00074	mg/L	UJ	Matrix spike recovery too low	WG5086
MW-1D	7841	thallium	< 0.00079	mg/L	UJ	Matrix spike recovery too low	WG5087
MW-2	6010	zinc	< 0.0061	mg/L	UJ	Method blank contamination	WG5084
MW-2	7740	selenium	< 0.00074	mg/L	UJ	Matrix spike recovery too low	WG5086
MW-2	7841	thallium	< 0.00079	mg/L	UJ	Matrix spike recovery too low	WG5087
MW-3	6010	zinc	< 0.0261	mg/L	U	Method blank contamination	WG5084
MW-3	7740	selenium	0.0026	mg/L	J	Matrix spike recovery too low	WG5086
MW-3	7841	thallium	< 0.00079	mg/L	UJ	Matrix spike recovery too low	WG5087
MW-4	6010	zinc	< 0.0244	mg/L	U	Method blank contamination	WG5084
MW-4	7740	selenium	< 0.00074	mg/L	UJ	Matrix spike recovery too low	WG5086
MW-4	7841	thallium	< 0.00079	mg/L	UJ	Matrix spike recovery too low	WG5087
MW-5	7740	selenium	< 0.00074	mg/L	UJ	Matrix spike recovery too low	WG5086
MW-5	7841	thallium	< 0.00079	mg/L	UJ	Matrix spike recovery too low	WG5087
MW-5	8260	cis-1,2-dichloroethene	0.2	mg/L	J	Surrogate recovery too high	WG5299
MW-5	8260	trichloroethene	1.8	mg/L	J	Surrogate recovery too high/matrix spike recovery too low	WG5299
MW-5	8260	vinyl chloride	0.022	mg/L	J	Surrogate recovery too high	WG5299
MW-6 (2'-4')	7421	lead	36.7	mg/Kg	J	Matrix spike recovery below 30 percent	WG5625
MW-6A (2'-4')	7421	lead	91.3	mg/Kg	J	Matrix spike recovery below 30 percent	WG5625
MW-7	6010	zinc	< 0.023	mg/L	U	Method blank contamination	L2622
MW-7	8270	1,2,4,5-tetrachlorobenzene	< 0.0046	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	1,2,4-trichlorobenzene~	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	1,2-dichlorobenzene~	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	1,2-diphenylhydrazine	< 0.0045	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	1,3-dichlorobenzene~	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	1,4-dichlorobenzene~	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	1-chloronaphthalene	< 0.011	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	1-naphthylamine	< 0.004	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2,3,4,6-tetrachlorophenol	< 0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2,4,5-trichlorophenol	< 0.0062	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2,4,6-trichlorophenol	< 0.0045	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2,4-dichlorophenol	< 0.0043	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2,4-dimethylphenol	< 0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2,4-dinitrophenol	< 0.0072	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2,4-dinitrotoluene	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2,6-dichlorophenol	< 0.0041	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2,6-dinitrotoluene	< 0.0041	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2-chloronaphthalene	< 0.0056	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2-chlorophenol	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622

Table B2-2
Data Qualified During Validation
Former MNOP Landfill
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Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
MW-7	8270	2-methyl naphthalene	< 0.0023	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2-methylphenol	< 0.0021	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2-naphthylamine	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2-nitroaniline	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2-nitrophenol	< 0.0043	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	2-picoline	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	3,3'-dichlorobenzidine	< 0.004	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	3-methylcholanthrene	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	3-nitroaniline	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	4,6-dinitro-2-methylphenol	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	4-aminobiphenyl	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	4-bromophenyl phenyl ether	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	4-chloro-3-methylphenol	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	4-chloroaniline	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	4-chlorophenyl phenyl ether	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	4-methylphenol	< 0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	4-nitroaniline	< 0.0071	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	4-nitrophenol	< 0.008	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	7,12-dimethylbenz(a)anthracene	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	a,a-dimethylphenethylamine	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	acenaphthene	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	acenaphthylene	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	acetophenone	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	aniline	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	anthracene	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	benzidine	< 0.0069	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	benzo(a)anthracene	< 0.0031	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	benzo(a)pyrene	< 0.0039	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	benzo(b)fluoranthene	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	benzo(g,h,i)perylene	< 0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	benzo(k)fluoranthene	< 0.0042	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	benzoic acid	< 0.062	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	benzyl alcohol	< 0.0028	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	bis(2-chloroethoxy)methane	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	bis(2-chloroethyl)ether	< 0.0024	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	bis(2-chloroisopropyl)ether	< 0.0021	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	bis(2-ethylhexyl)phthalate	< 0.026	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	butyl benzyl phthalate	< 0.0026	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	chrysene	< 0.0047	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	di-n-butyl phthalate	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	di-n-octyl phthalate	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	dibenz(a,h)anthracene	< 0.0039	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	dibenz(a,j)acridine	< 0.0057	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	dibenzofuran	< 0.0037	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	diethyl phthalate	< 0.0057	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	dimethyl phthalate	< 0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	diphenylamine	< 0.0047	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	ethyl methanesulfonate	< 0.0029	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	fluoranthene	< 0.0044	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	fluorene	< 0.0035	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	hexachlorobenzene	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	hexachlorobutadiene~	< 0.0033	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	hexachlorocyclopentadiene	< 0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	hexachloroethane	< 0.005	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	indeno(1,2,3-cd)pyrene	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	isophorone	< 0.0034	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	methyl methanesulfonate	< 0.003	mg/L	UJ	Holding time violation (extraction)	L2622

Table B2-2
Data Qualified During Validation
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Sample ID	Method	Parameter	Result	Unit	Qflag	Explanation	SDG
MW-7	8270	n-nitrosodibutylamine	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	n-nitrosodimethylamine	< 0.0022	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	n-nitrosodiphenylamine	< 0.0091	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	n-nitrosodipropylamine	< 0.0032	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	n-nitrosopiperidine	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	naphthalene~	< 0.0025	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	nitrobenzene	< 0.0053	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	p-(dimethylamino)azobenzene	< 0.0029	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	pentachlorobenzene	< 0.0036	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	pentachloronitrobenzene	< 0.005	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	pentachlorophenol	< 0.0051	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	phenacetin	< 0.0066	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	phenanthrene	< 0.0027	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	phenol	< 0.0038	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7	8270	pronamide	< 0.004	mg/L	UJ	Holding time violation (extraction)	L2622
MW-7 (0'-2')	7421	lead	15.9	mg/Kg	J	Matrix spike recovery below 30 percent	WG5625
MW-8 (0'-2')	6010	antimony	11.1	mg/Kg	J	Matrix spike recovery below 30 percent	WG5624
MW-8 (0'-2')	7421	lead	61.8	mg/Kg	J	Matrix spike recovery below 30 percent	WG5625
MW-8 (0'-2')	8080	4,4'-DDD	< 0.41	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	4,4'-DDE	< 0.087	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	4,4'-DDT	< 0.16	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	aldrin	< 0.26	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	alpha-BHC	< 0.095	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	aroclor 1016	< 0.97	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	aroclor 1221	< 0.57	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	aroclor 1232	< 0.57	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	aroclor 1242	< 0.57	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	aroclor 1248	23.4	mg/Kg	J	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	aroclor 1254	< 0.57	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	aroclor 1260	< 0.57	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	beta-BHC	< 0.081	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	chlordane	< 2.7	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	delta-BHC	< 0.058	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	dieldrin	< 0.065	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	endosulfan I	< 0.078	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	endosulfan II	< 0.068	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	endosulfan sulfate	< 0.096	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	endrin	< 0.067	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	endrin aldehyde	< 0.43	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	endrin ketone	< 0.074	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	gamma-BHC	< 0.07	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	heptachlor	< 0.19	mg/Kg	UJ	Surrogate recovery too low/matrix spike recovery too high	WG5569
MW-8 (0'-2')	8080	heptachlor epoxide	< 0.074	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	methoxychlor	< 0.26	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-8 (0'-2')	8080	toxaphene	< 1.3	mg/Kg	UJ	Surrogate recovery too low	WG5569
MW-9 (6'-8')	7421	lead	5.43	mg/Kg	J	Matrix spike recovery below 30 percent	WG5625

Table B2-3
Summary of Laboratory QC Nonconformances
Former MNOP Landfill
Macon, Georgia
Rust Project No. 33941.000

Matrix	Method	Analysis	Rustflag	Rustflag Explanation	Analytes Affected
groundwater	6010	inorganics	Bm	Method blank contamination	8
groundwater	7740	selenium	Mil	Matrix spike recovery too low	6
groundwater	7841	thallium	Mil	Matrix spike recovery too low	6
groundwater	8260	volatiles	Ml	Matrix spike recovery too low	5
groundwater	8260	volatiles	Su	Surrogate recovery too high	2
groundwater	8260	volatiles	SuMl	Surrogate recovery too high/matrix spike recovery too low	1
groundwater	8270	semivolatiles	Hte	Holding time violation (extraction)	91
groundwater	8270	semivolatiles	HteLl	LCS recovery too low	1
groundwater	8270	semivolatiles	Ll	LCS recovery too low	4
groundwater	8270	semivolatiles	Ml	Matrix spike recovery too low	1
groundwater	8270	semivolatiles	MlLl	LCS recovery too low	1
groundwater	8270	semivolatiles	Mu	Matrix spike recovery too high	12
sediment	6010	inorganics	Bm	Method blank contamination	1
sediment	8260	volatiles	Sl	Surrogate recovery too low	116
sediment	8260	volatiles	Su	Surrogate recovery too high	5
sediment	8260	volatiles	SuSl	Surrogate recovery too high and too low	2
sediment	8270	semivolatiles	Hte	Holding time violation (extraction)	92
sediment	8330	explosive residues	Ll	LCS recovery too low	24
soil	6010	inorganics	Bm	Method blank contamination	4
soil	6010	inorganics	Mir	Matrix spike recovery below 30 percent	6
soil	7421	lead	Mir	Matrix spike recovery below 30 percent	6
soil	8080	pesticides/PCBs	Mu	Matrix spike recovery too high	6
soil	8080	pesticides/PCBs	Sl	Surrogate recovery too low	53
soil	8080	pesticides/PCBs	SlMu	Surrogate recovery too low/matrix spike recovery too high	1
soil	8080	pesticides/PCBs	Srd	Surrogate recovery below 10 percent but mitigated by dilution	135
soil	8080	pesticides/PCBs	Su	Surrogate recovery too high	3
soil	8260	volatiles	Sl	Surrogate recovery too low	59
soil	8260	volatiles	Su	Surrogate recovery too high	7
soil	8270	semivolatiles	Ml	Matrix spike recovery too low	10
soil	8270	semivolatiles	Sr	Surrogate recovery below 10 percent	88
soil	8270	semivolatiles	SrMl	Surrogate recovery below 10 percent	4
surface water	6010	inorganics	Bm	Method blank contamination	11
surface water	8260	volatiles	Sl	Surrogate recovery too low	59
surface water	8270	semivolatiles	Bm	Method blank contamination	1
surface water	8270	semivolatiles	Hte	Holding time violation (extraction)	364
surface water	8270	semivolatiles	HteLl	LCS recovery too low	4
surface water	8270	semivolatiles	Ll	LCS recovery too low	2
surface water	8270	semivolatiles	Ml	Matrix spike recovery too low	1
surface water	8270	semivolatiles	Mu	Matrix spike recovery too high	1
surface water	8330	explosive residues	Ml	Matrix spike recovery too low	4
surface water	8330	explosive residues	MlMu	Matrix spike recovery too low/matrix spike recovery too high	1
surface water	8330	explosive residues	Mu	Matrix spike recovery too high	8